

INVENTORY OF SENSITIVE SPECIES AND ECOSYSTEMS IN UTAH

INVENTORY OF SENSITIVE VERTEBRATE AND INVERTEBRATE SPECIES: A PROGRESS REPORT

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Appendix A: Agency Status Definitions

Utah Division of Wildlife Resources
 USDI Fish & Wildlife Service
 USDA Forest Service
 USDI Bureau of Land Management
 USDI National Park Service

Appendix B: Natural Heritage Rank Definitions

Appendix C: Utah Vertebrate Species List

Appendix D: County and Ecoregion Status Terminology

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Section I

Introduction

INTRODUCTION

The Utah Division of Wildlife Resources (Division), under an agreement with the U.S. Department of the Interior, began work in March 1994 to develop a study plan for a statewide inventory of sensitive species and ecosystems. Activities enumerated in the plan include (1) conducting an exhaustive literature review of vertebrate, invertebrate, and plant species, (2) conducting field studies on sensitive species identified in the plan, and (3) using information obtained from the literature review and field studies to enhance and upgrade the Division's central database. The Division's study plan was approved by the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) in February 1995, and a subsequent cooperative agreement funded the Division to carry it to the present.

This document summarizes the work that has been completed for animal species in the first two years of plan implementation, including: (1) detailed reviews of the ecology, status, distribution, and abundance of five sensitive species, (2) more concise status summaries for 150 sensitive vertebrate species, (3) status rankings for sensitive mollusk species, and (4) a summary of the locality data collection project for sensitive bird and mammal species in the Division's Southern Region. The overall emphasis thus far has been on database development through identification of data gaps and review of existing literature. The author of this report is George V. Oliver, Zoologist with the Division's Utah Natural Heritage Program. Users of this document should bear in mind that the document may contain some sensitive locality information which should not be disclosed to the public.

This product is a preliminary inventory of the sensitive vertebrate and invertebrate species that inhabit Utah, and directly reflects the development of the Division's central database through an intensive review of existing literature. Such an inventory is needed to understand the state's biological diversity and to improve our capability to evaluate the potential impacts on Utah's native species and ecosystems. However, the work is far from complete. The literature review and enhancement of database records has identified gaps in our knowledge that will direct future efforts toward a comprehensive inventory that will best suit the needs of cooperating agencies and other users of the data. Additional inventory needs have been addressed in the individual species accounts, included in this report. In addition, a detailed workplan, submitted to the Mitigation Commission in July, 1997, addresses inventory needs for the purposes of this project over the next two years.

The Division would like to acknowledge the Mitigation Commission for its commitment to this inventory. The funding that has been provided by the Mitigation Commission and through an earlier cooperative agreement with the U.S. Department of the Interior, is substantial and is helping our central database to achieve an unprecedented level of accuracy and relevancy. The work completed by the Division to date is also assisting the Mitigation Commission to meet its mitigation obligations under the Central Utah Project Completion Act. The Division looks forward to continued interagency cooperation on this important effort.

Section II

Background

BACKGROUND

The Utah Interagency Conservation Committee was established under an interagency Memorandum of Understanding (MOU) reached in February 1994 (amended in July 1995) and titled "Utah Conservation Effort for Sensitive, Candidate and Listed Species." Parties to this MOU include the USDI Bureau of Land Management, National Park Service, and Fish and Wildlife Service; the USDA Forest Service; and the State of Utah's Division of Wildlife Resources. The intent of the MOU is to provide a framework for interagency cooperation on the conservation and management of sensitive species, especially those tending toward federal listing under the Endangered Species Act.

The participating federal and state agencies have each developed their own set of status definitions (see Appendix A). For the purposes of this report, however, "sensitive species" are defined as those that are of concern to one or more agencies due to small or declining populations, limited geographic distribution, or losses of habitat. Because of limited funding and other factors, conservation and management efforts for these species must be carefully planned and prioritized.

The Division's Utah Natural Heritage Program assists these efforts by systematically reviewing the state's animal and plant species according to their geographic distribution and abundance. A numeric rank (1 through 5) is assigned to indicate the status of a species at both the Global (rangewide) and State levels (see Appendix B for definitions). The program also maintains a sensitive species "tracking list" that includes all vertebrate and invertebrate species meeting one or more of the following criteria:

1. Currently listed as threatened, endangered, or sensitive by the federal land and resource management agencies;
2. Currently on the Utah Division of Wildlife Resources' sensitive species list; or
3. Currently assigned a Natural Heritage rank of S1, S1S2, S2, SX, SH, SAB, S1B, S1S2B, or S2B.

Of the 695 full species of vertebrates known to occur or to have occurred in Utah within historical times, 150 species and five subspecies currently meet the above-defined criteria for inclusion on the Natural Heritage tracking list (see Appendix C). There are also 139 species of mollusks that are known from Utah either currently or historically, and of these there are 54 mollusk species currently on the Natural Heritage tracking list.

Hundreds of literature sources have been examined thus far in the development of the tracking list. Many of these sources are referenced in the individual species accounts, although many more that were consulted have not been directly utilized in the preparation of the document. As more information is gathered, the ranks of individual species will be reevaluated and periodically adjusted. Occasionally this may cause some species to be added and others to be removed from the tracking list.

Documentation was conducted entirely in the Division's central Biological and Conservation Database (BCD). The texts for the vertebrate species accounts in this report were generated directly from the BCD. Coded information was translated into a readable format, while text fields were extracted directly without modification since they already exist as readable summaries.

Section III

Detailed Reviews of Status and Ecology of Selected Animal Species

DETAILED STATUS REVIEWS FOR SELECTED ANIMAL SPECIES

The purpose of this section is to demonstrate the progress that has been made in compiling and interpreting existing data regarding the distribution and abundance of sensitive animal species in Utah. To date, exhaustive locality data have been gathered statewide for five animal species of conservation concern. The example species presented here are: (1) Eureka mountainsnail (*Oreohelix eurekaensis*), (2) Gambel's crayfish (*Pacifastacus gambelii*), (3) least chub (*Lotichthys phlegethontis*), (4) black swift (*Cypseloides niger*), and (5) spotted bat (*Euderma maculatum*).

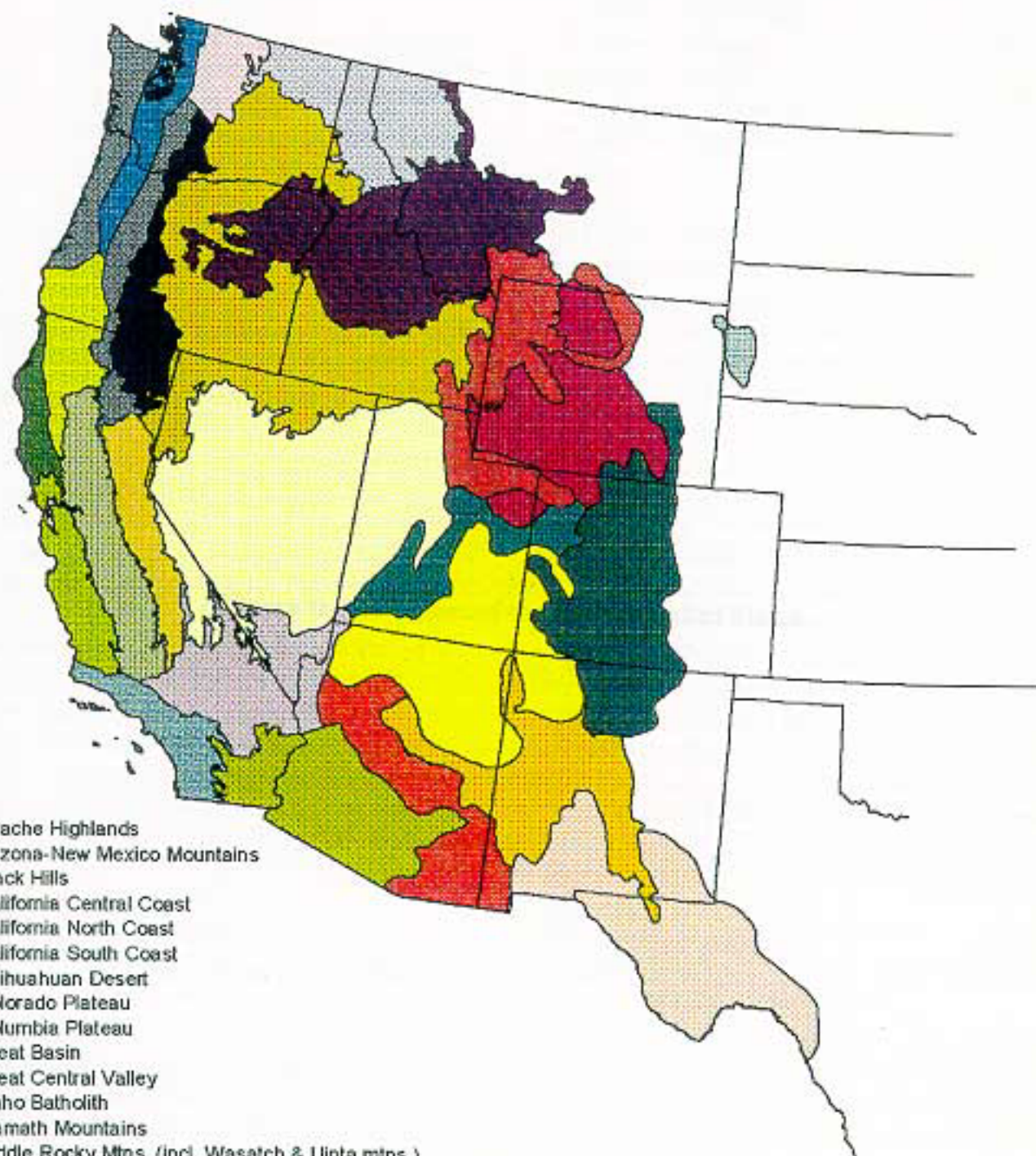
For each of these species a complete status summary is provided in the pages that follow. Each summary includes a discussion of taxonomy, subspecies designations, agency status (see Appendix A for definitions), Natural Heritage ranking (see Appendix B for definitions), species identification, estimated number of populations, protected populations, abundance, population trends, threats, inventory needs, habitat, food habits, ecology, reproduction, and mobility.

Provided with each species summary is an indication of distribution by county and by ecoregion. The ecoregional boundaries are adapted from the Nature Conservancy's Western Ecoregional Planning Units, which themselves are modified from Bailey (1995). (See Figure 1 for a map of the state's ecoregions.) Also, each detailed status review is accompanied with a map of the state showing the location of known occurrences (see Figures 2 through 6). Documentation of species occurrences was conducted entirely in the Division's central Biological and Conservation Database (BCD). The geographic coordinates representing the location of each occurrence were then translated into a set of ARCVIEW coverages from which the statewide distribution maps were generated. These maps are a good example of how locality data can be interpreted in ways that are useful to biologists and natural resource planners. Similar maps will be produced for all animal species on the Natural Heritage tracking list as locality data development is completed for these species over the next two years. The locality database from which these maps were generated is also being used by the Division and cooperating agencies on an on-going basis as a tool for project-specific impact analysis and mitigation planning.

It must be emphasized that species status assessment is an ongoing process and that no field work has been conducted to date. The literature search thus far reveals numerous instances in which distributions and abundances are poorly understood. Continued data development will indicate where future inventory effort should be directed.

Figure 1: Ecoregions of the western United States

Ecoregions of the Western United States



- Apache Highlands
- Arizona-New Mexico Mountains
- Black Hills
- California Central Coast
- California North Coast
- California South Coast
- Chihuahuan Desert
- Colorado Plateau
- Columbia Plateau
- Great Basin
- Great Central Valley
- Idaho Batholith
- Klamath Mountains
- Middle Rocky Mtns. (Incl. Wasatch & Uinta mtns.)
- Modoc Plateau and East Cascades
- Mojave Desert
- North Cascades
- Northern Rocky Mountains
- Puget Trough and Willamette Valley
- Sierra Nevada
- Sonoran Desert
- Southern Rocky Mountains
- Utah High Plateaus
- West Cascades and Coastal Forests
- Wyoming Basins (Incl. Uinta & Green R. basins)



EUREKA MOUNTAIN SNAIL

Oreohelix eurekaensis

State Taxonomic Comments

Originally described as *Oreohelix hemphilli eurekaensis* by Henderson and Daniels (1916); subsequently elevated to full specific status as *Oreohelix eurekaensis* by Henderson (1924).

Many workers have called this snail *Oreohelix eurekaensis eurekaensis* (e.g., Pilsbry 1939, Clarke 1993, Clarke and Hovingh 1994); these authors have considered the taxon *uinta* to be a race of the species *eurekaensis*. The American Fisheries Society's mollusks list (Turgeon et al. 1988) assigned full species status to *O. uinta*; under this taxonomic arrangement *O. eurekaensis* is a monotypic species (i.e., has no subspecies).

The problem of species limits, species, and subspecies, as well as what are now called "ecomorphs", in the genus *Oreohelix* was discussed by Henry A. Pilsbry, whom many regard as having been the greatest of all American malacologists. Pilsbry considered in some detail the difficulties encountered in understanding the variation and diversity, and thus the systematics, of the genus *Oreohelix* and concluded with the observation that "the assigned rank of 'species', 'subspecies' and 'forms' is less definite in *Oreohelix* than in more conservative genera" (Pilsbry 1939). He also commented: "It is extraordinary that so ancient a genus [known from at least Cretaceous times] is now in a stage of prolific speciation" (Pilsbry 1939).

State Subspecies

If *Oreohelix uinta* is a distinct species, as currently arranged in the American Fisheries Society's mollusks list (Turgeon et al. 1988), then *Oreohelix eurekaensis* is monotypic (i.e., has no subspecies). However, if *uinta* is not specifically distinct, as arranged by earlier authors (e.g., Pilsbry 1939), then *Oreohelix eurekaensis* has two subspecies, *O. e. eurekaensis* and *O. e. uinta*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat

Natural Heritage Ranking

Global Rank: G1

State Rank: S1

Natural Heritage Ranking Summary

A Utah endemic known from only one, possibly two, localities in the East Tintic Mountains on the Juab-Utah county line. Population may have declined since its original discovery. Mining operations and fire are threats.

Identification

The small size of this species (diameter 9 to 10 mm) serves to distinguish it from most of the other species of this genus (*Oreohelix*) in Utah.

O. parawanensis, which occurs only on Brian Head Peak (about 160 miles to the south, in Iron County), is slightly larger (diameter 10.5 mm) and is readily distinguished from *O. eurekaensis* by its much wider umbilicus, "which is contained about 3 1/2 times in the diameter of the shell" (Pilsbry 1948) and its more prominent keel on the outer whorl of the shell.

O. yavapai, known in Utah only from Navajo Mountain, San Juan County, is somewhat larger (diameter 12 mm).

O. uinta, endemic to one locality in Uintah County, is, however, very similar to *O. eurekaensis*, differing from *O. eurekaensis* by its "somewhat wider umbilicus, contained about 3 3/4 times in the diameter of the shell" (Brooks 1939), whereas in *O. eurekaensis* the "umbilicus [is] contained 4.4 to 5 times in the diameter" (Pilsbry 1939).

From immature *O. strigosa*, the only species of *Oreohelix* with which *O. eurekaensis* is sympatric, *O. eurekaensis* is distinguished by having more whorls, for a given size, than its usually larger congener and by the shape of its shell.

Estimated Number of Populations (Occurrences)

One or two occurrence(s).

Protected Populations (Occurrences)

The one (or two) occurrence(s) is (are) not protected.

Abundance

A recent estimate of the population of this species was 50,000 to 500,000 individuals on Mammoth Peak and Godiva Mountain, with perhaps a very small population on Lime Peak (Clarke 1993, Clarke and Hovingh 1994); this estimate was based on the finding of a combined total, from the three mentioned localities, of only 48 dead shells and 3 live individuals and appears to be a gross overestimate. It seems much more reasonable to conclude, from the recent finding of a total of only 48 dead shells--some (perhaps many) of them old--and 3 live individuals (all on Godiva Mountain), that the actual total population of this relict species is less (perhaps much less) than one-tenth the number(s) estimated by Clarke. It is indeed difficult to envision the formula used to arrive at an estimated living population of 50,000 to 500,000 from a field census that revealed only 3 living individuals.

Range Comments

Endemic to the northern part of the East Tintic Mountains, on the Juab-Utah county line, where it is known only from one population on Mammoth Peak and Godiva Mountain and another, presumably very much smaller, population (actually only a single dead shell) on Lime Peak.

County

Status

Juab	Native and natural, presence confident
Utah	Native and natural, presence confident

Ecoregion

Status

Utah High Plateaus	Native and natural, presence confident
--------------------	--

Habitats Utilized in Utah

Henderson and Daniels (1916), in the type description, mentioned that this snail was found "on the north side of Godiva Mountain, on Paleozoic limestone, under shrubs, etc." (Pilsbry 1939). Clarke (1993) reported that the species is "[f]ound under pygmy sagebrush and at the bases of ledges on north-facing slopes at altitudes of about 2200 to 2400 meters."

Minimum Elevation: 2200 m **Maximum Elevation:** 2400 m

Trends

Clarke and Hovingh (1994) stated: "Although we did not find the large population of this species seen on Godiva Mountain by Henderson & Daniels (1917), our findings there are quite similar to their earlier findings (Henderson & Daniels, 1916). Our work also materially extended the known range of the species [to Mammoth Peak and Lime Peak]. We therefore believe that no general population decline has occurred." This statement must be viewed skeptically: Only on Godiva Mountain, Henderson and Daniels' type locality, did Clarke and his co-workers find any living individuals of this species--and there only 3. In the two areas that "materially extended the known range of the species", Mammoth Peak and Lime Peak, they found only dead shells. In fact, on Mammoth Peak, while searching for *Oreohelix eurekensis* but finding only dead shells, they found 23 living snails of a related species, *Oreohelix strigosa*, which shows that both the sampling techniques that were used and the climatic conditions at the time were appropriate for finding living snails of the genus *Oreohelix*. Moreover, on Lime Peak their search yielded only "1 old shell", and it should be recognized that old shells often are very old--hundreds, if not thousands, of years old. Thus, while it is clear that this species has inhabited Mammoth Peak and (probably) Lime Peak at some time in the past, there is no convincing evidence that an extant population of this species is present at either of these sites that "materially [extend] the known range of the species." Thus, Clarke and Hovingh's (1994) failure to find the large population of this species discovered earlier in this century on Godiva Mountain, where they found only 3 living individuals, should be considered, at least until a more thorough inventory for this species is conducted, as evidence of a population decline.

Threats

The principal threat to this relict, endemic species is mining activities. Clarke (1993) pointed out that "[t]he whole area [inhabited by this species] is covered by patented mining claims controlled by the Kennicott [sic] Copper Company." He noted as well that "Godive [sic] Mountain has several abandoned mines on it and these, or others, could be activated if proper economic conditions develop", and "[m]ining operations, now abandoned, have reduced the available habitat for this species". On the field sheet for Godiva Mountain, he reported: "Area to 2/3 way up mountain has been seriously disturbed by mining activities (slag heaps, trash piles, areas flattened by vehicles, 2 excavations)" Clarke also considered fire to be a potential threat to this species.

Other Considerations

The Uinta mountainsnail, *Oreohelix uinta*, is listed in the American Fisheries

Society's mollusks list (Turgeon et al. 1988), which is considered the standard for molluscan nomenclature in the United States and Canada, as a distinct species of *Oreohelix*. However, it should be noted that the taxon *uinta* was originally described (Brooks 1939) as a race of *O. eurekaensis*, and this taxonomic arrangement was followed by other workers (e.g., Pilsbry 1939) until the publication of the AFS list. *O. uinta* is also a Utah endemic, known from only one locality in the Uinta Mountains, Uintah County, at a considerable distance (approximately 125 miles) from the area inhabited by *O. eurekaensis*, and, as already mentioned, in a completely different mountain range.

Inventory Needs

Inventory is needed to resolve questions regarding the health and extent of the Godiva Mountain population as well as to establish whether these snails survive on Mammoth Peak, where only dead shells have been discovered thus far, and similarly to determine whether the species is present on Lime Peak, from which only one old shell is known. Although Clarke (1993) surveyed additional sites in the East Tintic Mountains without finding this species, further prospective searches should be conducted.

Species Habits

Food

No dietary information has been reported.

Ecology

The related Rocky mountainsnail (*Oreohelix strigosa*) occurs in close proximity with this species on Godiva Mountain--and seemingly on Mammoth Peak and Lime Peak as well, though only dead shells of *O. eurekaensis* have been found in these last two locations. On Godiva Mountain there is apparent ecological segregation of the two coexisting congeners, *O. eurekaensis* being found under pygmy sagebrush and *O. strigosa* under large sagebrush. It is tempting to speculate that this local ecological separation is a form of resource partitioning, or avoidance of competition, that enables these two related species to coexist.

Clarke (1993) noted on the field sheet for Godiva Mountain: "Band on mountainside containing snails was about 150' wide" and "Snails collected here today were all close to fallen pole used for power line for now-abandoned mine."

Reproduction

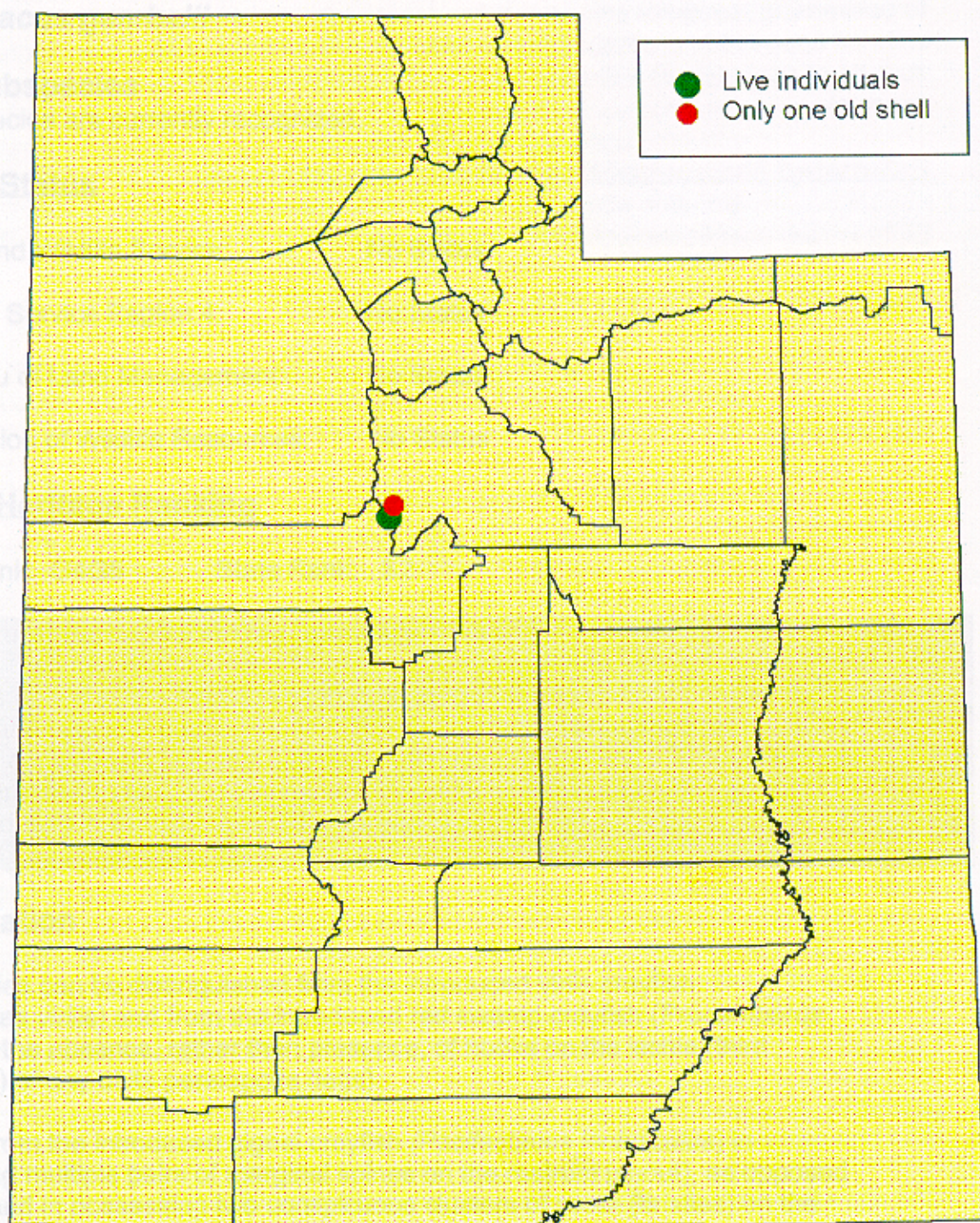
No reported information on reproduction.

Mobility

Extremely low vagility; restricted to a very small area.

Figure 2: Occurrences of Eureka mountainsnail (*Oreohelix eurekaensis*).

Occurrences of Eureka Mountain Snail (*Oreohelix eurekaensis*)



Data Sources: Location data--Biological and Conservation Database System,
Utah Natural Heritage Program, Division of Wildlife Resources.
County boundaries--State Geographic Information Database.

* Dots have been slightly moved for graphic clarity.

GAMBEL'S CRAYFISH

Pacifastacus gambelii

State Subspecies

No subspecies are currently recognized.

Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: No Status

Utah Division of Wildlife Resources: No Status

Natural Heritage Ranking

Global Rank: G4G5 State Rank: S2

Natural Heritage Ranking Summary

The only crayfish native to Utah, this species is known from only eight locations in four counties in the extreme northern part of the state; however, it is occasionally abundant at some of the known localities. Threats include alterations to aquatic systems and degradation of water quality, exotic predatory sport fishes, and the spread of introduced crayfishes.

Identification

This species can be distinguished from the introduced virile crayfish (*Orconectes virilis*) and from the introduced red swamp crayfish (*Procambarus clarkii*) by the absence, rather than presence, of hooks on the ischia (third segments) of any of its pereopods (legs).

It differs from the introduced signal crayfish (*Pacifastacus leniusculus*) in possessing multiple pairs of marginal spines on the rostrum (snout), as opposed to none, and in possessing two conspicuous clusters of setae (bristles) on the dorsal surface of the palm (base) of the chela (large part of the pincer or claw), as opposed to none.

From the crayfish *Pacifastacus connectens* (no common name), which possibly could occur in Utah, it is distinguished by the following combination of characters: postorbital (behind the eyes) ridges of the carapace (shell) lacking, as opposed to possessing, posterior spines or tubercles (bumps); rostrum (snout) often with, as opposed to always without, a median carina (ridge or keel); and dorsal surface of chela (claw) with only minute, as opposed to prominent, tubercles (bumps).

Estimated Number of Populations (Occurrences)

Eight known occurrences in Utah.

Protected Populations (Occurrences)

None of the known occurrences is known to be protected.

Abundance

Johnson (1986) mentioned that this species was abundant at several of the localities from which it is known in Utah, but actual population estimates are lacking; thus, the abundance of this species in Utah must be expressed in qualitative terms until field work is conducted to provide a quantitative basis for estimating its abundance in the state.

Range Comments

This species is known in Utah from only eight locations in four counties: Box Elder, Cache, Rich, and Morgan (two locations in each county) (Johnson 1986).

Based on these data and drainage systems, Johnson (1986) mapped the hypothetical range of this species in Utah to include most of the area north and east of Salt Lake City (to the Wyoming and Idaho borders) as well as two separate, smaller areas in Box Elder County (the Raft River Mountains and a small area on the north side of the Great Salt Lake). His mapped hypothetical distribution includes eight counties: about one-eighth (excluding the Great Salt Lake) of Box Elder, about two-thirds to three-fourths of Cache, all of Rich, about one-half (excluding the Great Salt Lake) of Weber, all of Morgan, about three-fourths (excluding the Great Salt Lake) of Davis, less than half of Summit, and less than one-tenth of Salt Lake County.

The eight known Utah occurrences are located in the following drainages: Bear River (four), Weber River (one), Lost Creek (one), and Salt Creek (one), all of these draining directly into the Great Salt Lake; and Cotton Thomas Basin (one) of the Raft River drainage (Columbia River system).

County**Status**

Box Elder	Native and natural, presence confident
Cache	Native and natural, presence confident
Morgan	Native and natural, presence confident
Rich	Native and natural, presence confident
Davis	Native and natural, presence possible
Salt Lake	Native and natural, presence possible
Summit	Native and natural, presence possible
Weber	Native and natural, presence possible

Ecoregion**Status**

Columbia Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Great Basin	Native and natural, presence possible

Habitats Utilized in Utah

In Utah this species occurs in both lentic (e.g., Bear Lake and Wellsville, Hyrum, and Lost Creek reservoirs) and lotic (e.g., Weber River) waters.

Minimum Elevation: 1300 m **Maximum Elevation:** 1990 m

Trends

Perhaps declining, although actual population trend is unknown.

Threats

The aquatic habitats of northern Utah are subject to continuing alteration, as well as agricultural, industrial, and urban pollution. Introduced exotic sport fishes present in the waters where this native crayfish occurs are known predators of crayfishes. The virile crayfish, *Orconectes virilis*, an introduced exotic species, has been "collected from the inlet of Willard Reservoir, a freshwater impoundment of the Bear River arm of the Great Salt Lake The collection site was below a large drop structure that may serve as a barrier to upstream migration of crayfish to the Weber River" (Johnson 1986), where the native crayfish (*Pacifastacus gambelii*) occurs. If the exotic crayfish should become established in the Weber River or other waters inhabited by the native species, the exotic may outcompete the native species. Johnson (1986) commented: "If crayfish were native to the Provo River drainage, the species should have been *Pacifastacus gambelii*, the documented native of the Bonneville basin No

specimens of *P. gambelii* from the Provo River have come to my attention; however, [the introduced exotic] *O. virilis* began appearing in fish sampling gear in 1981 at Deer Creek Reservoir and were reported to have been seen in the Provo River downstream of Deer Creek Dam (Sakaguchi 1984)." Johnson (1986) further reported: "Specimens from Salem and Spring ponds near Payson, Utah County, Utah, collected [in 1981] by D. Sakaguchi, were tentatively identified as *Pacifastacus leniusculus*", a species believed to be an introduced exotic in Utah (Johnson 1986, Taylor et al. 1996).

Payne (1978) mentioned pesticides and stream channelization as general threats to crayfishes. He noted that "[c]rayfish are sensitive to chlorinated hydrocarbon insecticides such as DDT, Dieldrin, Endrin, Aldrin, and Mirex" as well as to rotenone, antimycin (= Fintrol), and other fish toxicants, stating that "[i]n addition to being toxic especially to juvenile and recently molted specimens in which the exoskeleton is thin," such poisons may "also interfere with or interrupt types of pheromonal communication" essential to mating and successful reproduction.

Other Considerations

Taylor et al. (1996) erroneously indicated that *Orconectes virilis* (the virile crayfish) is native to Utah (perhaps merely a printer's error); all other authors have considered it to be an exotic introduction in this state (Hobbs 1972, Sakaguchi 1984, Johnson 1986). Unger (1978) mentioned that in Colorado the "[o]ne specimen of *O. virilis* [that] has been collected west of the Continental Divide ... almost certainly represents an introduction." *O. virilis* is native east of the continental divide in southern Canada and the northern United States but has become extensively established through introductions, which "... have resulted in its being one of the most widely dispersed crayfishes in North America" (Hobbs 1972).

There is the possibility that *P. gambelii* may not be the only crayfish native to Utah; Eng and Daniels (1982) indicated parenthetically that the crayfish *P. connectens* occurs in northern Utah but did not cite a source or provide substantiating details for this assertion. Johnson (1986) mentioned that *P. connectens* occurs in Idaho "and may be native to Utah waters; however, this possibility has yet to be confirmed." He further noted that "[i]f *P. connectens* is indeed represented in Utah, it might be expected to be present in the Columbia drainage", where, thus far in Utah, only *P. gambelii* has been found. Hobbs (1972) and Taylor et al. (1996) listed *P. connectens* as occurring only in Idaho and Oregon.

Inventory Needs

Inventory is needed to determine the extent of distribution in Utah and particularly whether the species occurs in the four counties, Weber, Davis,

Summit, and Salt Lake, from which it is not known but where Johnson (1986, map) speculated it should occur.

Possibly the search for this species should include the Utah Lake and Provo River area as well since Johnson (1986) pointed out that this is the species that should have occurred in this system if there had been a native crayfish there; Johnson further noted that he had received reports of crayfish and their burrows around Utah Lake but that no specimens had been collected for identification. Even very old crayfish remains (exoskeletons) from the Provo River-Utah Lake area would be of considerable interest, for such specimens could reveal whether there had been a native crayfish that has been replaced by the exotic virile crayfish (*O. virilis*) in that area; this, in turn, would have management implications (e.g., the possible reintroduction of the native crayfish to this ecosystem). It should be remembered that the drought years of the early 1930s were devastating to the native fishes of Utah Lake and would likely have gravely affected any crayfish that inhabited the area as well.

Species Habits

Food

No information regarding food habits in Utah has been reported, and seemingly no dietary information is available for this species elsewhere. The species may be an opportunistic omnivore, but this has not been verified.

Ecology

Almost nothing has been reported regarding the ecology of the native crayfish in Utah. Competition of the native crayfish with any of the three introduced species (the signal crayfish, *Pacifastacus leniusculus*; the virile crayfish, *Orconectes virilis*; and the red swamp crayfish, *Procambarus clarkii*) could have disastrous results for the native species. Bouchard (1978) warned: "One of the greatest concerns for the conservation status of crayfishes is the transplantation of [crayfish] species that may lead to the eradication of native ones."

Bouchard (1978) cited examples involving the introductions, in California, of two species of crayfishes, the virile crayfish (*Orconectes virilis*) and the signal crayfish (*Pacifastacus leniusculus*), both of which have been introduced in Utah: The more aggressive virile crayfish (*O. virilis*) is displacing a rare endemic species (the Shasta crayfish, *Pacifastacus fortis*) to the extent that the native species may soon be extinct, and another endemic species (the sooty crayfish, *Pacifastacus nigrescens*) is believed to be already extinct, having

been "preempted from its limited range by introductions of ... *P. leniusculus*"

Eng and Daniels (1982) have reiterated this, pointing out that the virile crayfish, "*Orconectes virilis*[,] is an aggressive species ... known to have displaced native crayfish species in some areas where it has been introduced ..." and that the signal crayfish, "*Pacifastacus leniusculus*[,] is also an aggressive species ... believed to have contributed to the extinction of the endemic *P. nigrescens*" Eng and Daniels (1982) expressed concern regarding the effect of the two introduced crayfishes, the signal crayfish (*P. leniusculus*) and the virile crayfish (*O. virilis*), on the native Shasta crayfish (*P. fortis*), since both of these exotic species seem to have the competitive advantage, both being "faster growing, faster maturing, more fecund, and more aggressive" than the native species. Moreover, Eng and Daniels (1982) believed that "[a]nother concern is possible hybridization of [the exotic] *P. leniusculus* with [the native] *P. fortis*." The concern regarding hybridization may apply in Utah as well if the exotic species of *Pacifastacus*, *P. leniusculus* (the signal crayfish), is introduced into waters inhabited by the native *Pacifastacus*, *P. gambelii* (Gambel's crayfish).

Bouchard (1978) mentioned some other "undesirable qualities" of a species that has been introduced in Utah, the red swamp crayfish (*Procambarus clarkii*): "Because of the burrowing activities of *P. clarkii*, the species has become a nuisance by damaging irrigation ditches and earthen dams." Furthermore, "[t]he resulting chimneys from burrowing activities interfere with the operation of farm machinery, and the species feeds on cultivated crops"

Reproduction

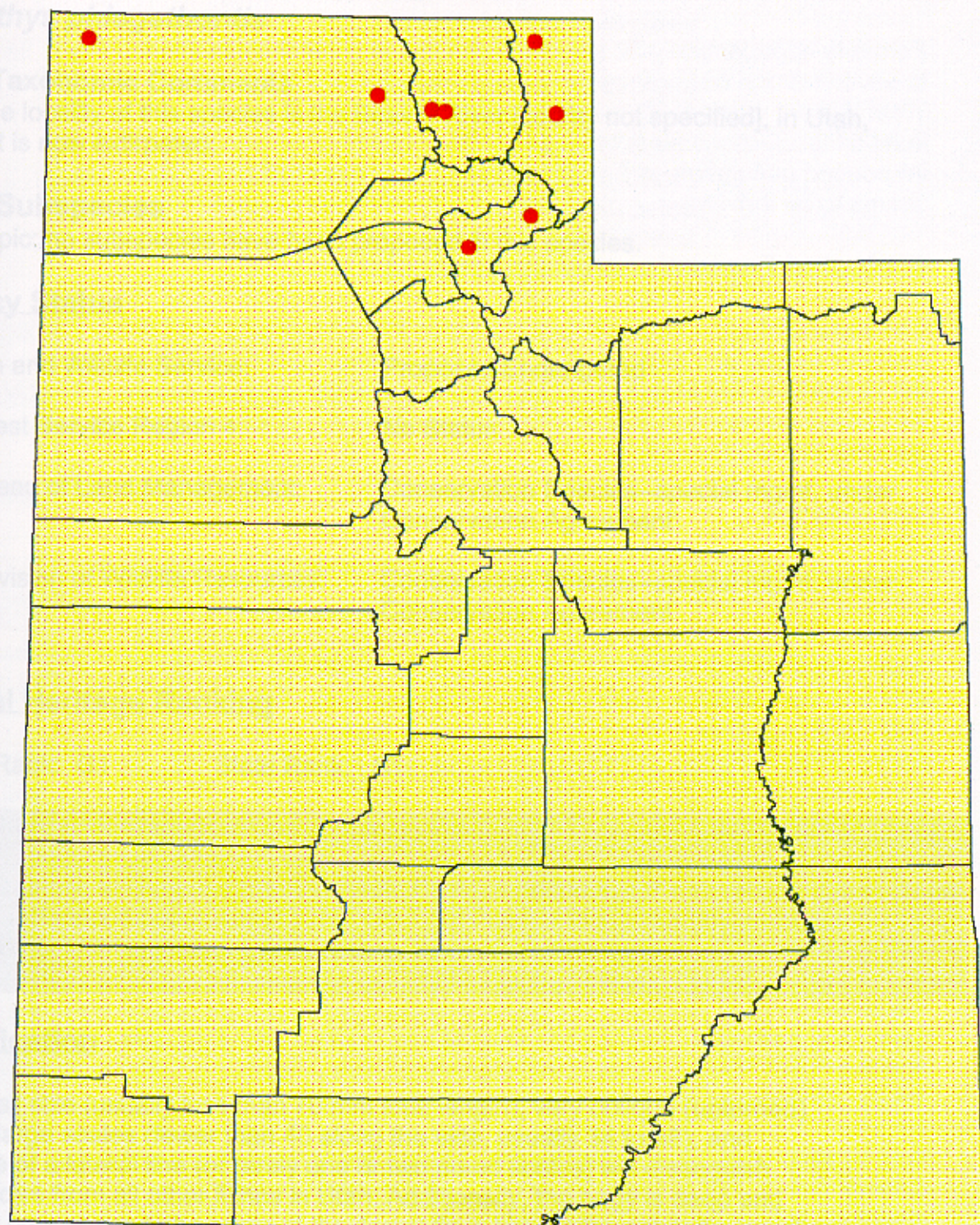
The reproductive biology of this species in Utah, as elsewhere, is unknown.

Mobility

Mobility, dispersal, and colonizing potential are unknown in this species in Utah or elsewhere.

Figure 3: Utah occurrences of Gambel's crayfish (*Pacifastacus gambelii*).

Utah Occurrences of Gambel's Crayfish (*Pacifastacus gambelii*)



Data Sources: Locality points--Biological and Conservation Database System,
Utah Natural Heritage Program, Division of Wildlife Resources.
County boundaries--State Geographic Information Database.

LEAST CHUB

lotichthys phlegethontis

State Taxonomic Comments

The type locality of this species is the Beaver River [county not specified], in Utah, where it is now extirpated.

State Subspecies

Monotypic: no subspecies have been proposed in this species.

Agency Status

US Fish and Wildlife Service:	Proposed Endangered
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Conservation Species--special mgmt. under Conservation Agreement
Utah Division of Wildlife Resources:	Conservation Species--special mgmt. under Conservation Agreement

Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Endemic to Utah and the Bonneville Basin; reduced to 4-7 natural populations (and 1 introduced population) by habitat degradation and loss and by predation by, competition with, and hybridization with exotic fishes.

Identification

The small size (usually less than 70 mm total length), very oblique (upturned) mouth, large scales (fewer than 40 along the side, usually 34 to 38), and absence of a lateral line (or rarely one or two pored scales) will distinguish this species from all other fishes in Utah. Additionally, the body is deep and strongly compressed, the origin of the dorsal fin is behind the pelvic fin insertions (origins), the caudal peduncle is slender, the eye is large, and the snout is short and

rounded. There are distinctive black specks on the back and side.

Estimated Number of Populations (Occurrences)

Formerly approximately 20 natural occurrences; most have been extirpated. Four to seven natural occurrences are extant--2 to 5 in the Snake Valley area of the West Desert, western Millard and Juab counties, and 2 in eastern Juab County. At least 5 introductions have been attempted; 4 have been unsuccessful, but 1 introduced population, at Fish Springs National Wildlife Refuge, Juab County, seems to be thriving.

Protected Populations (Occurrences)

The Bureau of Land Management manages the land around the Leland Harris Spring complex (Sigler and Sigler 1987). The Utah Division of Wildlife Resources owns the property in The Meadows of Mill Valley where this species occurs. The only successful introduction is at Walter Spring, which is part of Fish Springs National Wildlife Refuge.

Abundance

This species formerly was "excessively common in ponds and warm pools" (Jordan and Everman 1896). Decline in distribution and abundance was first noted in the 1940s and 1950s (Holden et al. 1974), and this decline is continuing (USFWS 1995). Populations of the 4-7 extant natural occurrences are: relatively large at two of the locations (Leland Harris Spring complex, Juab County, and Gandy Salt Marsh complex, Millard County), small (if extant) at two others (Central Spring [Bishop Spring complex], Millard County, and Miller Spring, Juab County), speculated to be small (if extant) at another (Snake Creek, Millard County), and incompletely surveyed but seemingly moderately large at one (perhaps both) of the two most recently discovered locations (American Dream springs complex and Mill Valley, Juab County) (USFWS 1995, pers. comms.).

Range in Utah

Historically widely distributed in the Bonneville Basin: in streams near Salt Lake City, freshwater ponds and marshes around the Great Salt Lake, Utah Lake and the Provo River, Beaver River, Parowan Creek, Clear Creek (Sigler and Miller 1963), and Sevier Lake or its tributaries (Jordan and Everman 1896).

Four to seven natural populations are extant: Leland Harris Spring complex, Juab County; Gandy Salt Marsh complex, Millard County; Central Spring (Bishop Spring complex), Millard County; Miller Spring, Juab County; Snake Creek, Millard County; American Dream Springs complex, Juab County; and The Meadows in Mill Valley, Juab County. An introduction at Walter Spring, Fish Springs National Wildlife Refuge, Juab County, seems to be established and thriving.

<u>County</u>	<u>Status</u>
Beaver	Native and natural, presumed extirpated
Box Elder	Introduced, presumed extirpated
Davis	Native and natural, presumed extirpated
Iron	Native and natural, presumed extirpated
Juab	Native and natural, presence confident
Millard	Native and natural, presence confident
Salt Lake	Native and natural, presumed extirpated
Tooele	Native and natural, presumed extirpated
Utah	Native and natural, presumed extirpated

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presumed extirpated

Habitats Utilized in Utah

Formerly occurred in almost all aquatic habitats, both lotic and lentic, in the Bonneville Basin with the exception of the Great Salt Lake and probably the few high-gradient streams and rivers. The very few extant populations occur mostly in alkaline marshes with associated springs, although at least one population, if extant, inhabits a stream.

Osmundson (1985) found least chubs in 38 (of 83) surveyed sites. The pools occupied by least chubs varied greatly in size, ranging in surface area from 0.3 to 260 square meters (3 to 2,800 square feet) and in depth from 0.1 to 3.6 meters (0.4 to 12 feet).

Crawford (1978) characterized current occurrences of the least chub as low-diversity (i.e., biotically depauperate), highly severe and fluctuating environments. She (Lamarra 1981) speculated that current habitat use may be an indication that the species is now limited to the margins of its range and to suboptimal habitats where it has managed to avoid the competition, particularly with introduced species of fishes, that has eliminated it from the wider geographical area and wider range of habitats that it formerly inhabited.

Substrates seem to be unimportant, while the presence aquatic vegetation is very important--in fact, a habitat requirement (Lamarra 1981).

Minimum Elevation: 1280 m **Maximum Elevation:** 1902 m

Trends

Precipitous decline was first noted in the 1940s and 1950s (Holden et al. 1974) and is continuing. "[S]tudies conducted in the last 15 years indicate a steady decline in ... distribution and abundance" (USFWS 1995). Workman et al. (1979) found this species in 5 spring complexes in Snake Valley in 1977 and 1978, but in 1985 Osmundson (1985) found that the species still existed in only 2 of these spring complexes, apparently having been extirpated from the Redden, Bagley, and Bishop spring complexes during the 7- to 8-year period between the two surveys. "Least chub numbers are now declining within the Gandy Salt Marsh and Leland Harris Spring Complex [the two largest populations]. Recent collections by UDWR personnel indicate that least chub [sic] occurs in only 3 of 5 springs sampled in the Leland-Harris Complex and only 6 of 12 springs in the Gandy Salt Marsh" (USFWS 1995). Workman et al. (1979) had found the species in 20 springs in the Gandy Salt Marsh complex during the 1977-1978 survey, and Osmundson (1985) had found the species at all 8 of the springs in the Gandy complex that he was able to relocate that had been inventoried previously by Workman and co-workers.

Threats

Holden et al. (1974) stated: "The major reason for decline of least chub populations appears to be loss of habitat through water diversion. A case in point is the type locality in the Beaver River, which is presently dry much of the year. Many of the small streams emanating from the Wasatch Range are diverted or polluted once they reach the valley."

It has also been pointed out that "[m]aintenance of certain water levels is very important to least chub because these levels must be high enough to allow the fish to migrate between springs and surrounding marsh areas as environmental conditions change . Additionally, maintenance of water levels and discharge volumes is critical in preserving natural sediment transport processes, thereby maintaining underwater habitat configurations and reducing aquatic vegetation encroachment into sensitive spring areas. ... [P]roposed wells [permit requested by the Las Vegas Valley Water District] in the southern part of Snake valley and surrounding areas could lower the water table, resulting in drying up or lowering the water level in springs and marshes populated by least chub. These springs are dependant [sic] on underground water sources that flow from the Deep Creek Mountains to the Snake Valley It is important to note that all surface streams from the Deep Creek Mountains are currently diverted for agricultural use" (USFWS 1995).

Other threats include predation by introduced aquatic species (bullfrogs, game fishes [especially largemouth bass], and transplanted Utah chubs), trampling and organic pollution by livestock, particularly at Leland Harris Spring complex, known hybridization with Utah chub and speckled dace (and perhaps competition with these two species), and predation by gulls, terns, herons, and piscivorous ducks (Sigler and Sigler 1987, 1996).

Yet other threats have been pointed out (USFWS 1995). One of these is oil and gas exploration and production in the West Desert, which results not only in the creation of new roads, thus providing entrance to areas previously protected by their inaccessibility, but also in pollution of ground water and aquatic habitats. Another is the proposed Juab County mosquito abatement program, rejected by the BLM on its lands but still being considered on county and private lands; spraying of insecticides on wetlands in Juab County would likely affect least chubs directly as well as through their foods, which consist largely of insects, especially mosquito larvae. Still another threat that has been mentioned is stochastic events: "A single catastrophic event could destroy a significant portion of remaining least chubs, or one or more of their populations. These remaining populations are vital in maintaining the genetic diversity of the species" (USFWS 1995).

Lamarra (1981) considered competition with other fishes, particularly introduced species such as the mosquitofish (*Gambusia affinis*), to be a major threat--and perhaps the factor responsible for the greatly reduced distribution and abundance of the least chub, which she speculated has found refuge, possible because of its ability to tolerate an extremely broad range of harsh environmental conditions, in severe, suboptimal aquatic habitats (e.g., alkaline springs and marshes), in which introduced competitors have been less successful.

Other Considerations

Efforts are underway to establish artificial populations of this species through introduction, usually following total kill-outs using fish toxicants to eliminate other species of fishes that may compete with, prey upon, or hybridize with least chubs. Agencies involved in this work (e.g., the Utah Division of Wildlife Resources) should be especially careful to conduct thorough inventories of native aquatic mollusks present in waterbodies selected for least chub introductions before the total kill-outs are conducted. The aquatic molluscan fauna of Utah includes many endemic species as well as others of great conservational concern, and fish toxicants are lethal to aquatic mollusks, particularly when these toxicants are used for total kill-outs of fish.

Inventory Needs

Continued inventory for this species is needed throughout the Bonneville Basin. The surprising discoveries in 1995 and 1996 of two previously unknown populations of this species demonstrates that prospective searches for this species are still warranted.

Species Habits

Food

Workman et al. (1979) examined the stomach contents of 185 least chubs from 27

springs; 121 of the individuals examined contained food items. They found 14 food types or categories. The most important foods, by frequency (as opposed to volume), were: green algal filaments and diatomaceous material (23%); chironomid (midge) larvae (15%); copepods (11%); long, single-filament green algae (10%); chironomid pupae (9%); the remainder (33%) being mainly small crustaceans (ostracods and cladocerans) and insects, mostly immature stages (dragonfly naiads, corixids, etc.). By volume the three most important food types were chironomid adults, pupae, and larvae. They identified at least 31 prey taxa (plus detritus): 24 invertebrate taxa (18 insect, 5 crustacean, and 1 arachnid taxa), 7 plant taxa (4 diatoms and 3 algae), and detritus. It should be noted that they found considerable variation in diet between localities. There was also seasonal variation in food habits. These data indicate that the least chub is an omnivore and seemingly is opportunistic in its feeding.

Various authors (e.g., Pendleton and Smart 1954) have mentioned mosquito larvae as prey of least chubs.

Ecology

Crawford (1978) considered this species a generalist. She found that it possesses concurrent extremely broad tolerance limits to physical factors including temperature, conductivity, alkalinity, pH, and water level. She reported that least chubs were "reproducing in the [Leland Harris] marsh when temperature, alkalinity, ph [sic] and conductivity were found to be at a maximum." In the field she found least chubs inhabiting extremely warm water (29 C), and in the laboratory found that least chubs acclimated to 30 C could tolerate temperatures of 34 to 35 C. She reported high tolerances by this species to conductivity changes, with conductivities over the spring complex ranging on a given date from 450 to 7,800 micromhos per centimeter. She even found least chubs spawning where the conductivity measured almost 9,000 micromhos per centimeter. Based on these findings of such extreme tolerance to physical environmental factors, she concluded that the probable reason for the decline in distribution and abundance of the least chub has not been habitat loss or environmental change but rather competition with such species as the exotic mosquitofish (*Gambusia affinis*).

Osmundson (1985) likewise found thermal variation in waters inhabited by least chubs to be great; in a 19-hour period he found that the temperatures of two aquatic sites occupied by least chubs varied between 12.2 C and 23.3 C.

Reproduction

Crawford (1979) found that spawning occurred at the Leland Harris spring complex from late April to August, the peak period being the first week in May. She reported that least chubs are partial and intermittent spawners, laying a few eggs at a time over an extended period. She found that least chubs utilized a variety of habitats for spawning, provided that vegetation was present. Least

chubs are polyandrous. Spawning takes place over or within areas of vegetation, usually filamentous green algae, where gametes are broadcast. The fertilized eggs sink, and, being adhesive, usually become attached to the aquatic vegetation. The aquatic vegetation may benefit the eggs and larvae by providing a microenvironment rich in oxygen and food. Adults do not guard the eggs or build nests (Lamarra 1981), though their tunneling through algae during spawning may produce a primitive nest (Lytle 1983). The failure to guard the eggs and larvae suggests an evolutionary past in which few predators of eggs or larvae were present where least chubs occurred; introduced fishes, even very small ones such as the mosquitofish (*Gambusia affinis*), now represent serious threats to eggs and larvae of the least chub. The incubation period is similar to that of other warm-water species of fishes (Crawford 1978); eggs hatch in about 2 days at 22 C.

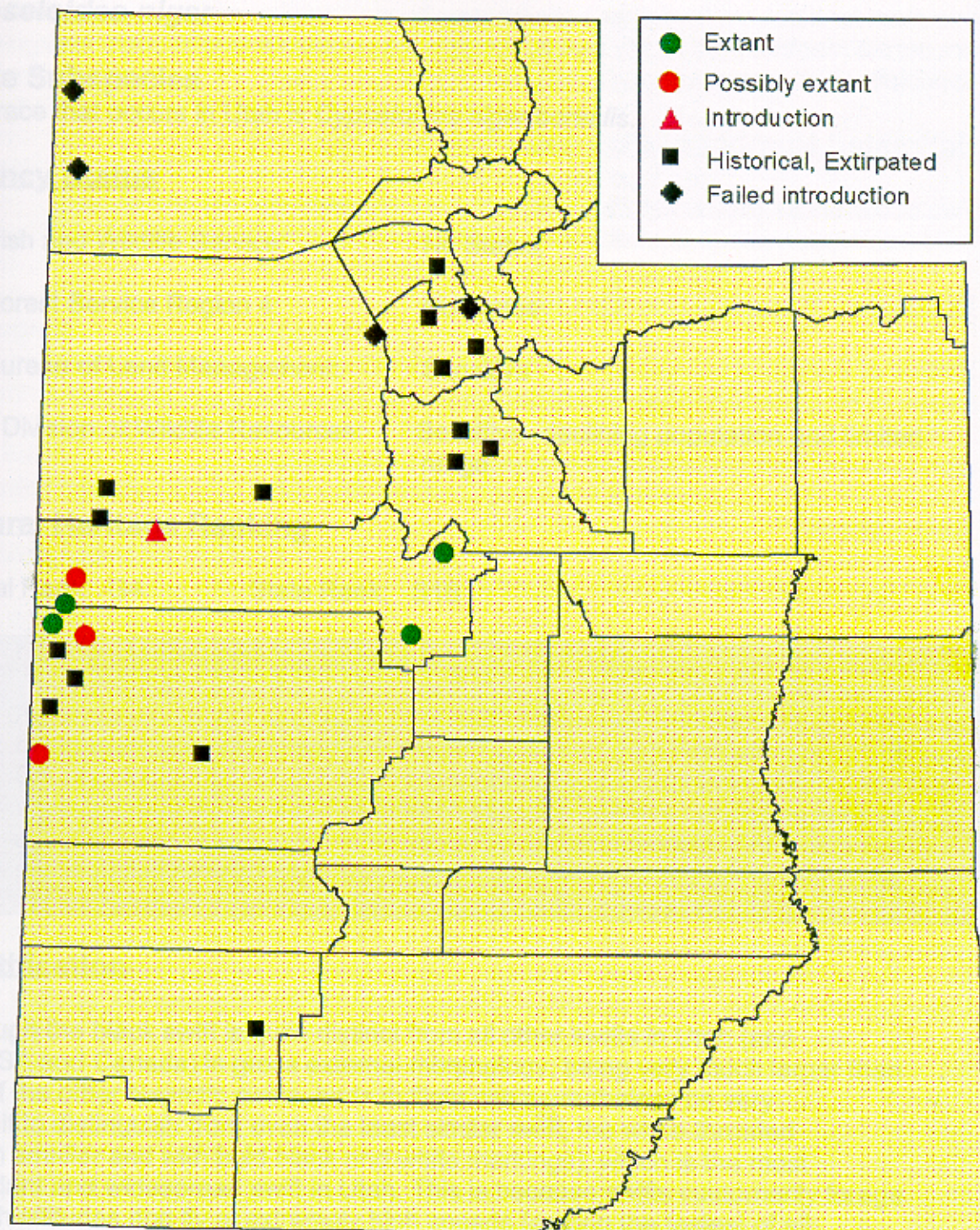
Migration

The least chub is believed to disperse between springs when temporary connections occur within spring complexes during periods of high water, thus permitting gene flow (out-crossing) and colonization of new sites.

In studies of spawning, least chubs have been found to move from springs to marshes for spawning and then back to the springs after the spawning period.

Figure 4: Occurrences of least chub (*Lotichthys phlegethontis*).

Occurrence Status of Least Chub (*lotichthys phlegethontis*)*



Data Sources: Locality data--Biological and Conservation Database System,
Utah Natural Heritage Program, Division of Wildlife Resources.
County boundaries, waterbodies--State Geographic Information Database.

* Some dots have been slightly moved for graphic clarity.

BLACK SWIFT

Cypseloides niger

State Subspecies

The race that occurs in Utah is *Cypseloides niger borealis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range

Natural Heritage Ranking

Global Rank: G4 State Rank: S1B

Natural Heritage Ranking Summary

An exceedingly rare species in Utah, the only known breeding sites in the state being in Provo Canyon and near Aspen Grove near Mt. Timpanogos in Utah County. Incidental observations reported for Cache, Salt Lake, Utah, Duchesne, Wasatch, Uintah, Sevier, Iron, and Washington counties. Breeding sites are ancestral, meeting unique and restricted ecological requirements; as a result, nesting sites are almost certainly the limiting factor for the species in Utah.

Identification

Although the black swift is quite distinct from all other swifts in Utah (and the USA and Canada) in gross external morphology, being very much larger than any of the other Nearctic swifts, birds in flight can nevertheless be very difficult to distinguish from even the least similar swift, the white-throated (much smaller and with bold black and white markings), which is the most abundant and widespread swift in Utah. This is because swifts customarily forage at high altitudes and fly at extremely high speeds (among the fastest of all birds), and the black swift is notable for foraging even higher than other swifts. Thus, when a black swift is, for example, foraging at high altitude and numerous white-throated swifts are foraging several thousand feet below it, both the size difference and the differences in markings may not be perceptible. Both Vaux's swift, a rare transient in Utah, and the chimney swift, accidental in

Utah, are very much smaller than the black swift, but, since size is often difficult to estimate in these fast and high-flying species, both could be mistaken for black swifts. Other birds frequently misidentified as black swifts are purple martins, particularly males, though this species is rare in Utah, and especially European starlings (fide E. Sorensen).

Estimated Number of Populations (Occurrences)

Two occurrences (that meet Element Occurrence Specifications) and sixteen incidental observations (that do not meet Element Occurrence Specifications).

Protected Populations (Occurrences)

Neither of the two occurrences (meeting Element Occurrence Specifications) is known to be protected. (Four incidental records of this species are from Zion National Park; if these records satisfied Element Occurrence Specifications, Zion National Park would constitute a protected occurrence.)

Abundance

Total Utah population probably consists of fewer than ten nesting pairs.

Range in Utah

Knorr (1961) noted that within its breeding range "the bird occurs only in isolated colonies due to certain ecological considerations". Known from three locations in Zion National Park, Washington County (Behle et al. 1964, Wauer and Carter 1965); from Aspen Grove Recreational Area east of Mt. Timpanogos (two nests with young) and from four sites in Provo Canyon (Upper Falls, Bridal Veil Falls [at least one nest], and two cascades between Upper Falls and Bridal Veil Falls), Utah County (Knorr 1962); from Cedar Valley, Iron County (Kingery 1971); from Lake Powell (Kingery 1979); from 2 mi. north of Richfield, Sevier County (BLM 1978); from Logan, Cache County (Kingery 1976); from Salt Lake City, Salt Lake County (Kashin 1963); from Red Creek near Fruitland, Duchesne County (Kashin 1964); and from Vernal, Uintah County (Kingery 1988). Sorensen (1993) mentioned that this species has been reported regularly for many years in Provo Canyon. Stackhouse (1997, pers. comm.) mentioned seven records of this species from the mouth of Provo Canyon during the summers of 1990, 1992, 1993, 1994, 1995, and 1996, as well as single observations from two other sites in Utah County: near Genola, 1996, and south dike of the Provo Airport, 1995. Stackhouse (1997, pers. comm.) also had single records of the species from just below Jordanelle Dam, Wasatch County, 1996, and at Doughnut Falls, Big Cottonwood Canyon, Salt Lake County, ca. 1991.

County Name**Status**

Utah	Native and natural, presence confident
Washington	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Uintah	Native and natural, presence confident
Wasatch	Native and natural, presence confident
Cache	Native and natural, presence confident
Iron	Native and natural, presence confident
Sevier	Native and natural, presence confident

Ecoregion**Status**

Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

An ecological specialist: habitually forages at very high altitudes, and nests, in Utah, behind or near waterfalls in steep, rocky canyons.

Knorr (1961) identified five physical requirements that characterized nesting colonies in Colorado. (1) The presence of water: Water was present at every nesting site, without exception, and varied from a trickle to a torrent, usually the latter. No nests were found on any truly intermittent streams, and even during the driest years water continued to flow at all nesting sites. The distance of nests from water varied from 8 inches to 35 feet. Spray from the more heavily flowing streams permitted more distant nest placement: "The moss of which nests are constructed continues to grow in most cases, emphasizing the role of the spray and damp surroundings." "[A] curtain of falling water is no barrier to these birds which fly through it to reach a suitable nesting cranny." (2) High relief: The nesting site must "have a commanding position above the surrounding terrain so that birds flying out from the nests on a horizontal course find themselves automatically at feeding altitude above the adjacent valley." Potential nest sites that were located near the valley floor were not utilized. (3) Inaccessibility: "No nest was ever found which was accessible to anything without wings." Knorr suggested that the fact that this species lays only one egg is related to the security of the nest site from predators. (4) Darkness: Knorr "never found an occupied nest upon which the sun shone" and indicated that the darker the site, the more preferred it was by the birds, with more illuminated nest sites being marginal in a colony. "The young bird invariably faces away from the light while in the nest except when anticipating

the return of an adult." (5) Unobstructed flyways: "[T]he air immediately in front of a nesting site must be free of obstructions." The birds are undaunted by waterfalls, which they fly through, and by narrow, tortuous gorges, but "no [black] swift colony has been found in which it was necessary for the birds to dodge trees on their way to the nests."

In addition to the five requirements, Knorr noted two others: "The impossibility of seeing the nests from above ... is another physical factor present in all cases but it is not to be ranked with the others", and "[a]n additional factor may be sound, since I have never seen, read about, or heard about a Black Swift nest which was not within range of the sound of water in motion, usually violent motion."

Minimum Elevation: 1280 m **Maximum Elevation:** 3450 m

Trends

Perhaps declining--no breeding reported in Utah since 1961, but this could merely reflect lack of effort and the difficulty of surveying for this species since adults have been observed regularly during the breeding season in recent years at one of the known nesting locations in Utah.

Threats

Since this species is dependent upon waterfalls for nesting sites and since waterfalls are especially attractive features for recreational and tourist activities, the habitat of this species in Utah is at least moderately threatened by human visitation pressure, though, ironically, the very attraction of waterfalls to people that may lead to disturbance of the breeding biology of this species may also lead to some degree of protection of these sites. A more general threat may be the trend toward dewatering of natural watercourses that is occurring throughout the state. Mosquito abatement and other programs aimed at control of insects in areas where black swifts occur reduce the prey base as well as making available prey toxic to both adults and nestlings.

Other Considerations

Knorr (1961) determined five ecological requirements for nesting colonies in Colorado: "the presence of water, high relief as regards the configuration of the terrain, inaccessibility, darkness, and lack of flyway obstructions." Knorr (1961) also speculated that "[a]n additional requirement may be sound, since I have never seen, read about, or heard about a Black Swift nest that was not within range of the sound of water in motion, usually violent motion." Knorr (1962) observed as well that "Black Swift breeding sites are ancestral by virtue of their unique and narrow ecological requirements." Nesting sites may be

considered the main limiting factor for this species in Utah.

Inventory Needs

Intensive inventory of known historical localities, particularly the Provo Canyon and Aspen Grove-Mt. Timpanogos area, as well as wet canyons in Zion National Park, should be conducted. Prospective searches in other areas possessing suitable habitat characteristics (following Knorr's [1961] five ecological requirements) should be undertaken as well. The difficulty of inventory for this species should not be underestimated, as noted by Sorensen (1993), who commented: "The Black Swifts in Provo Canyon, although reported regularly for many years, can be frustratingly difficult to find. Searches result in more negative reports than successful." Earlier, Knorr (1962), too, had cautioned: "Unless one knows how and where to search, the bird can be entirely overlooked."

Species Habits

Food

No dietary information has been reported for Utah. Probably feeds on flying insects, especially flying ants, frequently at high altitude, in Utah as it does elsewhere.

Ecology

Almost no ecological information has been presented for this species in Utah. Knorr (1962) reported the only nesting records for Utah. He mentioned that two of the nests that he found in Utah were "behind a thin cascading falls". He further commented: "Everything about the sites seemed typical except that the nests appeared to have more fern incorporated with the moss than nests in Colorado [where Knorr had previously conducted extensive studies of the nesting ecology of this species (Knorr 1961)]."

Reproduction

The two Utah nests for which the contents have been reported each contained "a feathered young bird" on 22 August; these two nests were "behind a thin cascading falls", presumably close to each other, but "[t]he size of the colony is unknown" (Knorr 1962).

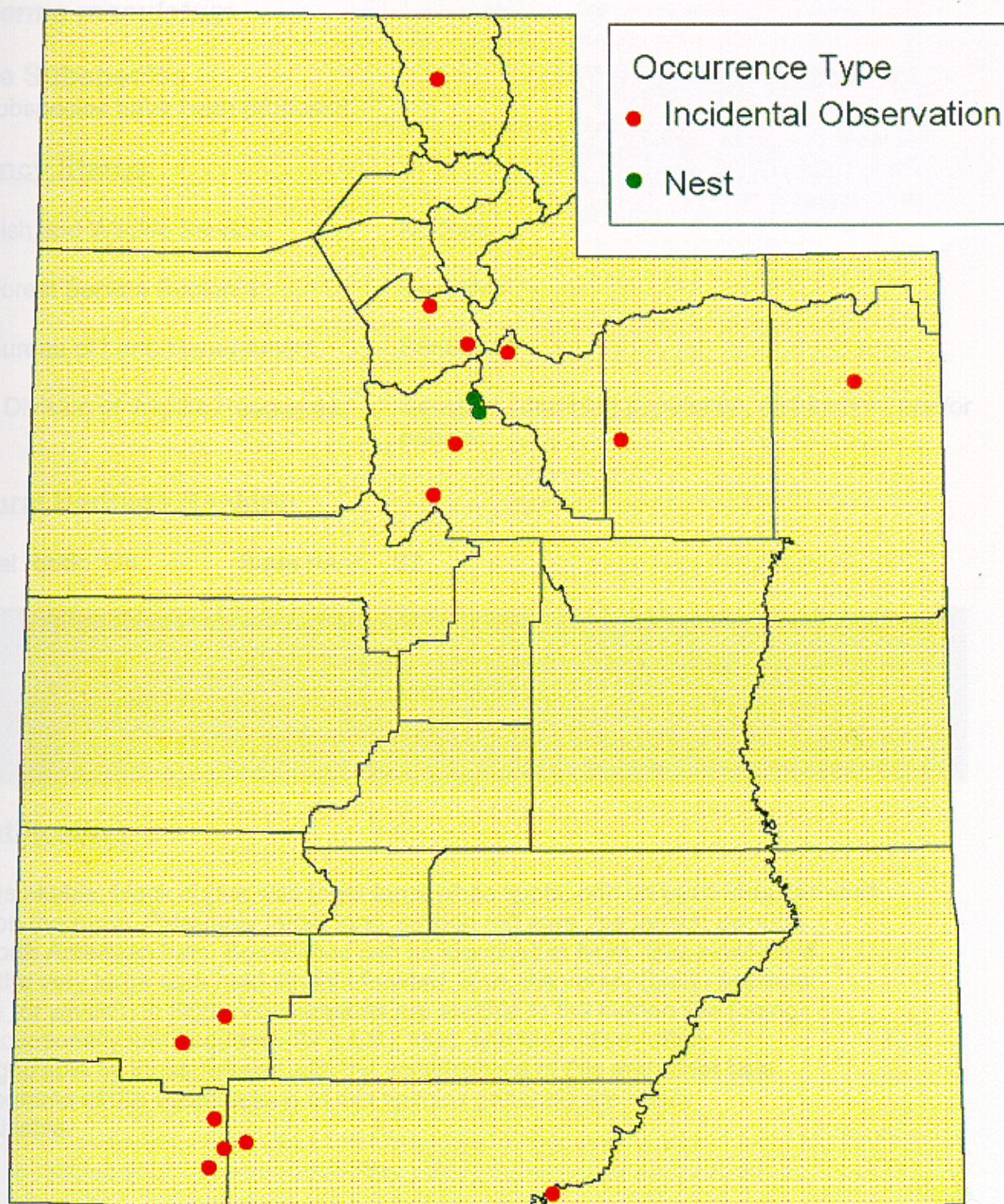
Migration

Some of the incidental records of this species in Utah probably represent migrating individuals. Walters and Sorensen (1983) considered records from

"latilong" blocks 7, 16, 19, and 20 to represent migrants (and only records from blocks 6 and 20, i.e., vicinities of Provo Canyon and Zion National Park, to represent summer resident or potentially breeding individuals).

Figure 5: Utah occurrences of black swift (*Cypseloides niger*)

Utah Occurrences of Black Swift (*Cypseloides niger*)*



Data Sources: Locality data--Biological and Conservation Database System,
Utah Natural Heritage Program, Division of Wildlife Resources.
County boundaries--State Geographic Information Database

* Some dots have been slightly moved for graphic clarity

SPOTTED BAT

Euderma maculatum

State Subspecies

No subspecies have been proposed.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	Sensitive
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population, distribution, and/or habitat

Natural Heritage Ranking

Global Rank: G4 State Rank: S2

Natural Heritage Ranking Summary

This species is poorly known and is considered rare throughout its range, including Utah. Overcollecting is the main threat in Utah, along with pesticide use.

Identification

Unmistakable: black above with three large white spots, one on each shoulder and one on the rump. Extremely large, long, pinkish red ears, the largest ears of all North American bats. Sometimes can be identified in flight; flies slowly and with the very large ears held straight forward; also, the venter (belly) appears white (or whitish) in flight. Vocalizations are audible to the human ear (being of exceptionally low frequency for a bat), loud, and distinctive--often recognizable by those familiar with the vocalizations of this and other bats. Sonograms of the vocalizations of this species generally are easily identifiable.

Estimated Number of Populations (Occurrences)

24 known occurrences.

Protected Populations (Occurrences)

At least five protected occurrences: Zion National Park, Bryce Canyon National Park, Capitol Reef National Park, Natural Bridges National Park (Bogan 1994), and Dinosaur National Monument (Storz 1995, Bogan 1994).

Abundance

Generally thought to be rare. Fort Pearce Wash is one of the few localities where this species appears to be moderately common. (Fenton et al. [1987], working throughout the range of this species in the United States and Canada, including Utah, tested the hypothesis that spotted bats are widespread and common but merely difficult to catch. Their results led them to reject this hypothesis. They found that, though widely distributed, spotted bats were not common; rather they "were encountered less often than other species [of bats].")

Range in Utah

The first record of this species in Utah was from Salt Lake City (Durrant 1935). The next several reports of the species in Utah all were from the extreme southern counties (Easterla 1965, and see Hasenyager 1980). The fact that the species was already known from all states bordering Utah suggested that the species could occur throughout the state (see Hall and Kelson 1959, Hall 1981, etc.). Recent records support the belief that the species may be of statewide occurrence. The species has been documented from ten counties in Utah: Salt Lake, Utah, Uintah, Grand, Wayne, San Juan, Garfield, Iron, Washington, and Kane. Notable, however, is the absence of records of this species from most of the Great Basin in Utah--the "West Desert" area.

County Name

Status

Beaver	Origin data uncertain, presence possible
Box Elder	Origin data uncertain, presence possible
Cache	Origin data uncertain, presence possible
Carbon	Origin data uncertain, presence possible
Daggett	Origin data uncertain, presence possible
Davis	Origin data uncertain, presence possible
Duchesne	Origin data uncertain, presence possible
Garfield	Native and natural, presence confident

Grand	Native and natural, presence confident
Iron	Native and natural, presence confident
Juab	Origin data uncertain, presence possible
Kane	Native and natural, presence confident
Millard	Origin data uncertain, presence possible
Morgan	Origin data uncertain, presence possible
Piute	Origin data uncertain, presence possible
Rich	Origin data uncertain, presence possible
Salt Lake	Native and natural, presence confident
San Juan	Native and natural, presence confident
Sanpete	Origin data uncertain, presence possible
Sevier	Origin data uncertain, presence possible
Summit	Origin data uncertain, presence possible
Tooele	Origin data uncertain, presence possible
Uintah	Native and natural, presence confident
Utah	Native and natural, presence confident
Wasatch	Origin data uncertain, presence possible
Washington	Native and natural, presence confident
Wayne	Native and natural, presence confident
Weber	Origin data uncertain, presence possible
Emery	Origin data uncertain, presence possible

Ecoregion

Status

Colorado Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence probable
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Easterla (1965), the first to report multiple captures of spotted bats, including reproductively active individuals, from a single Utah site, described the habitat of his Garfield County locality, at 7,589 ft elevation, saying: "The surrounding land for several miles is treeless and rolling, with sagebrush (*Artemisia* sp.), and rabbitbrush (*Chrysothamnus nausiosus*) forming the dominant vegetation. The area is in the Upper Sonoran Life Zone; yellow pine, *Pinus ponderosa*, is the dominant tree in mountainous areas about 3-4 miles from the netting site." In view of Poche's (1981) conviction that the availability of suitable roosting sites, in the form of crevices in cliffs, is an essential requirement for spotted bats and his observation of a spotted bat that, when released, flew approximately 6 km to an apparent roost, it is certainly plausible that Easterla's spotted bats had traveled the 3-4 miles from the

"mountainous areas" to the waterhole where he captured them.

Fort Pearce Wash, where various workers have captured many spotted bats (e.g., Poche 1981 [82 individuals], Pritchett n.d. [12 individuals]), including reproductive individuals, is "a transition desert community", at 2,700 ft elevation, dominated by creosotebush (*Larrea tridentata*), big galleta (*Hilaria rigida*), range ratany (*Krameria parvifolia*), and white bur-sage (*Ambrosia dumosa*), with mesquite (*Prosopis juliflora*), desert-willow (*Chilopsis linearis*), and salt cedar (*Tamarix pentandra*) growing along the wash (Poche 1981). Poche (1981) commented that his "... Washington County, Utah, [and Mohave County, Arizona,] study, ... lends evidence that xeric communities are preferred by *Euderma*. The most critical factor, however, is the presence of cracks and crevices of the right size in limestone or sandstone [cliff] formations. In Utah, sandstone deposits seem preferred."

The only other report of multiple captures of spotted bats, including reproductive individuals, in Utah is that of Foster et al. (1996) in San Juan County. The locality, at 9,800 ft elevation, was described as an area of subalpine grassland with Engelmann spruce (*Picea engelmannii*) and quaking aspen (*Populus tremuloides*): "The dominant vegetation is grass (60%) with aspen (10%) and conifer (10%) overstory." "The surrounding rock and mountains are granitic and the soil is loam."

Minimum Elevation: 900 m **Maximum Elevation:** 3045 m

Trends

Trend in Utah unknown. Data are difficult to assess; though there are increasing reports of this species in Utah, this is probably the result of increased efforts to find the species as well as improved methods for detecting or capturing it.

Threats

Overcollecting is a major threat to this species in Utah, particularly at Fort Pearce Wash. Pesticide use also is a threat to this and all other species of bats in Utah.

Additional Topics

A rather high incidence of errors in reports on the spotted bat in Utah, both reports published in peer-reviewed journals and unreviewed agency reports, was noted during the course of literature review for this species. Most of these errors were rather minor, but some were not. Errors ranged from misquotation and

misrepetition (or misrepresentation) of earlier work by others to internal self-contradiction. Flawed logic, speculations presented as scientific conclusions, and faulty interpretation of data were also encountered. Consequently, it is recommended that care be exercised when literature regarding this species in Utah is utilized in making management decisions: original sources should be checked and conclusions should be compared with the data upon which the conclusions were based.

Inventory Needs

The fact that this species continues to be discovered in surprising new locations in Utah suggests that further inventory for the species in this state is needed, particularly in the West Desert, where it has not been detected, as well as the mountainous areas of northern Utah.

Species Habits

Food

Easterla (1965) reported the stomach contents of two spotted bats collected on 15 and 20 August 1964 in Garfield County: "Only small moths, probably Noctuids, about one centimeter in length were found. This bat seems to pick off head, legs and wings before consuming a moth. To quote Dr. Byers [who performed the analysis of stomach contents for Easterla], 'Both samples have one very striking characteristic: there are no wing fragments, no tarsi (feet), no heads (antennae, mouthparts, eyes, etc.). The only conclusion I can draw from this is that the bats capture their prey, then, perhaps on the wing but more likely by going to some resting place, methodically chew off head, legs and wings. This is interesting in that these parts are the most densely sclerotized (i.e., hardened) parts of an insect and those most often well preserved in stomachs of vertebrates. All the sclerotized parts I found, in both samples, were pieces of abdomen or thorax, occasionally a leg fragment.'" (It should be noted that Byers was probably right in suggesting that it is more likely that the bats take their prey to a roost where they then dismember the organism, as do many species of bats, rather than processing the food item in flight.) Easterla went on to comment that these findings agreed with those reported in a study conducted in northern New Mexico in which 100% moths, 8-12 mm in length, were found in 18 fecal pellets of spotted bats. He then speculated: "The apparent selectivity in the eating habits of the spotted bat could possibly limit its distribution."

Though, of course, possible, it is highly unlikely that prey selectivity is limiting to the spotted bat; small moths are ubiquitous and abundant, and the family Noctuidae "is the largest family in the order [Lepidoptera, butterflies and moths], with some 2700 N. American species [north of Mexico], and many are common moths" (Borror and White 1970).

Poche (1981) said: "A study of the stomach contents of eight *Euderma* revealed the primary prey species to be Lepidoptera. Moth wings, heads and legs comprised [sic] 66% of stomach contents." It is unfortunately not entirely clear from this statement or others in his report whether the study to which he was referring was his own Fort Pearce Wash study or someone else's study, to which he failed to give citation. It does, however, seem probable that he was reporting results from his own Utah-Arizona study, for later in the same report he added: "Further lab analysis of *Euderma* stomachs from southwestern Utah [and Arizona?] will be undertaken in the fall of 1978." (Whether this was ever done is not known; however, the work to be completed in the fall of 1978 was not included in the 1981 report that "forecast" it.) It is of interest that all of the specific items that Poche mentioned from the eight spotted bat stomachs, whatever their geographic origin may have been,--the moth wings, heads, and legs that composed 66% of the sample--were exactly the kinds of prey remains that Byers and Easterla reported to be so surprisingly missing from the two Garfield County spotted bat stomachs.

Poche and Bailie (1974) reported their observations of the release of a spotted bat that they had captured at Fort Pearce Wash on a previous night; they released the bat "approximately 55 minutes before dark" and observed its behavior: "While in flight, the *Euderma* appeared to be feeding on small insects within two meters of the ground. Suddenly it dropped to the ground and seized and ate a grasshopper; and within ten seconds it was again in flight. A second plunge to the rocky terrain was observed. ... The descents to the ground were preceded by split-second hovering."

Although it is questionable whether spotted bats normally eat grasshoppers, most of which are diurnal, and whether any of what was observed was normal spotted bat behavior, since spotted bats are not diurnal, this observation is nonetheless interesting, for it shows that spotted bats have the abilities both to hover and to feed on the ground and that they will take prey items such as grasshoppers. (Presumably the grasshopper eaten by the spotted bat would have been a short-horned grasshopper [Acrididae].) There are, of course, nocturnal "grasshoppers", namely the katydids (Tettigoniidae), and other nocturnal relatives of grasshoppers, such as the various groups of crickets, and this observation is suggestive of the possibilities that spotted bats take such prey and engage in terrestrial predation.

Ground feeding is uncommon among bats; in fact, it took decades for the puzzling, recurring reports of pallid bats (*Antrozous pallidus*) found dead in snap traps set for desert rodents finally to be explained in terms of feeding behavior (the bats were attracted to insects that were feeding on the trap bait). Also, many bats (especially many of the freetail, Molossidae), either are unable to take flight from the ground or are able to do so only with

considerable difficulty. Poche (1981) reported: "None of the spotted bats exhibited difficulty becoming airborne. They leaped into flight from resting positions on the ground, rock surfaces and lab tables Fifteen individuals were placed on smooth terrain of flat rocks, and all attained flight within several seconds. Thirty-three percent of these individuals climbed onto small rocks or objects to assist the initial leap into flight."

Captive spotted bats from Utah have been fed flies, mealworm larvae, pupae, and adults (beetles), and a lepidopteran larva (caterpillar), but rejected ground beetles (Carabidae), which is not surprising since many members of this family are distasteful (Durrant 1935, Poche 1981).

Ecology

At least twelve other bat species have been captured in association with the spotted bat in Utah: the western pipistrelle (*Pipistrellus hesperus*), the long-eared myotis (*Myotis evotis*), the fringed myotis (*Myotis thysanodes*), the long-legged myotis (*Myotis volans*), the California myotis (*Myotis californicus*), the western small-footed myotis (*Myotis ciliolabrum*), the silver-haired bat (*Lasionycteris noctivagans*), the big brown bat (*Eptesicus fuscus*), the hoary bat (*Lasiurus cinereus*), the pallid bat (*Antrozous pallidus*), the Brazilian free-tailed bat (*Tadarida brasiliensis*), the big free-tailed bat (*Nyctinomops macrotis*) (Easterla 1965, Poche 1981, Foster unpublished 1995, Pritchett unpublished n.d.).

Poche and Ruffner (1975) and Poche (1981) studied roost sites of spotted bats at Fort Pearce Wash, Utah and Arizona. They found that spotted bats roosted in the cracks and crevices of limestone or sandstone cliffs. "Numerous observations revealed the preferred [roosting] microhabitat of *Euderma* to be cracks or crevices ranging from 2.0 to 5.5 cm ($X = 3.75$, $n = 30$) in width at the opening" (Poche 1981). Poche (1981) concluded that "*Euderma* probably has a simple social organization as its roosts prohibit clustering", and "[s]ince the spotted bat apparently roosts alone, it has simple social organization, and contacts with other individuals of the same species are probably only for copulation and rearing of young." He further speculated that the rarity of this species is in part a result of its social organization--that is, its solitary nature.

The only hibernaculum thus far reported for this species was found in Utah in 1930, when four spotted bats were found hibernating on the walls of Crocodile Cave, above a large pool of water, in Kane County (Hardy 1941).

Poche (1981) reported adults and protonymphs of one species of macronyssid mite (*Cryptonyssus desultorius*, 22 individuals) and larvae of one or two species of soft ticks (*Ornithodoros rossi*, 2 individuals, and possibly *Ornithodoros kelleyi*, 1 individual) from the 82 spotted bats that he captured at Fort Pearce Wash, Utah and Arizona. Although he did not discuss the infestation rate of

these ectoparasites on the spotted bat, those who have conducted field work with bats will recognize that 25 acarine ectoparasites of two or three species from 82 bats is a rather low rate, as well as a low diversity, of infestation.

Conspicuous in Poche's data is the complete absence of other bat ectoparasites such as bat flies (Streblidae and Nycteribiidae), bat fleas (Ischnopsyllidae), and various groups of mites (particularly Spinturnicidae). (A nycteribiid fly, *Basilia rondanii*, has been reported from the spotted bat in Texas [Whitaker and Easterla 1975]; Poche [1981] in fact did cite this occurrence but incorrectly called it a mite.) Both the low incidence of infestation and the low diversity of ectoparasites found on spotted bats in Poche's Utah-Arizona studies and the work of others elsewhere is almost certainly related to, and probably a consequence of, the solitary roosting habits of the bat, as discovered by Poche.

Poche (1981) also conducted a few homing experiments with spotted bats. One impressive result was obtained: two spotted bats captured in June 1976 (unfortunately Poche failed to report the exact date) were banded and transported approximately 24 km from the capture site; one of the two was recaptured on 17 July 1976 at the pool where it originally had been caught--this being, at the very least, 17 days later, based on the incomplete information contained in Poche's report.

Reproduction

Easterla (1965) reported the capture of three lactating females on 10, 15, and 18 August 1964 in Garfield County. Foster (1995, unpublished) captured three females, two of which were lactating, on 27 July 1995 in San Juan County.

Poche and Ruffner (1975) mentioned that in six of seven males captured at Fort Pearce Wash between 12 and 15 August 1974 the testes were scrotal. Poche (1981) captured pregnant females at Fort Pearce Wash (Utah-Arizona) on 20 June 1974 and 16 June 1976. He also reported: "Two [spotted bat] juveniles were captured during this study [at Fort Pearce Wash, Utah-Arizona]--one on 5 September 1974 and the other on 1 September 1975." This, however, seems to conflict with his statement earlier in the same report: "Three juveniles were captured in August 1975." Moreover, his Table 1 in the same report indicates that he captured only one spotted bat of any age in August 1975.

Poche (1981) concluded (based on evidence from scattered locations, some of them in Utah): "it appears that *Euderma* breeds in the early spring--late February to early April--and gives birth late May to early July."

Migration

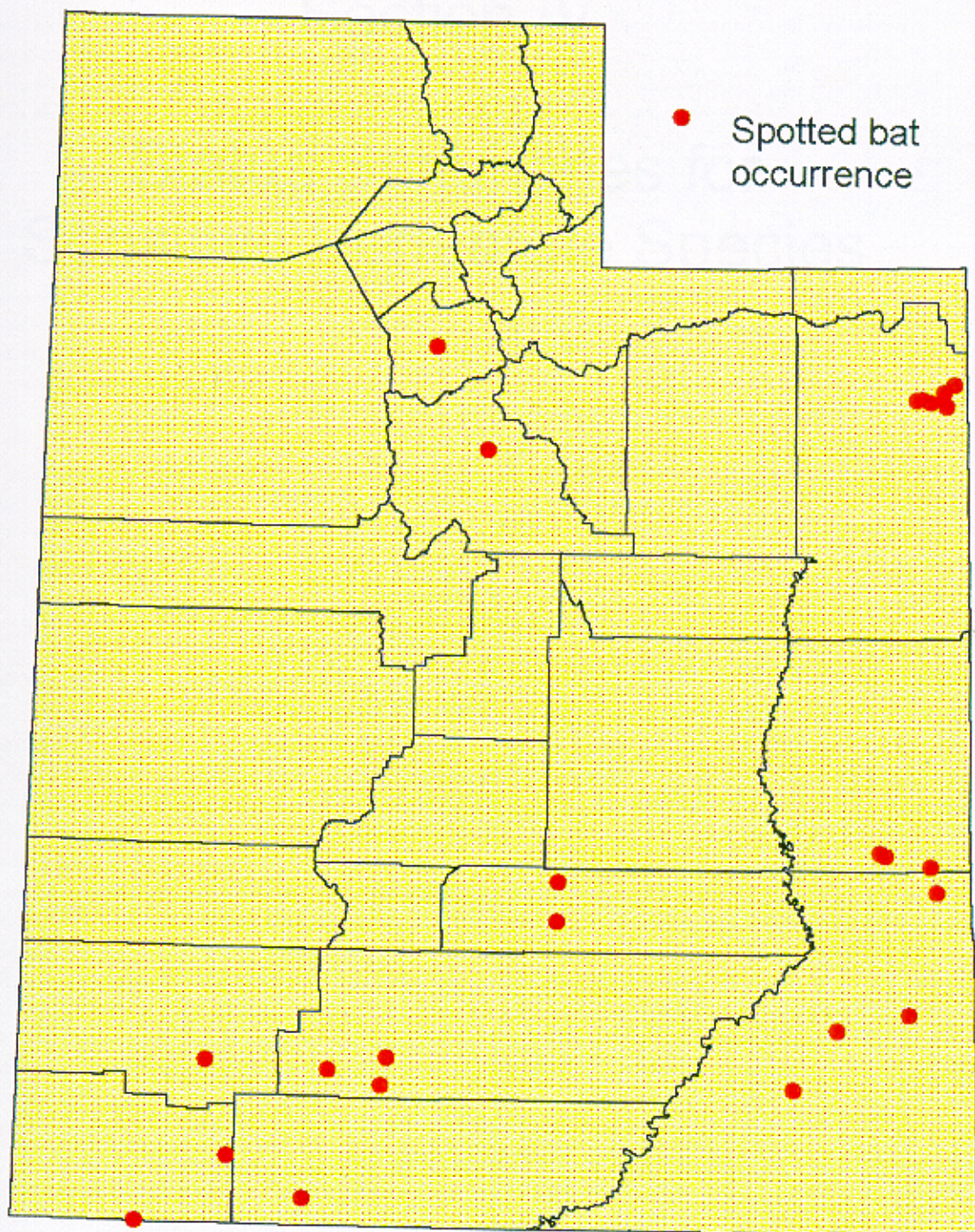
Long-distance migration has not been demonstrated in this species either in Utah or elsewhere; however, so little is known of the biology of the spotted bat that the possibility that at least some individuals or populations migrate cannot be ruled out. The species occurs, at least in summer, north and west of Utah into

Canada, and, if long-distance migration does occur in spotted bats, some could migrate to or through Utah. The fact that the one report of hibernation in this species (Hardy 1941) was in a cave in Kane County, Utah, suggests that at least Utah populations hibernate rather than migrate.

Poche hypothesized local migration of this species in summer in southwest Utah. Poche (1981) believed that, based on his "study from southwest Utah [and adjacent northwest Arizona], the species primarily inhabits xeric communities but occasionally wanders into higher elevations when temperatures are too stressful in desert environments", but, he noted, "[p]erhaps variations exist over the bat's geographic range."

Figure 6: Utah occurrences of spotted bat (*Euderma maculatum*).

Utah Occurrences of Spotted Bat (*Euderma maculatum*)



Data sources: Locality data--Biological and Conservation Database System, Utah Natural Heritage Program, Division of Wildlife Resources.
County boundaries--State Geographic Information Database.

Section IV

Status Summaries for Sensitive Vertebrate Species

STATUS SUMMARIES FOR SENSITIVE VERTEBRATE SPECIES

Included in the pages that follow are narrative summaries of statewide distribution and status for the 149 species and four subspecies of vertebrates on the Natural Heritage tracking list (excepting the three already covered in more detail in the previous section). For each of these species, information concerning subspecies, agency status, Natural Heritage ranking, estimated number of populations, abundance, distribution by county and ecoregion, habitat, population trends, threats, and inventory needs has been compiled through an extensive review of existing literature.

These status summaries would be equally useful to a sixth-grade student writing a paper for a school assignment; a biologist trying to gain an understanding of the statewide status for a particular species; or an environmental planner trying to complete an initial, sensitivity-level review for a particular project site. The statewide status summaries generally contain data of a non-sensitive nature and could be easily published over the Internet or by other means to reach a wide audience.

Because complete on-the-ground distribution information is not known for many species, the maps presented in this section of the document represent distribution by counties. It should be noted that county maps often grossly overestimate a species' distribution; the county maps are intended as coarse approximations and for directing more focused examination of the exact distribution of the species.

Bony Fishes

LAHONTAN CUTTHROAT TROUT

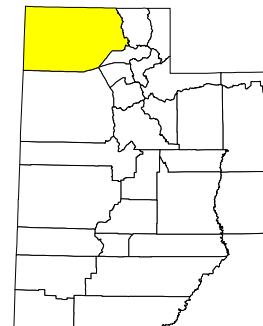
Oncorhynchus clarki henshawi

State Taxonomic Comments

This race was formerly called *Salmo clarki henshawi* (e.g., Hickman and Duff 1978, Hickman and Behnke n.d.).

State Subspecies

This is a race of the cutthroat trout, *Oncorhynchus clarki*.



Agency Status

US Fish and Wildlife Service:	Listed Threatened
US Forest Service Region 4:	Sensitive: not known to occur on USFS property in Utah.
US Bureau of Land Management:	Listed Threatened
Utah Division of Wildlife Resources:	State Threatened

Natural Heritage Ranking

Global Rank: G4T2 State Rank: SE

Natural Heritage Ranking Summary

This race, which is not native to Utah, occurs in Utah only in two streams in the Pilot Peak Range, Box Elder County, near the Nevada border. It is believed that the population of this race in one of the two streams was introduced earlier this century; the population in the second stream was established by transplantation from the first. Because of extirpation and interbreeding elsewhere, the Utah population may represent the only surviving genetically pure population of this race, or at least the Pyramid Lake strain of this race. This race is federally listed as threatened.

Estimated Number of Populations (Occurrences)

Two occurrences with natural reproduction: one believed to have been the result of an introduction made earlier this century, the other established by

transplantation from the first. Transplants have been made to three small impoundments that would represent two occurrences (two of the three ponds are near each other and would be only one occurrence) except that it is doubtful that natural reproduction is occurring in these small impoundments. Thus, there are two occurrences, neither considered native or natural.

Abundance

The population of this race in Utah is believed to be very small.

Range in Utah

This race was discovered in Utah in April 1977 in Morrison Creek (which was thought to be unnamed and was called "Donner Creek" by Hickman and Duff [1978] and Hickman and Behnke [n.d.]) in the Pilot Peak Range on the Utah side of the Utah-Nevada border. Since then, the Utah Division of Wildlife Resources (UDWR) has transplanted fish from the Morrison Creek population and successfully established them in Bettridge Creek. The UDWR has also stocked fish from Morrison Creek in a small reservoir in the Camp Creek drainage and in two very small artificial ponds at the mouth of Morrison Canyon (Schmidt et al. 1995); however, it is doubtful that natural reproduction is occurring in any of these three small artificial impoundments. All of these localities are in the Pilot Peak Range in Box Elder County, Utah, near the Nevada boundary.

County

Status

Box Elder

Introduced, presence confident

Ecoregion

Status

Great Basin

Introduced, presence confident

Habitats Utilized in Utah

None of the reports discussing this race in Utah has mentioned characteristics of the habitat that it occupies in this state. Hickman and Behnke (n.d.) did, however, say: "Donner Creek [i.e., Morrison Creek] ... is diverted at about 5900 ft. elevation. Above the diversion point, Donner Creek is perennial for about 3.2 km (2 mi), with about half its length in Nevada and half in Utah." They implied, but did not state, that the Utah population of this race was discovered above the diversion. In their discussion of their hypothesis that this race was introduced into Utah, they also said: "Many small streams, similar to Donner Creek [Morrison Creek], in the Lahontan and Bonneville basin were barren of fish in historical times. This is due to the steep gradient of the watersheds making

the small streams vulnerable to scouring and elimination of fish life from catastrophic floods." Thus, it appears that this race has existed in Utah, almost certainly the result of historical introduction, in a high-gradient stream above 5,900 ft elevation. Since its (re)discovery in Utah, this race has been transplanted into another, apparently very similar stream in the Pilot Peak Range and into three small impoundments, apparently at lower elevation.

The native habitat of this race, in Nevada, was natural lakes. The habitat of the species to which this race belongs has been described as "[g]ravel-bottomed creeks and small rivers; lakes" (Page and Burr 1991).

Trends

It is believed that the populations in Morrison Creek and Bettridge Creek are established and reproducing and thus that they are stable or perhaps are increasing.

Threats

Threats include hybridization with other trout taxa as well as stochastic or catastrophic events.

Other Considerations

This race formerly occurred in Tahoe, Pyramid, Walker, Donner, Independence, and Summit lakes but is now much reduced in distribution and abundance and no longer exists in Tahoe or Walker lakes. It was discovered in Utah in April 1977 in Morrison Creek. The Utah population is believed to have been the result of stocking in Elko County, Nevada, using fish from Pyramid Lake, in 1910, or perhaps later. Hickman and Duff (1978) commented: "The major significance of this find of *S. c. henshawi* [= *Oncorhynchus clarki henshawi*] [in Utah] is that it very likely represents the Pyramid Lake genotype--the largest trout native to western North America and long believed to be extinct...." Because of the extinction of the Pyramid Lake population and the extensive interbreeding that has taken place elsewhere, the Utah population may represent the only pure genetic strain of this race that is extant.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BONNEVILLE CUTTHROAT TROUT

Oncorhynchus clarki utah

State Taxonomic Comments

Formerly known as *Salmo clarki utah* (see, for example, Sigler and Miller 1963, Hickman and Duff 1978).

The type locality of this subspecies is Utah Lake, Utah County; the subspecies was described and named by Suckley (1874).

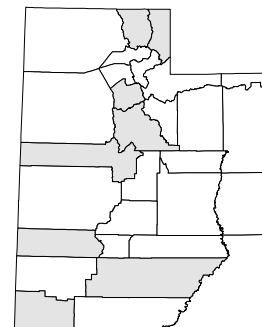
State Subspecies

The Bonneville cutthroat trout, *utah*, is a race of *Oncorhynchus clarki*.

Some of the Utah populations of this race are show genetic differences from others. Schmidt et al. (1995) commented: "It appears certain that Bonneville cutthroat trout are a diverse group and that further work is needed before phylogeny and intraspecific relationships can be interpreted with confidence and agreement. Until such time, the various existing populations should be considered unique entities and mixing of the groups should be avoided"

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Conservation Species--special mgmt. under Conservation Agreement
Utah Division of Wildlife Resources:	Conservation Species--special mgmt. under Conservation Agreement



Natural Heritage Ranking

Global Rank: G4T2 State Rank: S2

Natural Heritage Ranking Summary

Originally widespread in Utah in lakes and streams of the Bonneville Basin. Formerly thought to be extinct due to overfishing, degradation of habitat, and hybridization with introduced rainbow and cutthroat trouts. Though extant in Utah, it is reduced, in this state, to a few streams in the Deep Creek Mountains and the Santa Clara, Sevier, Jordan, and Bear River drainages, and Bear Lake.

Estimated Number of Populations (Occurrences)

Schmidt et al. (1995) stated "survey work by UDWR [Utah Division of Wildlife Resources] personnel and other agencies has identified a total of 29 pure populations of Bonneville cutthroat trout ... and an additional 43 suspected populations"

Abundance

Sigler and Miller (1963) wrote that though "The former abundance of this trout in Utah Lake is now difficult to visualize", the subspecies "is now believed to be extinct". Sigler and Sigler (1987), however, noted: "This subspecies was once thought to be extinct. Small populations exist ... in western Utah ... [and] in other parts of the Bonneville Basin."

Range in Utah

Originally occurred in streams and lakes (including Bear, Panguitch, and Utah lakes, the last being the type locality) of the Bonneville Basin; relatively "pure" populations in Utah now reduced to Trout Creek in the Deep Creek Mountains, Bear Lake and the Bear River drainage, two streams (in Reservoir Canyon and Water Canyon) that are tributaries of the Santa Clara River (Virgin River drainage), Birch Creek (Sevier River drainage), a tributary of Little Cottonwood Creek (Jordan River drainage) (Holden et al. 1974, Hickman and Duff 1978, Behnke 1992, Schmidt et al. 1995), and "other areas of the Bonneville Basin" (Sigler and Sigler 1996, and see Schmidt et al. 1995). Stocked, but probably hybridizing with other trouts, elsewhere in Utah.

County

Status

Washington	Origin unknown, presence confident
Juab	Origin unknown, presence confident
Utah	Native and natural, presumed extirpated
Garfield	Native and natural, presumed extirpated
Rich	Native and natural, presence confident

Cache	Native and natural, presence probable
Beaver	Native and natural, presence confident
Salt Lake	Native and natural, presence confident

Ecoregion

Status

Great Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence probable

Habitats Utilized in Utah

This subspecies occurs or occurred in large lakes (both deep and shallow), rivers, and streams in Utah (Schmidt et al. 1995). Schmidt et al. (1995) noted: "Many remnant populations were confined to tiny headwater streams above natural barriers which prevented contamination by nonnative trout"

Trends

Though rangewide the population is greatly reduced from its former abundance, the limited population that remains seems not to be experiencing precipitous decline and may even be increasing under current management programs.

Threats

Threats in Utah have included overfishing, habitat degradation, hybridization with introduced rainbow and cutthroat trouts. Hybridization may currently be the greatest threat to some populations, although the Bear Lake population, which has had long exposure to nonnative trouts such as the rainbow trout, seems not to be hybridizing (Behnke 1992).

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

COLORADO RIVER CUTTHROAT TROUT

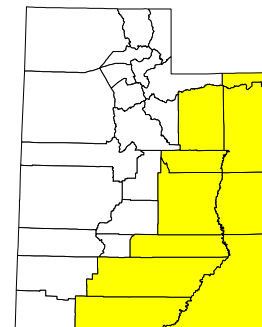
Oncorhynchus clarki pleuriticus

State Taxonomic Comments

Formerly known as *Salmo clarki pleuriticus* (see, for example, Sigler and Miller 1963).

State Subspecies

The Colorado River cutthroat trout, *pleuriticus*, is a race of *Oncorhynchus clarki*, the cutthroat trout.



Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	Sensitive
US Bureau of Land Management:	Conservation Species--special mgmt. under Conservation Agreement
Utah Division of Wildlife Resources:	Conservation Species--special mgmt. under Conservation Agreement

Natural Heritage Ranking

Global Rank: G4T2T3 State Rank: S2

Natural Heritage Ranking Summary

Formerly abundant in cold tributaries of the Green River; now much reduced in numbers and distribution because of deterioration of habitat and hybridization with stocked trouts.

Estimated Number of Populations (Occurrences)

Almost certainly more than six occurrences. Schmidt et al. 1995 concluded that 5 Utah populations have been identified, using electrophoretic techniques, as genetically pure examples of this race and that another 38 populations are

"apparently pure". Young et al. (1996) considered there to be 17 Utah populations of this race, one of them having been stocked; 11 of the 17 Utah populations were considered to be "pure".

Abundance

Formerly abundant, but, according to Sigler and Miller (1963) "now scarce or absent in Utah" but "may still be holding out in Utah in western tributaries of the Green River"; however, recent work (see Schmidt et al. 1995, Young et al. 1996) indicates that genetically pure populations of this race are indeed present in Utah and that the race may be fairly common.

Range in Utah

Sigler and Miller (1963) stated: "It was formerly abundant in cold tributaries of the Green River but occurred only as far south in the Colorado River as the headwaters of the Fremont River in Wayne County. It may still be holding out in Utah in western tributaries of the Green River." "Today it is present in isolated headwater streams" draining into the Green River (Sigler and Sigler 1996). The 17 Utah populations identified by Young et al. (1996) are in the drainages of the Escalante (3 populations), Duchesne (9), Green (1), and Dolores (4) rivers, with genetically pure populations existing in all of these river drainages.

County

Status

Daggett	Origin unknown, presence probable
Uintah	Origin unknown, presence probable
Duchesne	Origin unknown, presence probable
Carbon	Origin unknown, presence probable
Emery	Origin unknown, presence probable
Wayne	Origin unknown, presence probable
Garfield	Origin unknown, presence probable
Kane	Origin unknown, presence probable
San Juan	Origin unknown, presence possible
Grand	Origin unknown, presence possible

Ecoregion

Status

Wasatch & Uinta Mtns.	Origin unknown, presence probable
Utah High Plateaus	Origin unknown, presence probable
Colorado Plateau	Origin unknown, presence possible

Habitats Utilized in Utah

Believed formerly to have occurred in lakes, rivers, and streams in Utah, now limited in Utah to "isolated headwater areas and other rigorous environments" (Schmidt et al. 1995) in the western tributaries of the Green and Colorado rivers.

Trends

Probably declining.

Threats

Deterioration of habitat and hybridization with stocked rainbow trout and Yellowstone cutthroat trout (Sigler and Miller 1963).

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BEAR LAKE WHITEFISH

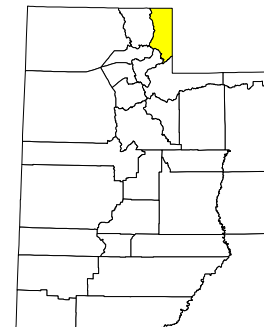
Prosopium abyssicola

State Taxonomic Comments

This species was described, from Bear Lake, as a species of *Coregonus*.

State Subspecies

No subspecies have been proposed (monotypic).



Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive: not known to occur on BLM property in Utah.
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat

Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Strictly endemic to Bear Lake, which experiences heavy recreational use and is undergoing development that may affect water quality; fishing and predatory exotic sport fishes may represent secondary threats.

Estimated Number of Populations (Occurrences)

One occurrence: strictly endemic to Bear Lake, Utah and Idaho.

Abundance

Apparently not uncommon in the one locality of its occurrence, though "less abundant than *P. spilonotus*, one of two other Bear Lake endemics" (Lee et al. 1980). [There are actually three other Bear Lake endemic fishes, two of them

being congeners of this species.]

Range in Utah

Limited to Bear Lake, Rich County, Utah, and Bear Lake County, Idaho (Sigler and Miller 1963, Lee et al. 1980, Sigler and Sigler 1987, Simpson and Wallace 1982). (Simpson and Wallace [1982] commented, "No attempts have been made to transplant it to other lakes . . .")

County

Status

Rich

Native and natural, presence confident

Ecoregion

Status

Wasatch & Uinta Mtns.

Native and natural, presence confident

Habitats Utilized in Utah

Deep water in Bear Lake. McConnell et al. (1957) reported that this species was not recorded in their creel census (of fishermen) and "[a]ll individuals taken in gill nets were from water usually exceeding 75 feet in depth." They also noted that "... spawning occurs in water 50 to 100 feet deep" Investigations of stomach contents "... suggest a complete dependence [of this species] on the soft mud bottom in deep water as a source of food."

Sigler and Miller (1963) commented: "It should be emphasized that all three of these fish [Bear Lake species of *Prosopium*] have been taken in almost all depths, although the likelihood of taking ... the Bear Lake whitefish in very shallow water is less. ... The Bear Lake whitefish is the deep water form"

Simpson and Wallace (1982) stated: "The vertical distribution of the Bear Lake whitefish is generally confined to the 60-foot level and below where the water temperature is uniformly 39° F."

Trends

Population trend not known; believed to be stable.

Threats

Recreational use and development may affect water quality in Bear Lake (which has lost its entire molluscan fauna for unknown reasons), some sport fishing for this species, predation by introduced sport fishes on immature stages.

Inventory Needs

Inventory for this species in Utah relatively complete.

BONNEVILLE CISCO

Prosopium gemmifer

State Taxonomic Comments

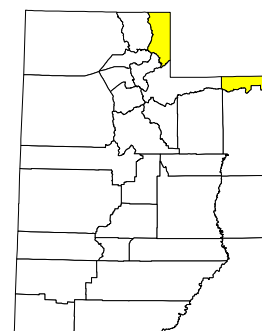
Tanner (1936) referred to this species by the name originally assigned to it, *Leucichthys gemmifer*, and mentioned that "it is called 'Peaknose.'" For many years the species was known as *Prosopium gemmiferum* (for example, see Sigler and Miller 1963, Lee et al. 1980).

State Subspecies

No subspecies (monotypic).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive: not known to occur on BLM property in Utah.
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Strictly endemic to Bear Lake (which is undergoing rapid development and receives heavy recreational use). Forms spawning concentrations in shallow water along a beach on the east shore and is legally harvested during spawning using dip nets. Heavily preyed upon by several species of introduced sport fishes (trouts).

Estimated Number of Populations (Occurrences)

Only one occurrence.

Abundance

The most abundant fish species in Bear Lake, its population numbering in the hundreds of thousands (Sigler and Sigler 1987).

Range in Utah

Occurs only in Bear Lake, Rich County, Utah, and Bear Lake County, Idaho (Lee et al. 1980). (Although Simpson and Wallace [1982] said that "it has been transplanted to Tahoe Lake, California and Nevada, and has been reported to have become established", Sigler and Sigler [1987] stated: "It has been stocked in Lake Tahoe, Nevada-California, Twin Lakes, Colorado, high mountain lakes in South Dakota, and Flaming Gorge Reservoir, Utah-Wyoming. There has been no survival in Lake Tahoe and none has been documented in other areas.")

County

Status

Rich

Native and natural, presence confident

Daggett

Introduced, presumed extirpated

Ecoregion

Status

Wasatch & Uinta Mtns.

Native and natural, presence confident

Habitats Utilized in Utah

Seeks temperatures below 59° F, usually the upper part of the hypolimnion rather than the deeper, colder regions, as water warms in summer but in other seasons distributed throughout all depths (Perry 1943). McConnell et al. (1957, Table 3) presented gill-net data that showed that this species, though captured at all depths (including their 0-25 ft sampling zone), was much more frequently netted at depths of 100 to 200 feet than at other depths; their temperature data show that at depths of 100 feet or greater the temperature in Bear Lake is consistently about 40 to 41°F.

Trends

Population trend not known; believed to be stable.

Threats

The greatest threat is probably development and recreational use of Bear Lake, which, mysteriously has lost its entire, diverse molluscan fauna. Predation by introduced sport fishes may be a lesser threat. Legal harvest is allowed, using dip nets, on spawning concentrations in shallow water.

Inventory Needs

Inventory for this species in Utah relatively complete.

BONNEVILLE WHITEFISH

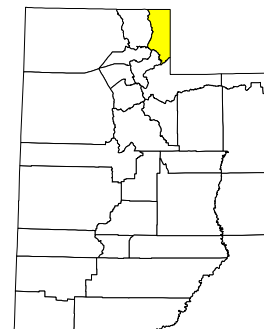
Prosopium spilonotus

State Taxonomic Comments

An unpublished study by White (1974) asserted that *Prosopium spilonotus* actually represents two cryptic species endemic to Bear Lake, differing in size (at maturity), growth rate, spawning times and temperatures, food habits, and water depth occupied. He concluded that the holotype of *Prosopium spilonotus* must be the larger form, based on its length as reported in the type description. The smaller form, White (1974) wrote, "... is tentatively designated as a new species, *Prosopium nannomaculatum* (manuscript) ...; the suggested common name is spotted whitefish." However, since this new taxonomic arrangement and the new name have not been published (White, pers. comm., 1997) or formally proposed in even an unpublished form and no type specimen has been designated or described, the new name is a *nomen nudum*; thus, the new name and the restriction of the older name have no taxonomic or nomenclatural validity, even if White was correct in his diagnoses of the two putative species, and they have not been followed or used by others.

State Subspecies

Monotypic--no subspecies.



Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive: not known to occur on BLM property in Utah.
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat

Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Strictly endemic to Bear Lake. Surrounding development and recreational use may affect water quality. Some fishing for this species occurs. Exotic predatory sport fishes feed on immature stages.

Estimated Number of Populations (Occurrences)

One occurrence.

Abundance

Sigler and Sigler (1996) referred to this species as "relatively abundant".

Range in Utah

Confined to Bear Lake, Rich County, Utah, and Bear Lake County, Idaho (Lee et al. 1980, Sigler and Miller 1963, Sigler and Sigler 1987, 1996). (Simpson and Wallace [1982] commented: "No attempts have been made to transplant it to other drainages.")

County

Status

Rich

Native and natural, presence confident

Ecoregion

Status

Wasatch & Uinta Mtns.

Native and natural, presence confident

Habitats Utilized in Utah

McConnell et al. (1957) judged, from stomach contents of this species, that it is "far-ranging", exploiting a wider variety of habitats, and depths, than its congeners in Bear Lake. They found that young of this species tended to inhabit deep water; rarely were young captured in shallow water but were commonly captured in "gill nets that were set at depths varying from 40 to 100 feet." They found adults in shallow water, where they spawn: "The usual spawning areas appeared to be rocky shallows; but in low water periods, when the rocks are exposed, it is presumed that Bonneville whitefish spawn over sandy points." They also noted that this species is commonly caught by anglers, again demonstrating the presence of adults in shallow water. They mentioned, too, "[s]ome individuals dwelling near stream mouths...."

Trends

Population trend not known but believed to be stable.

Threats

Threats may include development (affecting water quality) and recreational use of Bear Lake (which has lost its entire molluscan fauna due to unknown causes), limited fishing for this species, introduced predatory sport fishes.

Inventory Needs

Inventory for this species in Utah relatively complete.

LEATHERSIDE CHUB

Gila copei

State Taxonomic Comments

Tanner (1936) referred to this species as *Richardsonius copei*, which he called the leather-sided minnow. This species clearly is closely related to the fishes of the genus *Richardsonius*, for it readily hybridizes with *Richardsonius balteatus*, the redbase shiner (Baxter and Stone 1995).

State Subspecies

No subspecies are recognized in this species.

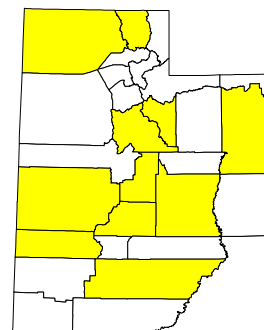
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G3G4

State Rank: S2S3

Natural Heritage Ranking Summary

Few occurrences; found mainly in Utah, in the eastern and southern portions of the Bonneville Basin, with extremely few occurrences in adjacent Idaho and Wyoming. Narrow habitat preferences (shallow water [usually 3 feet or less] of pools and riffles of cool to cold creeks and rivers).

Estimated Number of Populations (Occurrences)

About 10 natural and two introduced occurrences in Utah (Lee et al. 1980, Sigler and Miller 1963).

Abundance

Meyer (1983) said: "This fish is fairly common where found except for the Wyoming population found in the Snake River drainage...." Page and Burr (1991) considered the species to be "[c]ommon."

Range in Utah

Native to the eastern and southern parts of the Bonneville Basin (Bear, Logan, Weber, and Provo rivers) and to the Sevier River system (Beaver and Sevier rivers and their tributaries). Established through "bait bucket" introductions into Strawberry Reservoir and Price River (Colorado River system) (Sigler and Miller 1963).

County

Status

Box Elder	Native and natural, presence confident
Cache	Native and natural, presence confident
Utah	Native and natural, presence confident
Millard	Native and natural, presence confident
Sanpete	Native and natural, presence confident
Sevier	Native and natural, presence confident
Garfield	Native and natural, presence confident
Wasatch	Introduced, presence confident
Uintah	Introduced, presence confident
Emery	Introduced, presence probable
Beaver	Native and natural, presence probable

Ecoregion

Status

Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Sigler and Miller (1963) provided details of the habitat of this species: creeks and rivers; adults preferring pools and riffles, young near shore and among vegetation; cool to cold water (summer temperatures ranging from 50 to 74 F, usually 60 to 68 F); water varying from clear to slightly turbid or even muddy; current slight to swift, usually moderate; water depths moderate, usually 2 to 3 feet, but often less than 1 foot; bottom usually gravel but also including silt, sand, rubble, stones, and boulders; aquatic vegetation ranging from absent to

dense, but usually sparse, and consisting of "algae and pondweeds, more rarely chara, buttercup and moss."

Simpson and Wallace (1982), discussing this species in Idaho, and Baxter and Stone (1995), in Wyoming, said that it prefers pools rather than riffles.

Trends

Population trend in Utah not well known--perhaps stable.

Threats

Sigler and Sigler (1987) remarked: "At one time, the seining and selling of leatherside chub for bait was a drain on the population." And, "Where this practice is legal, it may be heavily seined for bait."

Other Considerations

Neither Holden (1974) nor Deacon et al. (1979) listed this species as of conservational concern.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

HUMPBACK CHUB

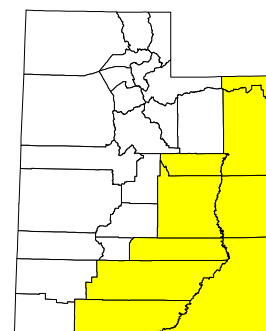
Gila cypha

State Subspecies

No subspecies have been proposed (i.e., monotypic).

Agency Status

US Fish and Wildlife Service:	Listed Endangered
US Forest Service Region 4:	Endangered
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1

State Rank: S1

Natural Heritage Ranking Summary

Endemic to the upper Colorado River system where it is uncommon and locally concentrated, usually in deep, swift river, canyon-shaded segments; damming has eliminated and altered habitat and has favored exotic fish predators and competitors.

Estimated Number of Populations (Occurrences)

About 6 current and 2 former occurrences (Lee et al. 1980).

Abundance

"Generally uncommon, but locally concentrated" (Lee et al. 1980). "Formerly it was probably more widespread in the Green and Colorado rivers . . ." (Sigler and Miller 1963). "Rare; . . . formerly more common and widespread" (Page and Burr 1991).

Range in Utah

Endemic to the upper Colorado River system; in Utah only in the Colorado, Green, and White rivers: the Colorado River near Moab, Grand County; the Green River in the Desolation Canyon stretch and near the mouth of the Price River; the Green River east of Vernal, Uintah County; the White River just southeast of Bonanza, Uintah County (Sigler and Miller 1963, Lee et al. 1980). Formerly in the Green River in Daggett County (Lee et al. 1980).

<u>County</u>	<u>Status</u>
Carbon	Native and natural, presence confident
Emery	Native and natural, presence confident
Garfield	Unknown
Grand	Native and natural, presence confident
Kane	Native and natural, presence confident
San Juan	Unknown
Uintah	Native and natural, presence confident
Wayne	Unknown
Daggett	Native and natural, presumed extirpated

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Occurs in canyon reaches of large main-stem rivers. Lee et al. (1980) reported that this species inhabits deep, swift rivers, in shaded canyons. The habitat of this species has been variously reported as deep water with swift or slow current; young of the year and juveniles occurring in water 0.3-1.0 m deep, with little current, and over silt substrate and adults occupying a variety of water conditions, with neither depth nor velocity being important, but usually over sand substrate; and juveniles preferring water less than 2 m deep, adults water more than 2 m deep (see Berg 1983).

Trends

Sigler and Miller (1963) commented: ". . . with the advent of increasing numbers of dams and impoundments it seems doomed to extinction." Page and Burr (1991) noted that it was "formerly more common and widespread".

Threats

Damming has eliminated and altered habitat (inundation, changed flow regimes, changed temperature conditions) and favored exotic fish species (predators and competitors). Reduced genetic diversity, the result of reduced population, may be a threat as well.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BONYTAIL

Gila elegans

State Taxonomic Comments

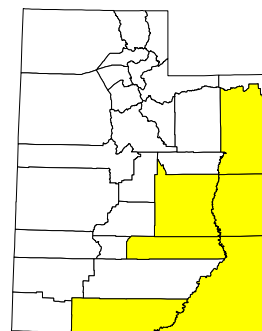
Formerly considered to be a race of the roundtail chub, *Gila robusta* (see, for example, Sigler and Miller 1963).

State Subspecies

No subspecies are recognized (i.e., the species is monotypic).

Agency Status

US Fish and Wildlife Service:	Listed Endangered
US Forest Service Region 4:	Endangered
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1

State Rank: S1

Natural Heritage Ranking Summary

Endemic to Colorado River system and is now very rare, near extinction; extirpated from most of former range; possibly survives only in Utah and only in the Green River.

Estimated Number of Populations (Occurrences)

About four or five extant occurrences and about three extirpated occurrences (Lee et al. 1980).

Abundance

"Presently very rare, near extinction; recently taken only from Green River [Utah] and Lake Mojave [Arizona-California]" (Lee et al. 1980). "Extremely rare" (Page and Burr 1991).

Range in Utah

Endemic to Colorado River system; in Utah only in Colorado and Green rivers, recently taken only in the Green River (Lee et al. 1980); ". . . extant only in Green R., UT, and perhaps in some large impoundments of the Colorado R." (Page and Burr 1991).

<u>County</u>	<u>Status</u>
Emery	Native and natural, presence confident
Grand	Native and natural, presence confident
San Juan	Native and natural, presence confident
Wayne	Unknown
Uintah	Native and natural, presence confident
Kane	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Main channels of large rivers: "Generally associated with swift currents; feeds on surface" (Lee et al. 1980).

Behnke and Benson (1980) stated: "The optimum habitat of bonytail chubs, based on former collections when they were abundant, appears to be the open river areas of relatively uniform depth and current velocity. This type of habitat typically consists of a shifting sand bottom[,] water depths of 3 to 4 feet, and a relatively constant, moderately swift current."

Adults are found mainly in pools and eddies with silt and sand or silt and boulder substrates; young occur in still water or shallow pools with silt or sometimes gravel or small rubble substrates (see review by Timothy 1983).

Trends

Has suffered precipitous decline: "very rare, near extinction" (Lee et al. 1980).

Threats

Habitat alteration is probably the greatest threat.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

ROUNDTAIL CHUB

Gila robusta

State Taxonomic Comments

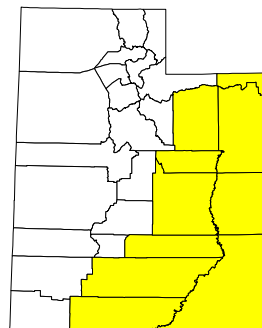
This species until recently included as races the species *Gila elegans* (the bonytail) of the large, main channels of upper Colorado River drainage and the Virgin River chub (*Gila seminuda*) of the Virgin River system.

State Subspecies

Until recently this species included several races (*elegans*, *seminuda*), now elevated to specific level. If the taxon *jordani* of Nevada is considered to be a race of *Gila robusta* or if the Mexican population considered to be *Gila robusta* is named as a race of this species, then the Utah population of this species is the type race *Gila robusta robusta*. However, if *jordani* is considered to be a distinct species and the Mexican population is either not described or is described as a species, then there are no races in this species.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Threatened
Utah Division of Wildlife Resources:	State Threatened



Natural Heritage Ranking

Global Rank: G3 State Rank: S3S4

Natural Heritage Ranking Summary

Limited to the Colorado River system and, though formerly locally common, decreasing in abundance.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences (see dot map in Lee et al. 1980).

Abundance

May be locally abundant (Lee et al. 1980, Page and Burr 1991) but thought to be decreasing in abundance.

Range in Utah

Warm streams and larger tributaries and rivers of Colorado River system (Colorado, Green, Duchesne, White, Escalante, Dolores, Price, and probably San Juan and Dirty Devil rivers) (Lee et al. 1980).

<u>County</u>	<u>Status</u>
Emery	Native and natural, presence confident
Grand	Native and natural, presence confident
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident
Uintah	Native and natural, presence confident
Wayne	Native and natural, presence confident
Daggett	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Carbon	Native and natural, presence confident
Garfield	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Main channels of large rivers. Lanigan and Berry (1981) found in the White River, Uintah County: "Young roundtail chubs commonly were found in pools where there was some water movement, such as those below riffles, and pools formed by debris on the margins of the river. Adults, which are well adapted to swift current, were found in deeper water than were the young."

Trends

As early as 1963 Sigler and Miller warned: "It is decreasing in abundance...as the Colorado continues to be modified by man...."

Threats

Decreasing in abundance because of alterations (damming and perhaps introductions of exotic fishes [predators and competitors]) throughout the Colorado River system.

Other Considerations

Care must be exercised in interpreting the literature concerning this species, for included in it formerly were the species *G. elegans* and *G. seminuda*, both of which are of greater conservational concern than is *G. robusta*, as currently restricted.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

VIRGIN RIVER CHUB

Gila seminuda

State Taxonomic Comments

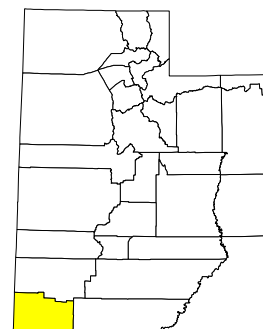
Formerly considered a race of the roundtail chub, *Gila robusta* (for example, see Sigler and Miller 1963, Lee et al. 1980), and still regarded as a race of that species by some authors (e.g., Sigler and Sigler 1996).

State Subspecies

As currently arranged, the Virgin River chub is a full species with no subspecies (i.e., is monotypic).

Agency Status

US Fish and Wildlife Service:	Listed Endangered in Utah
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1

State Rank: S1

Natural Heritage Ranking Summary

Strictly endemic to Virgin River system, where threatened by dewatering, pollution, and competition with and predation by exotic species (fishes and turtles).

Estimated Number of Populations (Occurrences)

Probably fewer than five occurrences.

Abundance

One of the rarest fish species of the Virgin River system.

Range in Utah

Endemic to the Virgin River system; occurs in Utah only in Washington County.

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

"Virgin River chubs are most often associated with deep runs or pool habitats of slow to moderate velocities with large boulders or instream cover, such as root snags. Adults and juveniles are often associated together within these habitats; however, the larger adults are collected most often in the deeper pool habitats within the river" (U. S. Fish and Wildlife Service 1994). The species usually is found in water 0.6 to 3 ft deep, still to 2.5 ft/sec velocity, with sand substrates and boulders or other cover, and a preferred temperature of about 75 F.

Trends

Declining.

Threats

Dewatering of the Virgin River system, degradation of water quality (pollution from agricultural runoff, sewage, etc.), competition with exotic fish, and predation by exotic turtles.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

VIRGIN SPINEDACE

Lepidomeda mollispinis

State Taxonomic Comments

The type locality of this species is in Utah: Santa Clara River, 4.8 km southeast of Shivwitz and 7.2 km northwest of Santa Clara, Washington County.

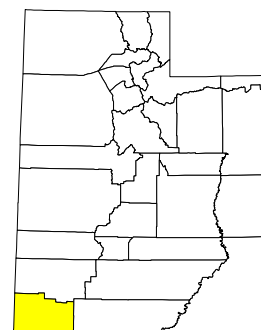
This species was formerly referred to as *Lepidomeda vittata* (see, for example, Tanner 1932, 1936).

State Subspecies

One subspecies occurs in Utah: the type (or nominate) race, *Lepidomeda mollispinis mollispinis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Conservation Species--special mgmt. under Conservation Agreement
Utah Division of Wildlife Resources:	Conservation Species--special mgmt. under Conservation Agreement



Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Endemic to the Virgin River system, where dewatering, pollution, impoundments, channelization, and introduced predators (game fishes and turtles) and competitors (bait fishes) threaten its survival.

Estimated Number of Populations (Occurrences)

Perhaps 5 occurrences.

Abundance

". . . [O]riginal distribution relatively intact but populations reduced or extirpated in modified areas" (Lee et al. 1980). "Generally common but reduced in streams subjected to impoundment and channelization" (Page and Burr 1991).

Range in Utah

Endemic to the Virgin River system in a small area of Utah, Nevada, and Arizona; in Utah only in Washington County. A 1971 report indicated that there were "good populations in Santa Clara River, its tributary Magotsu Creek, and sections of North and Ash creeks, UT", and a 1975 study "also found substantial populations in these locations except for North Creek," where none were found (Lee et al. 1980). "Santa Clara River and Magotsu Creek support best populations in Virgin River system" (Lee et al. 1980).

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

"Most often associated with clear, cool, relatively swift streams comprised of [sic] pools, runs, and riffles. Shaded pools (0.5-2.0 m deep) and runs most often frequented" (U. S. Fish and Wildlife Service 1994).

Trends

Two studies in the early 1970s "found original distribution relatively intact but populations reduced or extirpated in modified areas" (Lee et al. 1980).

Threats

Dewatering (for commercial and residential development), pollution (sewage and agricultural run-off), impoundments, channelization, exotic predators (game fishes and turtles), introduced competitors (bait fishes).

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

WOUNDFIN

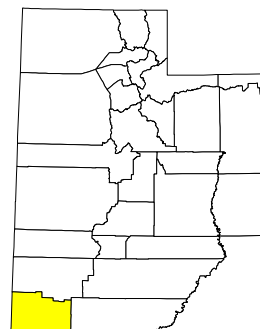
Plagopterus argentissimus

State Taxonomic Comments

The actual type locality of this species was probably the Virgin River, Washington County, Utah; it was stated in the type description by Cope (1874) as being in the San Luis Valley of western Colorado, which is clearly erroneous since the species does not occur outside the lower Colorado River system (Miller and Hubbs 1960).

State Subspecies

No subspecies (monotypic).



Agency Status

US Fish and Wildlife Service:	Listed Endangered in Utah
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered

Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Limited historically to tributaries of the lower Colorado River drainage and now extirpated from all areas except the Virgin River system; attempts to establish other populations unsuccessful; threatened by development (dewatering and pollution) and exotic predators (game fishes and turtles) and competitors (bait fishes).

Estimated Number of Populations (Occurrences)

Few (probably 2 or 3) occurrences.

Abundance

"Extremely rare" (Page and Burr 1991).

Range in Utah

Limited to tributaries of the lower Colorado River drainage; now extirpated from all areas except Virgin River system (Lee et al. 1980, Sigler and Miller 1963); in Utah only in Washington County.

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Lee et al. (1980) stated: "Occupies main channel of seasonally swift highly turbid, and extremely warm streams, with sandy, constantly shifting bottoms." The Virgin River fishes recovery plan (U. S. Fish and Wildlife Service 1994) summarized habitat findings: "Woundfin adults and juveniles are most often collected from runs and quiet waters adjacent to riffles. Juveniles use habitats which are generally slower and deeper than those characteristic of adults. Woundfin larvae are collected in backwaters or slow-velocity habitat along stream margins, often associated with dense growths of filamentous algae."

Trends

Declining.

Threats

Threats include dewatering (for agricultural, commercial, and residential development), pollution (from sewage and agricultural run-off), introduced predators (game fishes and turtles), and introduced competitors (bait fishes).

Other Considerations

Attempts to establish other populations in the Paria River and elsewhere in Arizona have been unsuccessful (Lee et al. 1980).

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

COLORADO SQUAWFISH

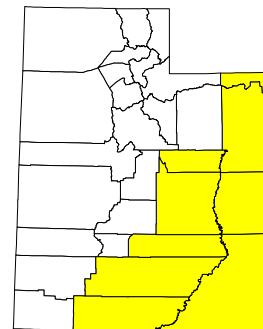
Ptychocheilus lucius

State Subspecies

No subspecies have been proposed (i.e., monotypic).

Agency Status

US Fish and Wildlife Service:	Listed Endangered in Utah
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1

State Rank: S1

Natural Heritage Ranking Summary

Formerly occurred in large rivers throughout the Colorado River system; remaining population largely restricted to Utah; threatened by habitat alterations, especially construction of large dams, which are believed to prevent spawning migrations and to change flow and temperature regimes critically important to the life history of the species; introduced game fishes probably prey upon young and compete with adults.

Estimated Number of Populations (Occurrences)

Lee et al. (1980) plotted about 23 or 24 localities, where the species was presumably extant in 1980, in Utah, as well as 1 or 2 Utah localities indicated as extirpated. The 23 or 24 localities mapped in Lee et al. (1980), even if they continue to support this species, which is doubtful, would not qualify as separate "element occurrences"; the number of occurrences represented by the localities shown in Lee et al. (1980) would likely be about half the number of localities, i.e., about 11 or 12.

Abundance

Sigler and Miller (1963) called this species "a zoological rarity" that was "[i]n former times ... more abundant".

Range in Utah

Limited to large rivers of the Colorado River system; in Utah at least formerly in the Colorado, San Juan, Dolores, Green, White, and San Rafael rivers (see Lee et al. 1980). Sigler and Miller (1963), however, comment: "It has been collected at relatively few places in Utah: Green River in and near Hideout Canyon (near the Wyoming boundary) and in Flaming Gorge, at Jensen, the town of Green River and from several adjacent localities in Daggett and Uintah Counties....also...near the mouth of the Dolores River, about 20 miles northeast of Moab, from the Colorado River at Moab, in Trachyte Creek near Hite..., and from San Juan River at Mexican Hat...." "Present distribution drastically reduced from original" (Lee et al. 1980).

<u>County</u>	<u>Status</u>
Garfield	Native and natural, presence confident
Grand	Native and natural, presence confident
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident
Uintah	Native and natural, presence confident
Wayne	Native and natural, presence confident
Emery	Native and natural, presence confident
Carbon	Native and natural, presence confident
Daggett	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Inhabits "large rivers" (Lee et al. 1980). "Young prefer small, quiet backwaters, adults generally use eddies, runs, or backwaters" (Lee et al 1980). Lanigan and Berry (1981), working on the White River, Uintah County, reported: "In our study adult squawfish were found in backwaters, eddies, and side channels with predominantly sand substrate. Water depth varied from 0.6 to 1.3 m and water velocity from 0.0 to 0.30 m/sec." According to Stanger (1983), who reviewed literature pertaining to this species: "Juveniles prefer shallower areas (0.3 to 1.8m deep) of backwaters where water velocities are slower and

the substrate is sand or silt. Young-of-the-year inhabit still lower current velocities and a firm silty bottom in [water] 0.3 to 0.6m deep."

Trends

Sigler and Miller (1963) said that this species is "rapidly disappearing due to destruction of habitat".

Threats

Construction of large dams may prevent spawning migrations as well as alter flow and temperature regimes that are critically important in the life history of this species; introduced game fishes probably prey upon immatures and compete with adults for food.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

DESERT SUCKER

Catostomus clarki

State Subspecies

No subspecies are recognized (i.e., monotypic).

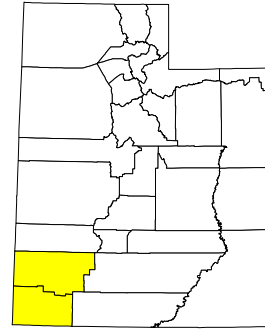
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G4

State Rank: S1S2

Natural Heritage Ranking Summary

In Utah limited to the Virgin River system; threatened by dewatering of the Virgin River system for agricultural, commercial, and residential development, by pollution (sewage and agricultural run-off), and by introductions of exotic turtles (predators) and fishes (competitors and predators).

Estimated Number of Populations (Occurrences)

Probably 4 to 6 occurrences.

Abundance

Although Lee et al. (1980) state that it is "[g]enerally common", they were possibly referring to Arizona populations. Sigler and Sigler (1987) say that it "is not abundant over any of its limited range throughout the lower Colorado River basin."

Range in Utah

Restricted to the lower Colorado River drainage; in Utah limited to the Virgin River system in Washington County (and possibly Iron County near the Nevada border).

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Iron	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Great Basin	Native and natural, presence possible

Habitats Utilized in Utah

Lee et al. (1980) summarized habitat information for this species as: "... small to moderately large streams with pool-riffle development, occupies riffle areas when small in size. Large adults in pools during day, moving to riffles and rapids at night in periods of high turbidity" Sigler and Sigler (1987) noted that the "range of habitat [of this species] ... is highly varied."

Trends

Population trend in Utah unknown--possibly stable.

Threats

The principal threats to this species are dewatering of the Virgin River system, pollution, and introductions of exotic turtles and fishes.

Other Considerations

Sigler and Sigler (1987) mention that "It may hybridize with other species of suckers." Since "The Utah sucker [*Catostomus ardens*] has been used for bait along the lower Colorado River in Nevada and Arizona" (Sigler and Miller 1963), hybridization between these two species, potentially leading to genetic swamping of *C. clarki*, may be of concern.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BLUEHEAD SUCKER

Catostomus discobolus

State Taxonomic Comments

Sigler and Miller (1963) referred to this species as *Pantosteus delphinus*, by which name it was formerly known.

State Subspecies

The race that occurs in Utah is the type (or nominate) race, *Catostomus discobolus discobolus*.

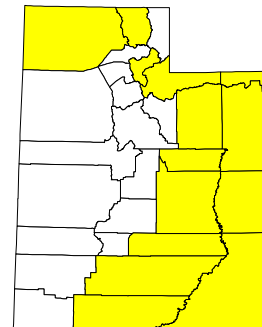
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G4

State Rank: S4

Natural Heritage Ranking Summary

Widespread in the upper Colorado River drainage of eastern Utah and present as well in the Weber River and Bear River drainages of northern Utah. Occupies a wide variety of habitats in these river systems and, at least formerly, was abundant. May be threatened by habitat alteration and loss, by exotic introduced species, and by hybridization with native and introduced suckers.

Estimated Number of Populations (Occurrences)

Lee et al. (1980, dot map) indicated at least 34 localities in Utah; although some of these localities may be combinable into fewer occurrences, probably at least 25 occurrences are represented.

Abundance

Regarding this species, Sigler and Miller (1963) wrote: "In Utah, it is particularly common in the Green River drainage" and "[i]t is ... abundant in large rivers...."

Range in Utah

In Utah occurs throughout the upper Colorado River drainage (Colorado, San Juan, Green, Dirty Devil, San Rafael, Price, White, and Duchesne rivers) (Kane, San Juan, Garfield, Wayne, Emery, Grand, Carbon, Duchesne, Uintah, and Daggett counties) as well as the Weber River (Morgan and Summit counties) and Bear River drainages (Cache and Box Elder counties).

<u>County</u>	<u>Status</u>
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident
Garfield	Native and natural, presence confident
Wayne	Native and natural, presence confident
Emery	Native and natural, presence confident
Grand	Native and natural, presence confident
Carbon	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Uintah	Native and natural, presence confident
Daggett	Native and natural, presence confident
Morgan	Native and natural, presence confident
Summit	Native and natural, presence confident
Cache	Native and natural, presence confident
Box Elder	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident

Habitats Utilized in Utah

Sigler and Miller (1963), discussing this species under the names *Pantosteus delphinus* and *Pantosteus virescens*, reported the habitat as: mountain streams and large rivers, often turbid or muddy, sometimes alkaline; substrate of rocks, gravel, or boulders with sand and mud; current usually swift but often moderate, sometimes slight, and young sometimes in still water; vegetation absent or sparse, including algae, moss, chara, and

pondweeds; water temperatures variable--45 to 85 F in summer; water depth usually 3 to 4 ft but large adults in pools, coves, and undercut banks 6 to 8 ft deep and juveniles in water only 6 to 18 inches deep.

Lee et al. (1980) stated: "Occupies wide variety of fluvial habitats, ranging from cold, clear trout streams (less than 20°C) to warm, very turbid streams. Prefers riffles over rocky substrate."

Trends

Population trend in Utah not well known--may be declining.

Threats

May be threatened by habitat alteration or loss and by introduced exotic fishes as are most of the other native fish species of the upper Colorado River drainage. Has been reported to hybridize with two other species of suckers--one native and one introduced--in the upper Colorado River basin.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

FLANNELMOUTH SUCKER

Catostomus latipinnis

State Subspecies

No subspecies are recognized in this species (i.e., the species is monotypic).

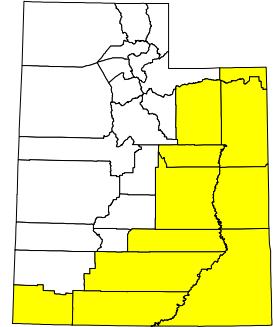
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G3G4 State Rank: S3S4

Natural Heritage Ranking Summary

Limited to moderate to large rivers of the Colorado River system, where it is reportedly absent from impoundments. Though common, seemingly less so than formerly, probably as a result of habitat alteration and loss from damming.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences; Lee et al. (1980, dot map) indicated 26 localities in Utah.

Abundance

In 1963 Sigler and Miller reported it to be "one of the commonest suckers of [the Colorado River] drainage." Reputedly less common now, though Page and Burr (1991) called it "Common." McAda (1977) stated: "The flannelmouth sucker is the most abundant large fish found in the upper Colorado River basin"

Range in Utah

Most of the main-stem Colorado River drainage and larger tributaries (excluding the Virgin River system): the upper Colorado, San Juan, Escalante, Fremont (Dirty Devil), Green, San Rafael, Price, and Duchesne rivers in Kane, San Juan, Garfield, Wayne, Grand, Emery, Carbon, Duchesne, Uintah, and Daggett counties (see map in Lee et al. 1980). Sigler and Miller (1963) stated "This species inhabits all suitable waters of eastern Utah that drain into the Green and Colorado Rivers."

<u>County</u>	<u>Status</u>
Washington	Unknown
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident
Garfield	Native and natural, presence confident
Wayne	Native and natural, presence confident
Emery	Native and natural, presence confident
Grand	Native and natural, presence confident
Carbon	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Uintah	Native and natural, presence confident
Daggett	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Sigler and Miller (1963) wrote: "Adults typically live in pools of streams and large rivers. These may vary from about six to 150 feet in average width, usually have little or no vegetation, are clear to murky, and have flows of up to 1800 cubic feet per second Depths of capture have varied from one to six feet with water depths up to 20 feet. The bottom is varied but often consists of rocks, gravel, or mud. Young fish live in moderately swift to slow marginal waters of swiftly-flowing streams, in much shallower water than do adults."

McAda (1977), who studied this species in the upper Colorado River basin, reported: "Adult flannelmouth suckers were collected from all habitats (riffles, runs and pools), at all stations during the present investigation, but were most abundant in pools"

Lee et al. (1980) stated: "...in moderate to large rivers; rarely in small

creeks and absent in impoundments. Typical of pools and deeper runs and often entering mouths of small tributaries."

Trends

Population trend in Utah not well known--possibly declining.

Threats

Lee et al. (1980) noted that it is "absent in impoundments." Flow and other habitat alterations and habitat loss resulting from damming appear to be the main threats. Predation by introduced sport fishes may also represent a threat.

Other Considerations

"This species is known to hybridize with the humpback sucker [*Xyrauchen texanus*]" (Sigler and Miller 1963), as well as with the introduced mountain sucker (*Catostomus commersoni*) (Lee et al. 1980).

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

JUNE SUCKER

Chasmistes liorus

State Taxonomic Comments

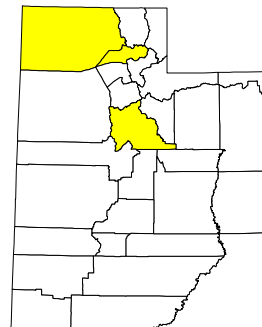
Two nominal taxa, a subspecies and a species, may represent the products of hybridization in Utah Lake between this species and the Utah sucker, *Catostomus ardens*: "... *C. l. liorus*, formerly confined to Utah Lake, had 55-64 lateral scales, 45-53 gill rakers. *C. l. mictus*, with 60-70 lateral scales, 37-47 gill rakers, larger lip papillae, less oblique mouth, shorter, more slender head, and smaller eye, may have arisen as a hybrid between *C. l. liorus* and Utah Sucker [*Catostomus ardens*] and replaced original form of June Sucker in Utah Lake" (Page and Burr 1991). *Catostomus fecundus*, the webbug sucker, known only from Utah Lake, is now considered to have been a hybrid between *Catostomus ardens*, the Utah sucker, and *Chasmistes liorus*, the June sucker.

State Subspecies

"Original form of the June Sucker [*Chasmistes liorus liorus*]...probably is extinct...[;] *C. l. mictus* may have arisen as a hybrid between *C. l. liorus* and Utah Sucker [*Catostomus ardens*] and replaced original form of June Sucker in Utah Lake" (Page and Burr 1991).

Agency Status

US Fish and Wildlife Service:	Listed Endangered
US Forest Service Region 4:	Endangered
US Bureau of Land Management:	Endangered: not known to occur on BLM property in Utah.
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Endemic to Utah Lake (and the mouth of the Provo River); decimated historically by commercial fishing, by dewatering of the Provo River (and Utah Lake) by

Irrigation diversions, mainly for agricultural purposes, and by droughts; believed, by the 1930s, to be extinct, but subsequently found to be extant, though much reduced in number. Pollution from agricultural run-off and sewage, introduced species of fishes, hybridization with other species of suckers, and further alterations of the Provo River all could jeopardize survival of the natural population in Utah Lake. Two artificial populations have been established elsewhere in Utah.

Estimated Number of Populations (Occurrences)

Globally only one natural occurrence; two intentionally established introduced populations.

Abundance

Though historically extremely abundant in the one locality of its occurrence (Utah Lake), after drought in the early 1930s the species was believed to be extinct (Sigler and Miller 1963). As recently as 1980, Lee et al. wrote: "Not seen for many years, and probably exterminated...."

Range in Utah

Endemic to Utah Lake (and the mouth of the Provo River, where spawning and early development take place), Utah County; two artificially created populations, one in Camp Creek Reservoir, Box Elder County, the other in a pond at the Ogden Nature Center, Weber County.

County

Status

Box Elder	Introduced, presence confident
Utah	Native and natural, presence confident
Weber	Introduced, presence confident

Ecoregion

Status

Great Basin	Native and natural, presence confident
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Habitats Utilized in Utah

Lee et al. (1980) wrote: "Formerly inhabited deeper waters of Utah Lake, and in June migrated in large numbers up large tributary streams to spawn." Rider (1983) stated: "Little to nothing is known of the habitat of the June sucker."

Trends

Formerly extremely abundant in Utah Lake, but, following drought in the 1930s, reduced to the point that the species was believed to be extinct.

Threats

Dewatering of the Provo River and Utah Lake for agricultural and residential uses, pollution from agricultural run-off and sewage, natural droughts, formerly commercial fishing, damming or other alterations of the Provo River, introduced exotic fish species, and hybridization with other species of suckers.

Other Considerations

Thought to hybridize with Utah sucker, *Catostomus ardens*. The Webbug sucker, *Catostomus fecundus*, described from, and known only from, Utah Lake is now considered to represent hybrids between these two species. Furthermore, "Original form of the June sucker [*C. l. liorus*]...probably is Extinct...[;]...*C. l. mictus* may have arisen as a hybrid between *C. l. liorus* and Utah Sucker [*Catostomus ardens*] and replaced original form of June Sucker in Utah Lake" (Page and Burr 1991).

Inventory Needs

Inventory for this species in Utah is relatively complete.

RAZORBACK SUCKER

Xyrauchen texanus

State Taxonomic Comments

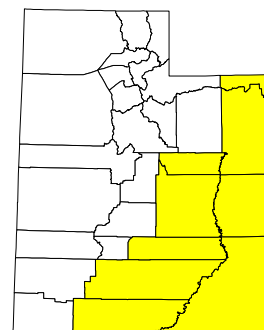
The specific epithet, *texanus*, is surprising for a species that occurs only in the Colorado River system, west of the continental divide and nowhere near Texas. The explanation for this is: The locality data for the original collection of this species was reported simply as the "Colorado River"; Abbott, who described the new species, was familiar with the Colorado River of Texas, one of the largest rivers in that state (and entirely in that state), which flows directly into the Gulf of Mexico. Mistakenly thinking that the new collection was from Texas, he assigned the new species a name that he believed reflected its geographic distribution.

State Subspecies

No subspecies have been proposed in this species (i.e., the species is monotypic).

Agency Status

US Fish and Wildlife Service:	Listed Endangered
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Endemic to large rivers of the Colorado River system; very rare; survives in Utah only in the main stems of the Colorado and Green rivers at and above their confluence; impacted by alterations (flow and temperature) caused by damming.

Estimated Number of Populations (Occurrences)

10 occurrences in Utah since 1973, as well as one extirpated occurrence (Lee et al. 1980, map). Sigler and Miller (1963) said that "There are not many Utah

records . . ."

Abundance

"Very rare" (Lee et al. 1980); ". . . becoming increasingly scarce above Grand Canyon . . . not many Utah records . . ." (Sigler and Miller 1963).

Range in Utah

Lee et al. (1980) mapped 10 occurrences in Utah since 1973, all in the main stems of the Colorado and Green rivers from their confluence north and east, in both rivers, to and into Colorado, as well as one extirpated occurrence in Utah near the confluence of the Colorado and San Juan rivers. Sigler and Miller (1963) mentioned specimens "from the Colorado River at Moab, White River near Ouray, and . . . the Green River at several places between the town of Green River ... and Hideout Canyon near the Wyoming border." Sigler and Sigler (1996) mentioned that the species is now "scarce to absent" from most of the Utah portions of the Green and Colorado rivers.

County

Status

Grand	Native and natural, presence confident
San Juan	Native and natural, presence confident
Wayne	Native and natural, presence confident
Uintah	Native and natural, presence confident
Daggett	Native and natural, presumed extirpated
Carbon	Native and natural, presence confident
Emery	Native and natural, presence confident
Kane	Native and natural, presence confident
Garfield	Native and natural, presence confident

Ecoregion

Status

Wasatch & Uinta Mtns.	Native and natural, presumed extirpated
Colorado Plateau	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident

Habitats Utilized in Utah

Sigler and Miller (1963) wrote: "This large sucker is an inhabitant of large rivers and has adjusted well to [certain] impoundments It commonly occurs at depths of four to eight feet over a bottom of sand, mud, or rock. Vegetation is sparse or lacking and water temperatures are moderate to warm. The water may be silty, muddy or clear and the current, except in the artificial reservoirs,

is usually strong where the adults are taken. The young occur in the shallows at the river or reservoir margins"

Lee et al. (1980) stated habitat of this species as: "Large riversGenerally in slow areas, backwaters and eddies." Behnke and Benson (1980) noted: "The peculiar body shape of the razorback sucker, which suggests a design for stability on the bottom in turbulent flow, may be a useful adaptation for migration during high river flows; however, virtually all captures of razorback suckers have been from essentially still water, particularly off channel ponds created from gravel excavation or for irrigation storage."

Trends

Apparently declining precipitously. Sigler and Sigler (1996) stated: "The population in the upper Green River has declined 50 percent since 1989."

Threats

Alterations (flow and temperature regimes) due to damming of the large rivers of the Colorado River system; possibly introduced fishes (predators of young, competitors). Lee et al. (1980) noted that "Although individuals have been observed spawning, reproduction in reservoirs seems to be unsuccessful".

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

PAIUTE SCULPIN

Cottus beldingi

State Taxonomic Comments

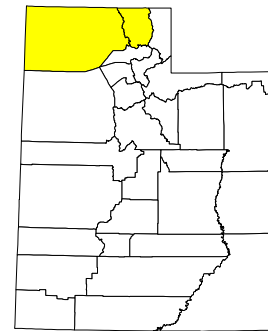
Sigler and Miller (1963) called this the Piute sculpin.

State Subspecies

Monotypic--no races are recognized in this species.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2

Natural Heritage Ranking Summary

Very limited distribution in Utah: reported in this state only from the lower Bear River drainage.

Estimated Number of Populations (Occurrences)

Lee et al. (1980) mapped no occurrences in Utah; Sigler and Miller (1963), however, stated that it "occurs in Utah only in the lower Bear River drainage", and Page and Burr (1991) mapped it in the vicinity of Bear Lake in Utah.

Abundance

Abundance in Utah unknown; estimate of low abundance is based only on its limited distribution in Utah.

Range in Utah

In Utah known only from the lower Bear River drainage (presumably Cache and/or Box Elder counties).

County

Status

Cache	Native and natural, presence probable
Box Elder	Origin data uncertain, presence possible

Ecoregion

Status

Wasatch & Uinta Mtns.	Native and natural, presence probable
Great Basin	Origin data uncertain, presence possible
Columbia Plateau	Origin data uncertain, presence possible

Habitats Utilized in Utah

Details of the habitat of this species in Utah are lacking. Simpson and Wallace (1982) stated: "It [this species] is known to inhabit both lakes and streams where rubble is present. It prefers clear, cold water." Sigler and Sigler (1987) said: "The Paiute sculpin prefers bottom habitat of rubble and gravel, although it is not unusual to find it living on other substrates. Its typical stream habitat is rocky riffle sections with clear, cold water, where it is almost always associated with trout." Page and Burr (1991) described its habitat: "Rubble and gravel riffles of cold creeks and small to medium rivers; rocky shores of lakes." These habitat statements, however, would apply to most freshwater species of sculpins in North America.

Trends

Population trend in Utah not known.

Threats

The lower Bear River drainage is in an area of heavy agricultural and residential development; thus, development itself as well as degraded water quality from pollution (agricultural run-off, industrial effluent, and residential sewage) may pose serious threats.

Inventory Needs

Occurs in the Snake River system (widely distributed in southern Idaho [Simpson and Wallace 1982] and at least one locality in extreme northeastern Nevada [Lee

et al. 1980]) and should be looked for in the Raft River part of that system, and perhaps in Grouse Creek and Goose Creek as well, in northwestern Box Elder County.

UTAH LAKE SCULPIN

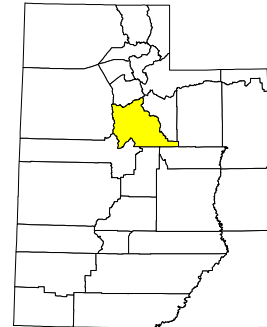
Cottus echinatus

State Taxonomic Comments

First distinguished in 1881 but incorrectly assigned to *Cottus semiscaber*. It continued to be lumped with other sculpins under the name *Cottus semiscaber* for many years by various authors (e.g., Tanner 1936). Since *Cottus semiscaber* is a synonym of *Cottus bairdi*, it was given the new name *Cottus echinatus* in 1963 (Bailey and Bond 1963).

State Subspecies

No subspecies have been proposed (i.e., monotypic).



Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Extinct: not known to occur on BLM property in Utah.
Utah Division of Wildlife Resources:	Extinct

Natural Heritage Ranking

Global Rank: GX State Rank: SX

Natural Heritage Ranking Summary

Extinct. Only seven known specimens, collected in Utah Lake between 1880 and 1928. It is believed that the species did not survive low lake levels from 1932 to 1935.

Estimated Number of Populations (Occurrences)

Formerly one occurrence.

Abundance

Species is now extinct; known from only seven specimens collected from Utah Lake between 1880 and 1928 (Bailey and Bond 1963).

Range in Utah

Formerly strictly endemic to Utah Lake (and mouth of Provo River), Utah County (Sigler and Sigler 1987, Lee et al. 1980).

County

Status

Utah

Native and natural, presumed extinct

Ecoregion

Status

Great Basin

Native and natural, presumed extinct

Habitats Utilized in Utah

Evidently the habitat of this species, now extinct, was never described. All seven known specimens were collected in Utah Lake, three of them at the mouth of the Provo River (see Bailey and Bond 1963).

Trends

Extinct.

Threats

Bailey and Bond (1963) questioned whether this species was able to survive the low levels of Utah Lake in the early 1930s discussed by Tanner (1936), who wrote: "At this writing Jan. 1936 practically all the Suckers as well as other fish in Utah Lake have been killed by the severe drought of the past four years. ... During the winter of 1934-35 the water was so shallow that hundreds of tons of suckers and carp were killed due to freezing and crowding in the few deep holes."

Inventory Needs

Since this species is considered to be extinct, not having been detected since 1928, there is little hope that inventory efforts directed toward its rediscovery would be productive.

BEAR LAKE SCULPIN

Cottus extensus

State Taxonomic Comments

Tanner (1936) referred to this species as *Cottus semiscaber*, now considered to be a synonym of *Cottus bairdi*; Bailey and Bond (1963) called this "misidentification".

The type locality is "along the east shore of Bear Lake, south of South Eden Delta, Rich Co., Utah", where the holotype, an adult female, number 141840 in the collection of the University of Michigan Museum of Zoology, and 15 paratypes, UMMZ 141841 (15), were collected 25 September 1941 by L. E. Perry and L. B. Crookston (Bailey and Bond 1963).

State Subspecies

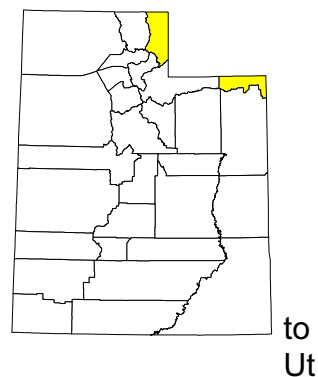
No races have been proposed (i.e., monotypic).

Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive: not known
occur on BLM property in



to
Ut

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat

Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Occurs only in Bear Lake (Rich County, Utah, and Bear Lake County, Idaho), where it is abundant.

Estimated Number of Populations (Occurrences)

Globally only one (natural) occurrence, viz. Bear Lake (Utah and Idaho), to which it is strictly endemic. An introduction into Flaming Gorge Reservoir,

Utah-Wyoming, was attempted; however, it is unknown whether the species has become established there (Sigler and Sigler 1987).

Abundance

Abundant in Bear Lake (Utah and Idaho), the only locality of its occurrence. It is "the second most numerous [fish] species in the lake" (Sigler and Sigler 1987), surpassed there in numbers only by the Bonneville cisco (*Prosopium gemmifer*), which is also strictly endemic to Bear Lake.

Range in Utah

Only in Bear Lake, Rich County, Utah (and Bear Lake County, Idaho) (Lee et al. 1980, Page and Burr 1991), though an introduction was attempted, with unknown success, into Flaming Gorge Reservoir, Utah-Wyoming (Sigler and Sigler 1987).

County

Status

Rich
Daggett

Native and natural, presence confident
Introduced, presence possible

Ecoregion

Status

Wasatch & Uinta Mtns. Native and natural, presence confident

Habitats Utilized in Utah

McConnell et al. (1957), documenting their findings concerning this species, at that time known only as "an undescribed form of *Cottus*, indigenous to Bear Lake", wrote: "From May through October, the majority of the sculpins were in water more than 50 feet deep, and a large number were taken in water 175 feet deep. The sculpin apparently spawns ... near shore around rocks. After spawning, it migrates to deeper water despite the fact that no cover exists in the deeper areas." Describing bottom types of Bear Lake they reported: "From the shore to a depth of about 25 feet the bottom is sand except for the rocky areas previously mentioned [at the shoreline]. This sand is gradually replaced by silt and marl; below about 75 feet, the bottom material is a fine gray silt marl that is 58 percent CaCO₃ [calcium carbonate]."

Trends

Population believed to be stable.

Threats

Bear Lake is heavily utilized for recreational purposes, with considerable and increasing development along its shores. A diverse molluscan fauna formerly was present in the lake but has mysteriously disappeared. Numerous exotic species of sport fishes have been introduced and become established in the lake, and many of these, especially the several species of trouts, feed heavily on the endemic sculpin.

Inventory Needs

Inventory for this species in Utah is relatively complete.

Amphibians

WESTERN TOAD

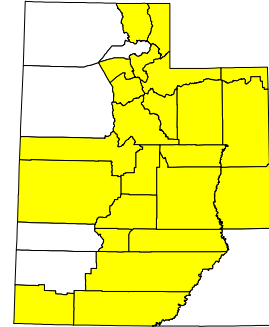
Bufo boreas

State Subspecies

The subspecies that occurs in Utah is the type or nominate race, *Bufo boreas boreas*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G4 State Rank: S2

Natural Heritage Ranking Summary

Greatly reduced abundance and distribution in Utah and elsewhere, many populations having disappeared from areas of known historical occurrence in Utah; causes for decline not clearly understood but thought to include increased ultraviolet radiation resulting from depletion of the ozone layer of the atmosphere, water pollution (perhaps from acid precipitation), habitat degradation and loss, and disease.

Estimated Number of Populations (Occurrences)

Ross et al. (1995) mapped 16 localities where tadpoles or adults were found since 1971, although 6 of these localities represented "Tadpoles present 1971-1991, not present 1992-1993".

Abundance

Though Tanner (1931) and others (see Ross et al. 1995) reported this species to be common in central and northern Utah, the recent work of Ross et al. (1995) suggests a drastic decline in Utah.

Range in Utah

Known from areas of high elevation, mainly the Wasatch Mountains and central Utah High Plateaus, from Rich and Daggett counties in the northeast to Washington and Kane counties in the southwest; also a few high areas near the Nevada border (Millard and Box Elder counties).

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Cache	Native and natural, presence confident
Carbon	Native and natural, presence confident
Davis	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Emery	Native and natural, presence confident
Garfield	Unknown
Grand	Unknown
Juab	Native and natural, presence confident
Kane	Native and natural, presence confident
Rich	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Sanpete	Native and natural, presence confident
Sevier	Native and natural, presence confident
Summit	Native and natural, presence confident
Uintah	Unknown
Utah	Native and natural, presence confident
Wasatch	Native and natural, presence confident
Washington	Native and natural, presence confident
Wayne	Native and natural, presence confident
Millard	Native and natural, presence confident
Daggett	Native and natural, presence confident
Morgan	Native and natural, presence confident
Piute	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident

Great Basin
Columbia Plateau

Native and natural, presence confident
Native and natural, presence confident

Habitats Utilized in Utah

Tanner (1931) wrote that in Utah this species occurs "in the canyons and mountains" as well as in "gardens and fields, where they may be found during the day under boards, rocks, debris, and in dark places."

Schwinn and Minden (1979) listed "breeding" habitats of this species in Utah as "[s]pring-fed seeps and small creeks with permanent flow", "[m]arshes, wetlands, swampy river bottoms or lake and reservoir shorelines where rooted aquatic plants occur", "[i]ntermittent or temporary plains streams, mountain tributaries, rain pools, marshes, ponds, stock tanks or ponds and irrigation ditches", riparian habitats, "[p]ermanent mountain streams or rivers with steep gradients ...", and "[p]ermanent streams or rivers in broad valleys and plains with low gradient...", and "nonbreeding" habitats as additionally including sagebrush, rabbitbrush.

Ross et al. (1995), writing about this species in Utah, declared: "We believe that *B. boreas* occupies montane habitats and sometimes valley wetlands adjoining montane habitat but does not use valley habitats distant from mountains."

Trends

Absent from many former locations in recent years, and recent surveys (Ross et al. 1995) indicate a marked decline.

Threats

Fits the pattern of continuing rapid population decline observed in many amphibian species, especially in western North America; causes of such declines are not clearly understood but may include increased ultraviolet radiation resulting from depletion of the ozone layer of the atmosphere, water pollution perhaps related to acid precipitation, habitat degradation and loss, and disease.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

SOUTHWESTERN TOAD

Bufo microscaphus

State Taxonomic Comments

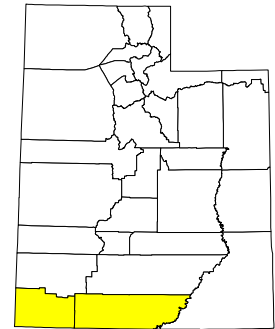
Tanner (1931) discussed this species in Utah using the name *Bufo compactilis* (= *Bufo speciosus*), which it resembles.

State Subspecies

The subspecies that occurs in Utah is the type (or nominate) race, *Bufo microscaphus microscaphus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G4 State Rank: S2

Natural Heritage Ranking Summary

This species has a limited and discontinuous distribution; it reaches the northern limit of its range in extreme southern Utah. Though locally common in Utah, it is restricted to the southwestern part of the state, in Washington and Kane counties.

Estimated Number of Populations (Occurrences)

Probably 15-20 occurrences. Price and Sullivan (1988) mapped six localities in Utah.

Abundance

Locally common (see Tanner 1931, as "*Bufo compactilis*").

Range in Utah

Extreme southern Utah, particularly the southwestern corner; Price and Sullivan (1988) mapped its distribution to include much of southern Washington County and the southwestern part of Kane County. Schwinn and Minden (1979) indicated its presence in south-central and, to some extent, even southeastern Utah, in Washington, Kane, and southwestern San Juan counties.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Kane	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed the breeding habitats of this species in Utah as aquatic habitats and riparian habitats, and the nonbreeding habitats as additionally including "[i]ntermittent or temporary plains streams, mountain tributaries, rain pools, marshes, ponds, stock tanks and ponds or irrigation ditches", "[s]pring-fed seeps and small creeks with permanent flow", "open water zones or permanent lakes, reservoirs or ponds", "[m]arshes, wetlands, swampy river bottoms or lake and reservoir shorelines where rooted aquatic plants occur", and "[p]ermanent streams or rivers in broad valleys and plains with low gradient and silt, sand or gravel bottoms".

Trends

Population trend in Utah unknown.

Threats

Threats include habitat loss and hybridization with other toads (e.g., Woodhouse's toad, *Bufo woodhousii*).

Inventory Needs

The presence of this species in eastern Kane and southwestern San Juan counties, as indicated by Schwinn and Minden (1979), should be verified.

PACIFIC CHORUS FROG

Pseudacris regilla

State Taxonomic Comments

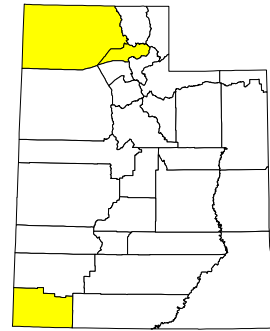
Literature concerning this species in Utah (e.g., Tanner 1931, Schwinn and Minden 1979) refers to it as *Hyla regilla*, the Pacific tree-toad or Pacific tree frog, by which names it was formerly known.

State Subspecies

This species is monotypic (i.e., has no subspecies).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

Known in Utah based on very few specimens from extremely limited areas of southern Washington County and northern Box Elder County; it is questionable whether the species is extant in Weber County, from which there is a very old record.

Estimated Number of Populations (Occurrences)

About 4 occurrences believed to be possibly extant; 1 occurrence thought likely to be extirpated. Tanner (1931) mentioned two or three localities in Box Elder County and one locality in Washington County.

Abundance

Exceedingly few individuals have been found in Utah. Tanner (1931) commented: "I am unable to understand why this species is so scarce [sic] in Utah."

Range in Utah

Known in Utah only from Washington, Box Elder, and Weber counties. Occurrence in Weber County is historical, probably no longer extant there.

County

Status

Washington	Native and natural, presence confident
Box Elder	Native and natural, presence confident
Weber	Native and natural, presumed extirpated

Ecoregion

Status

Mojave Desert	Native and natural, presence confident
Columbia Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presumed extirpated

Habitats Utilized in Utah

The best account of this species in Utah is that of Tanner (1931), who wrote: "Practically nothing is known about the habits of this species in Utah." Tanner's (1931) next statement is enigmatic: "The three specimens in the [Brigham Young University vertebrate] collection were taken by the writer in areas far removed from where they may be observed."

This species is unique in Schwinn and Minden's (1979) Utah "latilong" study in being the only species included in their work for which they showed no "latilong" occurrences and listed no habitats; under "Habitat" for this species, they stated "No Record".

Elsewhere within its range this species occupies a wide variety of habitats (see, for example, Stebbins 1985).

Trends

Perhaps declining; it is doubtful that this species still occurs in Weber County.

Threats

Threats in Utah unknown.

Inventory Needs

Inventory in Box Elder and Washington counties needed to determine whether this species is extant in Utah.

RELICT LEOPARD FROG

Rana onca

State Taxonomic Comments

This species has been treated by some as a race of *Rana pipiens* (e.g., Wright and Wright 1949), and various recent authors have considered *Rana fisheri*, the Las Vegas leopard frog or Vegas Valley leopard frog, to be either a junior synonym of *Rana onca* (e.g., Platz 1984, Jennings 1988) or a race of *Rana onca* (e.g., Stebbins 1985). Recent mtDNA evidence suggests that this species and *Rana yavapaiensis* are very closely related and could even be synonyms; however, morphologically they appear to be distinct species (Jennings et al. 1995). Conclusive analyses of the systematics of the leopard frog complex have not been completed.

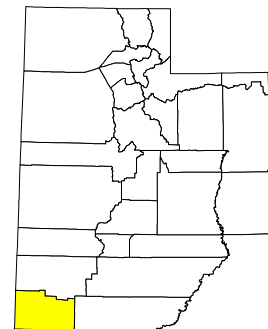
This species was first discovered in Utah, in 1872, the type locality having been designated by Cope (1875) as simply "Utah"; the type specimen, an adult female, number 25331 in the United States National Museum, was collected by H. C. Yarrow. Tanner later (1929) restricted the type locality to "somewhere along the Virgin River in Washington County".

State Subspecies

Considered to be monotypic--no subspecies are currently recognized. Stebbins (1985), however, tentatively treated the extinct *Rana fisheri* as a subspecies of *Rana onca*; by implication, under such an arrangement, there would then be a type or nominate race, "*Rana onca onca*", which would be the subspecies that occurred in Utah. This arrangement has not been followed by others, although some (including, apparently, Collins 1990) have considered *Rana fisheri* to be a synonym of *Rana onca*, without races.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Extinct
Utah Division of Wildlife Resources:	Extinct



Natural Heritage Ranking

Global Rank: G1 State Rank: SH

Natural Heritage Ranking Summary

Formerly occurred along or near the Virgin River at St. George, Washington County, the last known Utah specimens having been collected in 1950. The species had been believed to be extinct but was rediscovered in Nevada in 1991. Habitat loss (diversions, dewatering, etc.), hybridization with introduced species of leopard frogs, predation by exotic bullfrogs, exotic fishes, and probably exotic turtles, and competition with exotic frogs all likely contributed to extirpation of the species from Utah.

Estimated Number of Populations (Occurrences)

One to three historical occurrences (Jennings 1988), but none since 1950.

Abundance

Presumed to be extirpated; last known in Utah in 1950 (Platz 1984).

Range in Utah

Historically occurred in aquatic associations (springs, seeps, and streams, below 3000 ft elevation) along the Virgin River at St. George, Washington County (Tanner 1931, Platz 1984, Jennings et al. 1995).

County

Status

Washington	Native and natural, presumed extirpated
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Ecoregion

Status

Mojave Desert	Native and natural, presumed extirpated
---------------	---

Habitats Utilized in Utah

Tanner (1929) reported the capture of two individuals "in a small stream". Tanner (1931) commented: "Very little is known about the habits of this species. The two specimens reported here [same as those reported by Tanner (1929)] were taken ... on a small stream" Although Platz (1984) considered *Rana fisheri*, the Las Vegas leopard frog or Vegas Valley leopard frog, to be a synonym of *Rana onca*, and thus discussed them together, he opined that "[climatic] conditions [in southwestern Utah, where *Rana onca* occurred, and in southern Nevada, where *Rana fisheri* occurred] restrict the existence of leopard frogs particularly to springs (and some stream pools) with adequate vegetation, which ameliorates the effects of harsh sun, and dry heat." He also believed: "Permanent water sites suitable for *onca* [and *fisheri*] are chiefly cold springs and stream pools

deep enough (12 to 16 inches) to permit escape from predators. Although egg masses are unknown, it is likely that backwaters were required for breeding and subsequent early developmental stages." Platz (1984) also noted that all historical localities for this species (as well as *Rana fisheri*) were at elevations lower than 3,000 ft. and that *Rana pipiens* occurred in the same region at elevations higher than this. The Utah locality last known to have been inhabited by *Rana onca*, Berry Springs, has been described by Platz (1984): "The original pond associated with the spring measured 30 to 40 feet in diameter and 3 to 4 feet deep. Large trees and a half acre of plant cover exist immediately to the west of the spring. [Reportedly]... the spring was quite lush and included watercress and emergent aquatic vegetation as late as the early 1960's."

Three extant populations of *Rana onca* discovered in Nevada in 1991 along the Overton Arm of Lake Mead all were at springs (feeding pools and creeks), at least some of them with very dense emergent vegetation such as *Scirpus* sp. (bulrushes) (Jennings et al. 1995).

Behler and King (1979), treating *R. onca* as distinct from *R. fisheri*, summarized the habitat of *onca* as "[s]pring seeps and stands of bulrush along the edges of marshes and pools."

Trends

Although there is no evidence to suggest that this species is extant in Utah, it was recently rediscovered in Nevada. Of the three populations that were found in Nevada, two appeared to be relatively stable but one declined dramatically over a four-year period (Jennings et al. 1995).

Threats

Dewatering of the Virgin River and associated aquatic habitats (springs), flow alterations (diversions), and introductions of exotic ranid frogs, fishes, and perhaps turtles may have contributed to the extirpation of this species in Utah through habitat loss, hybridization, competition, and predation.

Inventory Needs

The surprising rediscovery of this species in Nevada in 1991 (Jennings et al. 1995) makes renewed efforts to find the species in Utah seem worthwhile.

Other Considerations

In the series of 14 leopard frog specimens collected 20 April 1950 at Berry Springs containing the last known examples of *R. onca* from Utah, 6 are *R. onca*, 1 is *R. pipiens*, and 7 are hybrids representing a mix of three species (*R. onca*, *R. yavapaiensis*, and *R. pipiens*) (Platz 1984).

COLUMBIA SPOTTED FROG

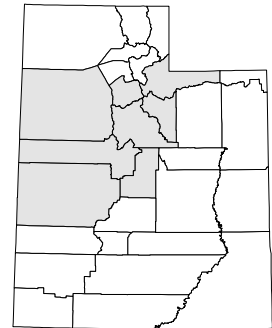
Rana luteiventris

State Taxonomic Comments

This species was formerly considered to be conspecific with *Rana pretiosa*, the spotted frog (see, for example, Behler and King 1979, Stebbins 1985, Collins 1990). Green (1991) thought that the species *Rana pretiosa* might represent two or more cryptic species. Recently Green et al. (1997), based on allozymic and morphometric assessments of populations throughout the range of what was formerly considered *Rana pretiosa*, split *Rana pretiosa* into two species and assigned all populations in Utah to the species *Rana luteiventris*, the Columbia spotted frog. Green et al. (1997), however, noted that “[t]he taxonomy of *R. luteiventris* may require further resolution” and “...may be a single species, with perhaps three subspecies, or there may be several weakly differentiated [i.e., cryptic] species.”

State Subspecies

Green et al. (1997), in elevating *Rana luteiventris* to specific status, noted that this species may actually represent a complex of cryptic species or subspecies. They wrote: “There are four forms [of *Rana luteiventris*], whose boundaries have not been delineated clearly.” Two of these four “forms” are known to occur in Utah: “The ‘Bonneville spotted frog’ from the Snake and Tule Valleys in Utah and the ‘Provo River spotted frog’ [found along the Wasatch Front] appear to be extremely limited in distribution and are probably the most threatened forms of *R. luteiventris*.” The former seemingly is known only from Utah, and the latter ranges, at least hypothetically, from the Wasatch Mountains of Utah barely into the southwestern corner of Wyoming (see Green et al. 1997, Figure 1).



Agency Status

US Fish and Wildlife Service:	No status
US Forest Service Region 4:	No status
US Bureau of Land Management:	Conservation Species--special mgmt. under Conservation Agreement
Utah Division of Wildlife Resources:	Conservation Species--special mgmt. under Conservation Agreement

Natural Heritage Ranking

Global Rank: G3G4

State Rank: S1

Natural Heritage Ranking Summary

Restricted to three disjunct areas in the West Desert (Deep Creek Range, Snake Valley, Tule Valley) and to discontinuous portions of the Wasatch Front (Summit County to Sanpete County); though the West Desert population appears to be relatively stable, the Wasatch Front population has suffered drastic recent reduction in both abundance and distribution as a result of fragmentation and destruction of habitat, dewatering, livestock, chemical applications, and introduced predators and competitors (trouts, mosquitofish, bullfrogs).

Estimated Number of Populations (Occurrences)

Probably at least 11 occurrences in the West Desert and at least 5 along the Wasatch Front.

Abundance

Formerly "Common along the streams of the Wasatch Mountains" (Tanner 1931) but now much reduced in abundance (Ross et al. 1993). Further, "Of 29 sites with known historic [sic] collections of spotted frogs along the Wasatch Front...only 2 (7%) were occupied in 1992" (Ross et al. 1993).

Range in Utah

Occurs in 3 counties in the West Desert: Tooele County (vicinity of Ibapah, Deep Creek Range); Juab and Millard counties (Snake Valley); Millard County (Tule Valley) (Ross et al. 1994). Occurs in 4 or 5 counties along the Wasatch Front: Wasatch County, Utah County, Juab County, Sanpete County, and possibly still Summit County. Formerly also occurred in Salt Lake County on the Wasatch Front. May have occurred historically in Morgan County.

County**Status**

Juab	Native and natural, presence confident
Millard	Native and natural, presence confident
Salt Lake	Native and natural, presumed extirpated
Sanpete	Native and natural, presence confident
Summit	Native and natural, presence confident
Tooele	Native and natural, presence confident

Utah	Native and natural, presence confident
Wasatch	Native and natural, presence confident

Ecoregion

Status

Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Tanner (1931), who knew only of the Wasatch population in Utah, commented: "In Utah we have no record of this species having been taken above 7,000 feet. It is always found near springs, small streams, and swamps."

Morris and Tanner (1969), who studied this species in Utah, Sanpete, and Juab counties, reported "several features which [their study areas] have in common": "Each observed site [inhabited by this species] is a small permanent pond of water which has a continual source of water. Because of their low level and seep springs inflow, the ponds seldom have an external outlet; therefore, very little movement results because of flow of water through them. As a result each pond is made up of standing water with a deep silt or muck bottom in which frogs presumably hibernate during the winter.

Stonewort, *Chara* sp., makes up the dominant aquatic vegetation and forms a complete mat covering over the bottom of the pond. Cattails, *Typha* sp., are present in the deeper parts of each pond, and provide a cool, moist place for adult frogs to feed during the warmer summer months. By the end of June *Spirogyra* sp. is usually common in water providing an excellent place for hiding and a source for food for developing tadpoles, which can normally be found within or beneath floating vegetation."

Ross et al. (1993), studying this species along the Wasatch Front, summarized habitats occupied by this species as "wetlands with small, clear, cold-water habitats where shallow water was present with an abundance of herbaceous emergent vegetation." Ross et al. (1994, studying this species in the West Desert (Millard, Juab, and Tooele counties), found considerable variation in temperature, salinity (conductivity), and acidity (pH) in spring habitats utilized by this species in that part of the state, occupied aquatic sites in Tule Valley being relatively warm, saline, and basic (alkaline), while those in Snake and Deep Creek valleys were lower in temperature, conductivity, and acidity.

Trends

Along the Wasatch Front the species is declining precipitously, both in abundance and in distribution. In the West Desert, however, the species seems to be relatively stable.

Threats

Loss and fragmentation of habitat, dewatering (draining, irrigation, and diversion), chemical application (mosquito control, agricultural herbicides), introduced fish predators (trouts in the Wasatch Range, mosquitofish in both the Wasatch Range and the West Desert), cattle (overgrazing and disturbance of aquatic habitats), introduced frog predators and competitors (bullfrogs and northern leopard frogs).

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

YAVAPAI LEOPARD FROG

Rana yavapaiensis

State Taxonomic Comments

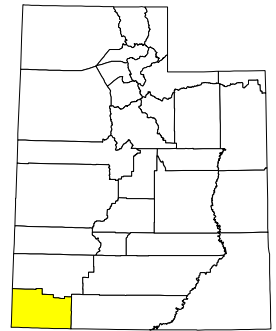
This species has been called the lowland leopard frog by some authors (Stebbins 1985, Platz 1988).

State Subspecies

No subspecies have been proposed (i.e., species is monotypic).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources: population, distribution, and/or habitat	Sensitive--declining



Natural Heritage Ranking

Global Rank: G3 State Rank: SH

Natural Heritage Ranking Summary

In Utah known only from the Virgin River drainage in Washington County. Probably no longer exists in Utah, except as part of a hybrid swarm involving at least three species of leopard frogs. If extant in Utah, so rare that recent surveys for leopard frogs within its historical range in Washington County have failed to detect it. Habitat loss, hybridization, and predation by exotic frogs, fishes, and turtles all may have contributed to its demise.

Estimated Number of Populations (Occurrences)

At least one historical occurrence (see Platz 1988).

Abundance

Probably no longer extant in Utah, except perhaps as part of a hybrid swarm; if extant in Utah, so rare that 3 recent surveys for leopard frogs in its

historical range in the Virgin River drainage of Washington County have failed to detect it (Platz 1984, Jennings et al. 1995, Fridell in Jennings et al. 1995).

Range in Utah

Known in Utah only from the Virgin River drainage in Washington County.

County

Status

Washington

Native and natural, presumed extirpated

Ecoregion

Status

Mojave Desert

Native and natural, presumed extirpated

Habitats Utilized in Utah

This species is believed to have been extirpated from Utah before it was recognized as a species distinct from other leopard frogs that occur or occurred in Utah; thus, almost nothing has been written about it or its habitats in this state. However, in the publication in which this species was described as new and named, Platz and Frost (1984) observed: "The new form is primarily a low elevation frog; most populations are found at less than 1,000 m. They occur in ponds and stream pools" Platz (1988) reiterated: "Most populations occupy ponds, and stream and river pools at low elevations (below 1000 m) in scrub desert They are most abundant where pools are deep enough to provide a haven from predators."

Stebbins (1985) wrote: "Frequents desert, grassland, oak and oak-pine woodland, entering the permanent pools of foothill streams, overflow ponds and side channels of major rivers, permanent springs, and, in drier areas, more or less permanent stock tanks. Usually stays close to water. ... Near sea level to about 4800 ft. (1460 m)." The historical distribution of this species in Utah (only along the Virgin River in southwestern Washington County), however, would fit more closely the narrower habitat description of Platz (1988) than the broader one given by Stebbins (1985).

Trends

If still extant in Utah, presumably experiencing a precipitous decline.

Threats

Alteration (dewatering, diversions, etc.) and destruction (development, grazing,

etc.) of aquatic/riparian habitats in the Virgin River drainage in Washington County; hybridization with other, probably translocated, leopard frogs; predation by and competition with bullfrogs; predation (especially on eggs and tadpoles) by exotic fishes and turtles.

Inventory Needs

Further inventory needed either to confirm extirpated status or to reveal the presence of the species in Utah.

Other Considerations

Platz (1984) mentioned that of 14 specimens of adult leopard frogs collected at Berry Springs, Washington County, 20 April 1950, 6 were *R. onca*, 1 was *R. pipiens*, and "The remaining 7 adult specimens represent a spectrum of hybrids exhibiting intermediate and conflicting morphology. This was particularly true with respect to dorsolaterals [sic] folds which were often as long as they are in *R. pipiens* but distinctly indented at the posterior extremes as they are in the Arizona lowland species [*R. yavapaiensis*] ... [and] ... males lacked vestigial oviducts typical of *pipiens*. ... It is apparent...from the range of trait expression among the hybrids that as many as three species may have participated in their formation."

Reptiles

DESERT TORTOISE

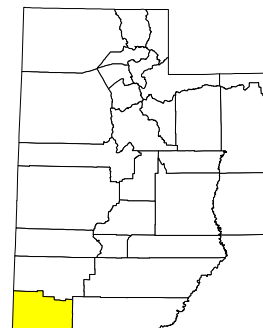
Gopherus agassizii

State Subspecies

No subspecies are recognized in this species. However, several recent studies have shown distinctive geographical variation within this species, which suggests that subspecies may be warranted; it may eventually be shown that this taxon actually contains more than one species.

Agency Status

US Fish and Wildlife Service:	Listed Threatened in Utah
US Forest Service Region 4:	Threatened
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G3 State Rank: S1

Natural Heritage Ranking Summary

A Mojave Desert endemic; occurs in Utah only in an area of about 80 square miles in southwestern Washington County. The small population of about 788 individuals is down from about 2,000 individuals a few decades earlier and is experiencing high mortality. The greatest threats in Utah are livestock grazing and habitat loss.

Estimated Number of Populations (Occurrences)

Atleast three populations (Beaver Dam Slope, Paradise Canyon and hills just north of St. George).

Abundance

Coombs (1977?) estimated "a grand total of 788 tortoises [*G. agassizii*] in the state of Utah"; however, the methods used in obtaining this estimate, while rigorous, suggest nonetheless that the estimated number may be greater than the actual population.

Range in Utah

Occurs in Utah only in an area of about 80 square miles in Washington County: naturally on the Beaver Dam Slope, probably introduced in Paradise Canyon and in the hills just north of St. George (Coombs 1977?).

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed the "breeding" habitats of this species in Utah as Mojave Desert, barren habitats, shrub/brush, and rodent burrows, and "nonbreeding" (presumably marginal) habitats as further including "sand dunes or soft sandy areas", "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, gravel and scarce vegetation", "spring-fed seeps and small creeks with permanent flow", and "sagebrush, rabbitbrush".

Trends

Coombs (1977?) found that mortality was high--exceeding natality--in the one natural Utah population (Beaver Dam Slope). Half a century ago Woodbury and Hardy (1948) had warned that the Utah population of this species was declining. The Beaver Dam Slope probably formerly supported a population of about 2,000 individuals, but in recent years this population has been reduced to about 350 native individuals (plus 68 released captives) (Woodbury and Hardy 1948, Coombs 1977?). Coombs (1977?) considered the population to be "5.7 times lower than what the area might be capable of sustaining."

Threats

Livestock (cattle) grazing is considered to be the greatest threat, through direct competition for food as well as trampling of food resources, destruction of habitat (including shelter), and mortality (trampling, especially of young); however, habitat fragmentation and loss through development, such as the residential development taking place adjacent to Paradise Canyon, may be as great a threat as grazing. Other serious threats include predation (especially by swift/kit foxes, but also coyotes, common ravens, domestic and feral dogs, and other species); disease (particularly upper respiratory tract disease);

collecting; shooting; road mortality; off-road vehicles (mortality and destruction of habitat); horse-back riding (trampling).

Other Considerations

"A distinct shell phenotype occurs in the Beaver Dam Slope region" but not in the areas north of St. George or in other areas of the Mojave Desert (Brussard et al. 1994), suggesting that the Beaver Dam Slope population may be genetically distinct from all other populations.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

WESTERN BANDED GECKO

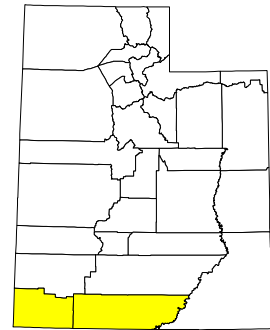
Coleonyx variegatus

State Subspecies

The race that occurs in Utah is *Coleonyx variegatus utahensis*. The type locality of this subspecies, described by Klauber (1945), is "Watercress Spring, Washington County, Utah", which is about 1 mi. northwest of St. George. The holotype, no. 35792 in the collection of the San Diego Society of Natural History, was collected 16 April 1941 by Ross Hardy.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in Utah only in the southern (mainly southwestern) part of Washington County, where it is not uncommon, and in extreme southwestern Kane County.

Estimated Number of Populations (Occurrences)

Probably seven or more occurrences in Utah (see dot map in Dixon 1970).

Abundance

Moderately common in its restricted habitat within its limited range in Utah.

Range in Utah

In Utah only in the southwestern corner of the state. Most Utah records are from southern (especially southwestern) Washington County; at least one record from southwestern Kane County (see dot map in Dixon 1970).

County

Status

Washington
Kane

Native and natural, presence confident
Native and natural, presence confident

Ecoregion

Status

Mojave Desert
Colorado Plateau

Native and natural, presence confident
Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) considered the "breeding" habitats of this species in Utah to be Mojave Desert, barren habitat, shrub/brush, and rodent burrows and the "nonbreeding habitat" (presumably marginal habitat) in Utah additionally to include grassland and pinyon-juniper. Woodbury (1931) made the comment: "Found mostly in the Lower Sonoran Life Zone."

Trends

Utah population probably is stable.

Threats

Probably not very threatened in Utah.

Inventory Needs

Inventory needed in southern Kane County to clarify extent of distribution and abundance.

Other Considerations

Woodbury (1931) mentioned: "The American Museum [of Natural History] had a specimen labeled Farmington, Davis County, but it has since disappeared. The

record may be open to question as it is doubtful whether it ranges that far north; however, being secretive and nocturnal in its habits, it may have escaped collectors for many years." The record referred to is almost certainly erroneous, there being virtually no chance that the species occurs in northern Utah. If a specimen was in fact collected in Farmington, it would have been an escaped captive; more likely the locality data were in error.

Woodbury (1931) also commented: "It would be interesting to know whether it extends into southeastern Utah along the Colorado River." However, in view of recent knowledge of the distribution of this species (see Dixon 1970), it seems very unlikely that this species occurs in southeastern Utah.

Schwinn and Minden (1979) strongly suspected that this species occurs in "latilong" block 14--roughly northwestern Iron, western Beaver, and southwestern Millard counties--but this, too, is highly unlikely.

ZEBRA-TAILED LIZARD

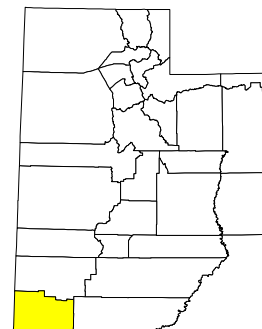
Callisaurus draconoides

State Subspecies

The race that occurs in Utah is *Callisaurus draconoides rhodostictus* (see Collins 1990, Behler and King 1979, Schwinn and Minden 1979); Stebbins (1985), however, seemed not to recognize the race *Rhodostictus* and would assign the Utah population to the type race, *Callisaurus draconoides draconoides*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

A desert species that enters Utah only in the southwestern corner of the state in southern and western Washington County and possibly extreme southwestern Kane County.

Estimated Number of Populations (Occurrences)

Probably at least six occurrences.

Abundance

Reported to be common in the rather restricted area of its occurrence in the state.

Range in Utah

Occurs in Utah in the southern and western parts of Washington County (Schwinn and Minden 1979, Behler and King 1979, Stebbins 1985); possibly in extreme southwestern Kane County as well.

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed "breeding" habitats of this species in Utah as Mojave Desert, barren habitats, deciduous habitats, and desert shrub (saltbush, greasewood, etc.), and "nonbreeding" (marginal?) habitats as also including "sand dunes or soft sandy areas" and "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation".

Trends

Population trend in Utah unknown.

Threats

Threats in Utah not known.

Inventory Needs

Inventory needed to clarify range in Utah, particularly whether it occurs in southwestern Kane County.

DESERT IGUANA

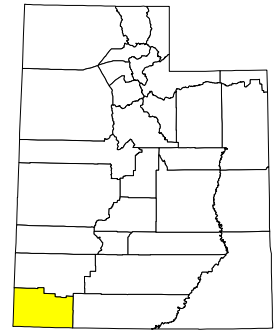
Dipsosaurus dorsalis

State Subspecies

The nominate or type race, *Dipsosaurus dorsalis dorsalis*, occurs in Utah.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

A Mojave Desert endemic that barely enters Utah in the southwestern corner of Washington County. The species is primarily herbivorous and in Utah occurs only in the bottom of Beaver Dam Wash, where its plant foods are limited. Competition with cattle for food is probably a serious threat, and cattle are destructive to the restricted habitat of the bottom of the wash.

Estimated Number of Populations (Occurrences)

One Utah occurrence (i.e., population).

Abundance

Coombs (1977?) calculated "an estimated population of 250 desert iguanas in Utah"; the actual population in Utah may be less than this estimate, for Coombs (1977?) actually observed only 13 individuals.

Range in Utah

Barely enters Utah in the extreme southwestern corner of Washington County. Coombs (1977?) summarized Utah distribution as: "found only in the lower area of the Beaver Dam Wash flood plain, 2.5 [miles] (4[.]0 km.) north into Utah from the Arizona border. The total inhabited area in Utah is about two square miles, (5.2 km. square). They have been observed only in the bottom of the wide flood plain of the Beaver Dam Wash from the Arizona border up to the Beaver Dam Well."

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Coombs (1977?) described the habitat of this species in Utah as "... silt loam floodplain with scattered clumps of desert willows, creosote bush, and some rabbit brush. Occasional mesquite trees are found in some places near steep banks." He also noted that these lizards "are often found basking in the sun on a rock, a dead trunk of a cottonwood or near a brush pile in the open"

Schwinn and Minden (1979) listed "breeding" habitats in Utah as barren habitats and desert shrub (saltbush, greasewood, etc.), and "nonbreeding" (marginal?) habitat as additionally including "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation".

Trends

Historical dewatering of Beaver Dam Wash, formerly a perennial stream but now completely dry below Snow's Ranch, may have favored this species (Coombs 1977?).

Threats

Coombs (1977?) commented: "Livestock competition with desert iguanas [which are primarily herbivorous] is probably a serious threat, where cattle are concentrated at a water hole like the Beaver Dam Well trough. The food species are not abundant along the flood plain" Coombs mentioned that cattle also

"destroy burrows, disturb the lizards and may disrupt social structures." He further warned that "any collecting of desert iguanas should be regulated."

Inventory Needs

Coombs (1977?) commented: "Certainly more information is needed, and a study of [desert iguana] populations, distribution and habitat requirements should be initiated in order to more fully understand their status and provide proper management."

CHUCKWALLA

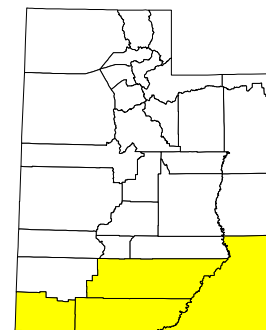
Sauromalus obesus

State Subspecies

Two races occur in Utah: the type race, *Sauromalus obesus obesus*, in Washington County, and *Sauromalus obesus multiforminatus*, in Kane, Garfield, and San Juan counties. The race *multiforminatus* was described from Utah by Tanner and Avery (1964), the type locality being "North Wash, 11 miles northwest of Hite, Garfield County", where the holotype, Brigham Young University no. 11376, was collected 9 June 1954. (Tanner and Avery [1964] added as a footnote to the type locality: "Since Hite and the road north to the mouth of North Wash will be inundated by Lake Powell, the type locality can be specified as 6.4 miles SE of Hog Springs.") Although Tanner and Avery (1964) designated a common name for the new race *multiforminatus*, calling it the "Upper Colorado River chuckwalla", others (e.g., Stebbins 1985, Collins 1990) have not honored this common name assigned by the authors of the subspecies, perhaps because of the awkwardness of its excessive length and perhaps rightfully so--no common name needs to be four words when the longest of scientific names, trinomials, are only three; instead this race has been called, more economically, the Glen Canyon chuckwalla. (It could be argued that assigning unique common names to races is itself superfluous or unnecessary.)

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

Primarily a Mojave Desert species; a habitat specialist with a patchy distribution;

occurs in Utah in south-central and southwestern Washington County and along Glen Canyon in extreme eastern Kane and Garfield counties and extreme southwestern San Juan County. Glen Canyon populations reduced or eliminated by inundation of their habitat by the damming of the Colorado River creating Lake Powell. Threatened by collecting and by persecution, sometimes being confused with the gila monster.

Estimated Number of Populations (Occurrences)

At least 6 occurrences in Washington County (see map in Coombs 1977?); probably at least 6 occurrences in Kane, Garfield, and San Juan counties.

Abundance

Coombs (1977?) calculated a maximum estimated population in Washington County of 65,000, but this was based on range, which included unoccupied habitat, and the assumption that occupied habitat was optimum, which was untrue; thus he concluded that an estimate of 10,000-15,000 was more realistic. Abundance in Kane, Garfield, and San Juan counties unknown but likely less than in Washington County.

Range in Utah

South-central and southwestern Washington County (Coombs 1977?); areas along Glen Canyon in extreme eastern Kane and Garfield counties and extreme southeastern San Juan County (Tanner and Avery 1964).

County

Status

Washington	Native and natural, presence confident
Kane	Native and natural, presence confident
Garfield	Native and natural, presence confident
San Juan	Native and natural, presence confident

Ecoregion

Status

Mojave Desert	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Prefers basalt formations found throughout much of the eastern end of the hot desert system in Utah; also in layered sandstone shelves; in limestone formations, but uncommon, in Beaver Dam Mountains (Coombs 1977?).

Schwinn and Minden (1979) listed the "breeding" habitats of the race *S. o. obesus* in Utah as barren habitats, riparian habitats, and desert shrub (saltbush, greasewood, etc.), and the "nonbreeding" (marginal?) habitats as additionally including "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, gravel and scarce vegetation" and rocky cliffs or cliff faces. For the race *S. o. multiformatus* they stated the "breeding" habitat as "gravel beds ... or rocky areas ... and scarce vegetation" and the "nonbreeding" habitat as barren habitats.

This is a saxicolous species, always associated with boulders, rocky slopes, or cliffs. Some of the habitats listed by Schwinn and Minden (1979) are misleading; for example, the occurrence of this species in riparian areas is due solely to the cliffs and boulder-strewn slopes that often are present in or near riparian habitats.

Trends

Population trend in Utah not known; perhaps stable.

Threats

Coombs (1977?) considered collecting to be the greatest threat; however, he mentioned that "Many people in the area mistake them for gila monsters" and speculated that persecution, based on misidentification, was also a threat. In the Glen Canyon area, loss of habitat resulting from the damming of the Colorado River that created Lake Powell has reduced or eliminated populations.

Inventory Needs

Inventories of Glen Canyon populations needed in order to ascertain whether any are extant since the filling of Lake Powell.

Other Considerations

Though the species is herbivorous, Coombs (1977?) concluded: "Grazing probably has little effect, as cattle avoid the steep and rocky areas inhabited by chuckwallas. In

some cases in the lower areas, livestock may compete for forbs, but the total direct competition would be minor." However, domestic and feral goats, and perhaps sheep and burros, would be more likely to compete with and degrade the habitat of chuckwalla than would cattle.

MANY-LINED SKINK

Eumeces multivirgatus

State Taxonomic Comments

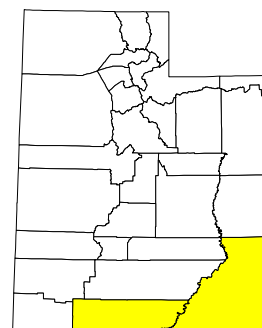
This species was formerly known as *Eumeces gaigeae* (or *gaigei*) and the race that occurs in Utah has been variously called *gaigeae* or *epipleurotus* (see Mecham 1957, 1980 for discussion).

State Subspecies

The race that occurs in Utah is called either *Eumeces multivirgatus gaigeae*, if one follows Collins (1990), or *Eumeces multivirgatus epipleurotus*, if one follows Mecham (1980), who has argued persuasively that the latter is the correct name for this race. Mecham (1980) has also noted: "Further analysis of geographic variation and reassessment of geographic races is needed."

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in Utah in the southern part of the state, probably only the southeastern corner (southern San Juan County and eastern Kane County), but more information is needed regarding its distribution and abundance in Utah.

Estimated Number of Populations (Occurrences)

Possibly six or more occurrences. Mecham (1980, dot map) indicated only two localities in Utah.

Abundance

Although Schwinn and Minden (1979) considered this species to be abundant in Utah, this is unlikely. If the species were abundant in Utah, it is somewhat surprising that it had not yet been detected in the state at the time of Woodbury's (1931) review of Utah reptiles. However, local abundance of this species in Utah is suggested by Maslin's (1957) report of the collection of eight individuals at one locality, apparently in one day.

Range in Utah

This species has been considered by most authors (see, for example, Behler and King 1979, Mecham 1980, Stebbins 1985) to occur in Utah in southern San Juan and eastern Kane counties. Schwinn and Minden (1979), however, indicated its presence in the state not only in "latilong" block 23 (most of southeastern San Juan County) but also in block 20 (western one-third to one-half of Kane, southwestern Garfield, southeastern Iron, and extreme eastern Washington counties), while indicating its absence from the intervening blocks 21 (extreme southwestern San Juan, eastern Kane, and central Garfield counties) and 22 (western San Juan and eastern Garfield counties). Its occurrence in "latilong" block 20 in southwestern Utah should be considered tentative, pending better documentation, and its absence from blocks 21 and 22 in extreme south-central Utah (i.e., from extreme southwestern San Juan County and southeastern and south-central Kane County) likewise should be considered uncertain.

County

Status

San Juan
Kane

Native and natural, presence confident
Native and natural, presence probable

Ecoregion

Status

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed habitats of this species in Utah as coniferous forest and shrub/brush. Maslin (1957) reported the habitat at a locality in Utah, "alt. abt. 8,300'", where he collected eight individuals: "The Utah specimens were ... found under rocks in a mesic situation, where yellow pines and scrub oaks formed an open forest. In clearings between trees where loose rocks were present surrounded by grass, either on the banks of the narrow canyon or its floor, one could expect to find [many-lined] skinks. A small temporary stream runs through this canyon"

Trends

Population trend in Utah unknown.

Threats

Probably not very threatened in Utah, but actual threats in this state are not known.

Inventory Needs

Inventory needed throughout southern Utah to resolve questions of abundance and exact distribution in Utah.

PLATEAU STRIPED WHIPTAIL

Cnemidophorus velox

State Taxonomic Comments

The genus *Cnemidophorus* was long considered one of the most problematical groups, taxonomically and systematically, of all animals inhabiting North America. As a result of the historical difficulty in understanding relationships within this group, nomenclature applied to the taxa within this genus in the scientific literature prior to the 1970s is distressingly inconsistent and confusing.

Woodbury (1928, 1931) discussed *Cnemidophorus gularis*, which he called the Sonoran whiptail lizard, in Utah. As the species of *Cnemidophorus* are now understood, *Cnemidophorus gularis*, the Texas spotted whiptail, does not occur anywhere near the state of Utah, and Woodbury was almost certainly discussing under that name the organism now known as *Cnemidophorus velox*, even though *Cnemidophorus velox* was known and named during Woodbury's time (i.e., 1928). Woodbury (1931) provided a photograph (his Figure 2) that he labelled "*Cnemidophorus gularis*". The lizard in the photograph clearly is not *Cnemidophorus gularis* as currently defined; it appears to be *Cnemidophorus velox* and, if it was found in Utah, is definitely the latter species.

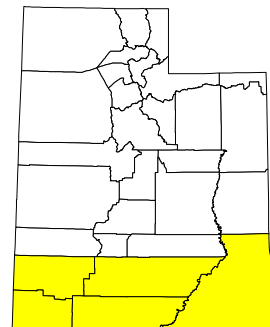
It should be noted that, strictly speaking, *Cnemidophorus velox* is not a species but an asexual clone.

State Subspecies

This "species" is monotypic (i.e., has no subspecies). [As mentioned elsewhere, it is not truly a species but an asexual clone.]

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5

State Rank: S3

Natural Heritage Ranking Summary

Occurs on the Colorado Plateau in roughly the southeastern one-quarter to one-third of Utah, where it is thought to be not uncommon. (Note: this "taxon" is not truly a species; it is an asexual, parthenogenetic clone.)

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences. Woodbury (1931) listed six Utah localities for *Cnemidophorus gularis*, a species that does not occur near Utah; it is very likely that these records actually represent *Cnemidophorus velox*. Woodbury's (1931) Figure 2 is a photograph labelled "*Cnemidophorus gularis*". The individual shown in the photograph is definitely not *Cnemidophorus gularis* as this species is now defined and appears to be *Cnemidophorus velox*; if the individual was found in Utah (which is not stated), it is definitely *Cnemidophorus velox*.

Abundance

Probably not uncommon within its range in Utah. For example, reported to be common throughout Natural Bridges National Monument (Persons 1992).

Range in Utah

Occurs in Utah in roughly the southeastern one-third or one-quarter of the state (see Behler and King 1979, Schwinn and Minden 1979, Stebbins 1985). Woodbury's (1931) six Utah localities for *Cnemidophorus gularis*, which almost certainly represent this species (*C. velox*), are in San Juan, Iron, and Washington counties.

County

Status

Washington	Native and natural, presence confident
San Juan	Native and natural, presence confident
Iron	Native and natural, presence confident
Kane	Native and natural, presence probable
Garfield	Native and natural, presence possible

Ecoregion**Status**

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Woodbury (1931), discussing this species under the name "*Cnemidophorus gularis*" stated: "In Utah it appears to be restricted to the upper and lower Sonoran Zones, mostly in the low foothills and canyons, among the trees and brush." Schwinn and Minden (1979) listed "breeding" habitats of this species in Utah as shrub/brush, barren habitats, pinyon-juniper, and ponderosa pine, and "nonbreeding" (marginal?) habitats as additionally including riparian, floodplain, stream, etc., situations.

Trends

Population trend in Utah not known--probably stable.

Threats

Probably not very threatened in Utah.

Other Considerations

This "taxon", although bearing a scientific name as though it were a species, is not truly a species but rather a clone. It is unisexual (all-female), reproducing parthenogenetically. Females lay unfertilized eggs, which develop into exact copies or clones of their parent, and presumably all "individuals" are genetically identical replicates of a single female ancestor believed to have been the result of hybridization of two sexual species of *Cnemidophorus*.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

DESERT NIGHT LIZARD

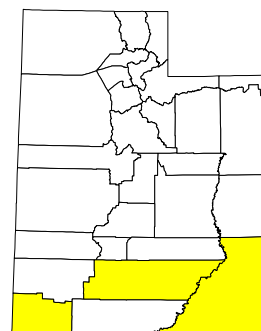
Xantusia vigilis

State Subspecies

Two races of this species occur in Utah, one of them being endemic to the state. The type (or nominate) race, *Xantusia vigilis vigilis*, occurs on the Beaver Dam Slope in extreme southwestern Washington County. The race *Xantusia vigilis utahensis* is endemic to eastern Garfield County and western San Juan County. It was described by Tanner (1957), the type locality being "approximately 20 miles northwest of Hite in North Wash, Garfield County, Utah." The holotype, an adult female collected 10 June 1954 by W. W. and W. L. Tanner, is in the collection of Brigham Young University, specimen number 11733.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

Occurs in two small areas in Utah: the extreme southwestern corner of the state in Washington County and an area on both sides of the Colorado River in eastern Garfield and western San Juan counties, the latter population being disjunct and taxonomically distinct.

Estimated Number of Populations (Occurrences)

Probably more than five occurrences. Bezy (1982, dot map) indicated five localities in Utah.

Abundance

Though secretive and thus difficult to detect, apparently not uncommon in the limited areas of their occurrence in Utah.

Range in Utah

This species occurs in two limited areas in Utah: Beaver Dam Wash in extreme southwestern Washington County (apparently continuous with the main Mojave Desert distribution of this species), and a small area on both sides of the Colorado River in eastern Garfield County and western San Juan County inhabited by a disjunct and taxonomically distinct race.

<u>County</u>	<u>Status</u>
San Juan	Native and natural, presence confident
Washington	Native and natural, presence confident
Garfield	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed habitats of this species in Utah as shrub/brush, Mojave desert, gravel beds or alluvial deposits or rocky areas, and in woodrat houses and beneath Joshua tree logs, and "nonbreeding" (presumably marginal) habitats as also including desert shrub (saltbush, greasewood, etc.).

Trends

Population trend in Utah unknown--perhaps stable.

Threats

Coombs (1977?) seemed not to consider this species to be very threatened in the Beaver Dam Wash; he stated: "No management practices for these tiny creatures are proposed." He also expressed the opinion that grazing may benefit this species by favoring woodrats, the nests of which he found to be important shelter for night lizards.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

GILA MONSTER

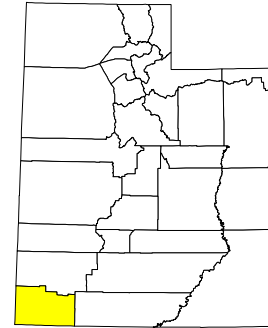
Heloderma suspectum

State Subspecies

The race that occurs in Utah is *Heloderma suspectum cinctum*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G4

State Rank: S1

Natural Heritage Ranking Summary

Occurs in Utah only in a 30-square-mile area in south-central Washington County, where urban expansion and collecting are the main threats to the species. The range of the species in Utah is now only one-third to one-fourth the area probably formerly occupied, and the population probably is one-sixth, or less, its historical level.

Estimated Number of Populations (Occurrences)

About eight occurrences. Coombs [1977?] reported: "There are eight major areas that are classified as prime gila monster habitat: Paradise Canyon, St. George Hills, Washington, Red Cliffs, Bloomington, Snow Canyon, Ivins and Sand Mountain populations."

Abundance

Coombs (1977?) stated that "There is an estimated population of 400-500 gila monsters in the state of Utah" or "an estimated 450 gila monsters".

Range in Utah

South-central Washington County. Coombs (1977?) commented: "Utah provides the most northern range for the gila monster. The Utah range is unique in that specific habitat types are most preferred. The red sandy areas around St. George, all part of the Virgin River system, provide the habitat ... for gila monsters." He mapped the range of the species in Utah as an irregular area including St. George, Washington, and Harrisburg Junction and extending northeast to Leeds, east to Laverkin and Hurricane, west to Santa Clara and Ivins, and south to within about half a mile of the Arizona boundary in two places (southeast and southwest of St. George). Schwinn and Minden (1979), however, mentioned "Beaver Dam Wash to Nevada state line", an area not included by Coombs in the Utah range of this species, as well as "Paradise Valley", an area emphasized by Coombs (which he called "Paradise Canyon") as having the highest population density of this species in the state.

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Coombs (1977?), discussing the habitat of this species in Utah, wrote: "The major aspects of [its Utah] habitat are large rock shelves, mostly Navajo sandstone and basalt flows, sandy areas, and creosote-old man sage associations. The important plant species are *Artemesia* [sic] *filifolia*, *Franseria dumosa*, *Ephedra nevadensis*, *Larrea tridentata*, *Querous* [sic] *turbanella*, *Krameria parvifolia*, *Dalea fremonti*, and *Eriogonum fasciculum*."

Schwinn and Minden (1979) listed the "breeding" habitats of this species in Utah as shrub/brush, barren habitats, Mojave Desert, and riparian habitats, and the "nonbreeding" (marginal?) habitats as additionally including sand dunes, desert shrub (saltbush, greasewood, etc.), rocky cliffs, and "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation".

Trends

Coombs (1977?) reported an estimated Utah population of 450 (400-500) individuals inhabiting about 30 square miles, down from an estimated historical population of 3,000 individuals that inhabited 108 square miles. These estimates, if accurate, represent a shocking loss of inhabited range (> 72% loss) and population (85% loss) in Utah.

Threats

Coombs (1977?) stated: "The primary reasons for the decline of the gila monster [in Utah] are habitat encroachment by civilization and collecting. Universities are probably the primary source of gila monster depredation."

Inventory Needs

Inventory and monitoring of the current population and occupied range of this species in Utah is needed, especially in view of its reported drastic decline in this state. Surveys in the area between Beaver Dam Wash and the Nevada state line particularly are needed to resolve the question, resulting from conflicting reports, of whether the species is present in this area.

WESTERN BLIND SNAKE

Leptotyphlops humilis

State Taxonomic Comments

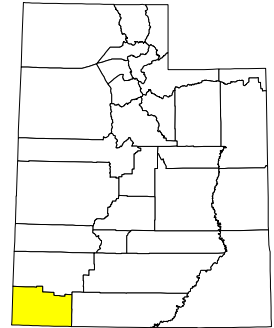
The first report of this species in Utah (Tanner 1935) referred to this species as *Siagonodon humilis*, the western worm snake. When the race *utahensis* was described, it was given the common name Utah worm snake.

State Subspecies

The race that occurs in Utah is *Leptotyphlops humilis utahensis*, which was described from Utah, the type locality being "east of the sugar loaf at Saint George, Washington County, Utah" (Tanner 1938), where the holotype, number 662 in the collection of Brigham Young University, was collected 28 April 1938.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

A species of the southwest deserts of North America that reaches its northernmost distributional limit in extreme southwestern Utah, where it occurs only in Washington County.

Estimated Number of Populations (Occurrences)

Probably at least six occurrences in Utah. Hahn (1979) mapped two locality records in Utah (in extreme southwestern Washington County).

Abundance

Abundance unknown but presumed to be low due to restricted range in Utah. Tanner (1935) reported one Utah individual (the first discovered in the state), and Tanner (1938) reported seven Utah specimens (the type series of the race *Leptotyphlops humilis utahensis*). Schwinn and Minden (1979) considered this species to be fairly common in Utah, and Cox and Tanner (1995) said that "[i]t appears plentiful" in the limited area of Utah in which it occurs.

Range in Utah

In Utah limited to Washington County where it occurs in much of the county except for the northern (Pine Valley Mountains) and eastern parts (Hahn 1979, Cox and Tanner 1995).

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Tanner (1938), discussing seven Utah specimens of this species, stated: "... occurs ... in the Lower Sonoran belt. ... All specimens were taken in the moist sandy soil." Schwinn and Minden (1979) listed "breeding" habitats in Utah as Mojave Desert, barren habitats, deciduous habitats, and desert shrub (saltbush, greasewood, etc.), and "nonbreeding" (marginal?) habitats also including sand dunes or soft sandy areas, "[g]ravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation", and riparian habitats. Cox and Tanner (1995) said that this species "is [in Utah] restricted to the Mojave Desert portions of Washington County between 2,500 and 4,000 ft (750 to 1,200 m) elevation." They also repeated much of Schwinn and Minden's (1979) list: "It is usually found in desert shrub habitats, where soils are sandy, or in loose, gravelly soils, alluvial deposits, and rocky areas where

loose soils occur at or near where the valley merges into the brushy hillside. The blind snake has also been taken in deciduous riparian habitats"

Trends

Population trend in Utah not known but believed to be stable.

Threats

Threats in Utah not known but believed not to be great.

Inventory Needs

Inventory needed to determine abundance and limits of distribution in Utah.

GLOSSY SNAKE

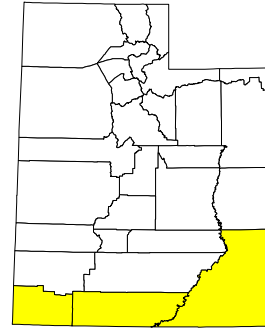
Arizona elegans

State Subspecies

Two races occur in Utah: *Arizona elegans eburnata* in Washington County and *Arizona elegans philipi* in Kane and San Juan counties.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

A secretive species that occurs in extreme southern Utah in southwestern Washington, southeastern Kane, and southwestern San Juan counties.

Estimated Number of Populations (Occurrences)

Probably more than five occurrences (see map in Dixon and Fleet 1976).

Abundance

A secretive species, probably less rare than reports suggest. For example, three individuals were found in a single night on the highway in a valley about 1 mile long (Tanner 1954).

Range in Utah

Occurs in Utah in southwestern Washington, southeastern Kane, and southwestern San Juan counties (Dixon and Fleet 1976, Cox and Tanner 1995).

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Tanner (1954) mentioned that the area where three road-killed individuals were found was in a small valley with "sandy flats on either side" of the highway; sandy substrates, it should be noted, are typical of the habitats occupied by this species throughout its range.

Schwinn and Minden (1979) listed "breeding" habitats in Utah as Mojave Desert, desert shrub (saltbush, greasewood, etc.), sand dunes or soft sandy areas, "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel, and scarce vegetation" and barren habitats, and "nonbreeding" (marginal?) habitats as additionally including Joshua trees and riparian habitats.

Trends

Population trend in Utah not known.

Threats

Threats not known.

Inventory Needs

Inventory needed to determine abundance.

CORN SNAKE

Elaphe guttata

State Taxonomic Comments

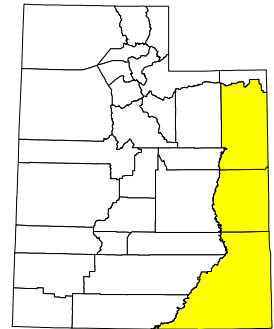
The common name usually applied to the race that occurs in Utah (*E. g. emoryi*) is the Great Plains ratsnake.

State Subspecies

The race that occurs in Utah is *Elaphe guttata emoryi*, often known as the Great Plains ratsnake, which is unfortunate since it obscures the fact that it is merely a named population of the corn snake.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

An eastern species mainly found east of the Rocky Mountains; a disjunct population occurs on the central Utah-Colorado boundary--in Utah only in southeastern Grand and extreme northern San Juan counties.

Estimated Number of Populations (Occurrences)

Probably fewer than six occurrences.

Abundance

Abundance in Utah poorly known but believed to be low. Cox and Tanner (1995) considered it to be "uncommon in the state", as did Schwinn and Minden (1979).

Range in Utah

According to Cox and Tanner (1995, map), known in Utah only from areas near the Colorado River in southeastern Grand and extreme northern San Juan counties. Stebbins (1985), however, stated that this species occurs "[i]n ... e. Utah ... in major valleys of the Colorado R., including Green R. near Colo. border, Uintah Co., Utah." Stebbins (1985) accordingly mapped the distribution of this species in Utah as including northern San Juan County, most of Grand County, possibly southern Uintah County, and a small disjunct occurrence in northeastern Uintah County. It is unclear from Stebbins' map whether he considered this species to occur west of the Green River in Carbon, Emery, Wayne counties, and perhaps west of the Colorado River in Garfield County.

County

Status

Grand	Native and natural, presence confident
San Juan	Native and natural, presence confident
Uintah	Native and natural, presence probable

Ecoregion

Status

Colorado Plateau	Native and natural, presence confident
Uinta Basin	Native and natural, presence probable

Habitats Utilized in Utah

Cox and Tanner's (1995) comment that "little is known about the specific habitat it occupies [in Utah]" seems to be accurate; it is the only reptilian species that Schwinn and Minden (1979) listed as occurring in Utah for which they provided no habitat information whatsoever. Stebbins (1985) stated: "In w. Colo. and e. Utah, found in major valleys of the Colorado R., including Green R." Stebbins (1985), discussing its habitats throughout its range, wrote: "Occurs in a variety of habitats--along stream courses and river bottoms, on rocky wooded hillsides, in canyons and arroyos, and in coniferous forests. May be found on farms."

Trends

Population trend in Utah not known.

Threats

Threats in Utah unknown.

Inventory Needs

Inventory needed to determine abundance and to clarify Utah distribution, especially Stebbins' (1985) assertion that this species occurs in Uintah County.

Other Considerations

Various authors (e.g., Behler and King 1979, Stebbins 1985, Hammerson 1986, Cox and Tanner 1995) noted that the population in west-central Colorado and adjacent east-central Utah is disjunct from the main population of this species east of the continental divide.

COMMON KINGSNAKE

Lampropeltis getula

State Taxonomic Comments

Formerly known as *Lampropeltis getulus* (see, for example, Woodbury 1931, Blaney 1973, Behler and King 1979, Stebbins 1985), and that spelling is still used by some (e.g., Cox and Tanner 1995).

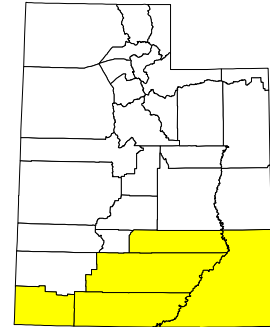
Woodbury (1931) referred to the race that occurs in Utah as *Lampropeltis getulus boylii*.

State Subspecies

The race that occurs in Utah is *Lampropeltis getula californiae*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S3

Natural Heritage Ranking Summary

In Utah occurs only in the south-central and southwestern parts of the state.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences.

Abundance

Probably not uncommon within its range in Utah.

Range in Utah

Occurs in Utah in the southern part of the state: southern Washington County, most of Kane County (except the northwestern part), southeastern Garfield County, and southwestern San Juan County (see Cox and Tanner 1995).

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Kane	Native and natural, presence probable
Garfield	Native and natural, presence probable
San Juan	Native and natural, presence probable
Wayne	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed "breeding" habitats of this species in Utah as Mojave desert, agricultural areas, aquatic habitats (such as streams), deciduous habitat, grassland, desert shrub (saltbush, greasewood, etc.), gravel beds, alluvial deposits, or rocky areas, and pinyon-juniper, and "nonbreeding" (marginal?) habitats as also including shrub/brush and ponderosa pine. Cox and Tanner (1995) seem simply to have repeated most of the habitats given by Schwinn and Minden (1979); they did, however, add the interesting comment: "Desert shrub that is adjacent to agricultural areas is an ideal habitat."

Trends

Population probably stable in Utah, but trend not definitely known.

Threats

Probably not very threatened in Utah. Collecting may be the greatest threat in this state.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

SONORAN MOUNTAIN KINGSLAKE

Lampropeltis pyromelana

State Taxonomic Comments

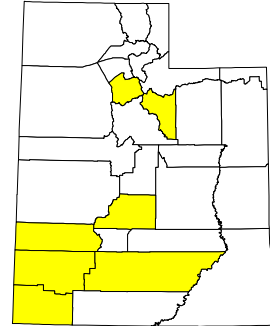
Woodbury (1931) referred to this species as the Arizona king snake.

State Subspecies

The race that occurs in Utah is *Lampropeltis pyromelana infralabialis*, which occurs, so far as is known, only in Utah and Nevada. This race was described by Tanner (1953). The type locality is "[Beaver Canyon,] Beaver County, Utah." The holotype is an adult male, specimen number 10340 in the collection of Brigham Young University, collected in August 1940 by R. Liechty.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population, distribution, add/or habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

This species reaches the northern limit of its range in Salt Lake County and occurs south through the high central plateaus to the Pine Valley Mountains of the southwestern corner of the state as well as in the Wah Wah Mountains of southwestern Utah. It is considered uncommon, collecting being its greatest threat.

Estimated Number of Populations (Occurrences)

Tanner (1983, dot map) indicated 12 localities in Utah.

Abundance

Thought to be uncommon in Utah, as elsewhere. Tanner (1941) reported meristic and mensural data for five specimens, presumably from Utah, in the collections of Brigham Young University and the University of Utah.

Range in Utah

In Utah ranges from the Pine Valley Mountains in the southwestern corner of the state north through the mountains of the central plateaus as far as Salt Lake County, there being a disjunct population in the Wah Wah Mountains of southwestern Utah. Woodbury (1931) listed records from Salt Lake, Beaver, Iron, and Washington counties, and Tanner (1941) reported a locality in Wasatch County as well as additional localities in Washington County.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Beaver	Native and natural, presence confident
Iron	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Garfield	Native and natural, presence probable
Sevier	Native and natural, presence probable
Wasatch	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed the habitats of this species in Utah as coniferous forest, riparian habitats, sagebrush and rabbitbrush, and scrub oak, mountain mahogany, etc. Cox and Tanner (1995) observed that "[i]t is found in the mountains of the state ranging to about 9,000 ft (2,700 m) elevation" and "... is found in moist, forested areas where there is thick cover ..." and "... has also been found near streams in grasslands and riparian and sagebrush regions."

Trends

Population trend in Utah not known--perhaps stable.

Threats

Seemingly not very threatened in Utah except by collecting.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

MILK SNAKE

Lampropeltis triangulum

State Taxonomic Comments

Woodbury (1931) called this species the western king snake, the coral snake, and the coral king snake and assigned Utah specimens to the race *Lampropeltis triangulum gentilis*, which had not been split at that time.

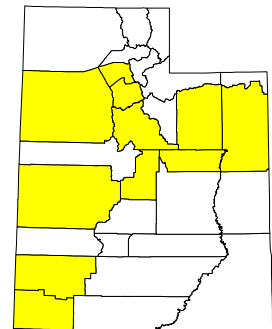
Although most authors have referred to this species in Utah as *Lampropeltis triangulum*, the name *Lampropeltis doliata* was for many years applied to this species by various authors; Tanner and Loomis (1957) used this latter name for this species in Utah.

State Subspecies

The race that occurs in Utah is *Lampropeltis triangulum taylori*, which was described by Tanner and Loomis (1957) as a race of *Lampropeltis doliata*: *Lampropeltis doliata taylori*. The type locality is "approximately 2 miles north of Alpine, Utah County, Utah"; the holotype, an adult female, specimen number 10533 in the collection of Brigham Young University, was collected 24 May 1951 by W. W. Tanner. Prior to the naming of the race *taylori*, Utah populations were considered to be the race *Lampropeltis triangulum gentilis*. Tanner and Banta (1966) called Utah examples of this species *Lampropeltis triangulum utahensis*, which error Williams (1994) has called a lapsus calami--evidently Tanner could not remember the name he had proposed for the new race nine years earlier.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in Utah through the central Utah High Plateaus, the southern Wasatch Mountains, the Uinta Mountains, and the Uinta Basin; considered uncommon in Utah.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences. Williams (1994, dot map) indicated 16 locality records from Utah.

Abundance

Thought to be uncommon in Utah. Tanner (1941) provided meristic data for 13 specimens, presumably all from Utah, in the collection of Brigham Young University.

Range in Utah

In Utah ranges from the southwestern part of the state north through the central Utah High Plateaus to the southern part of the Wasatch Mountains and east through the

Uinta Mountains and the Uinta Basin (see Williams 1994, Cox and Tanner 1995). Woodbury (1931) summarized records from Iron, Sanpete, Utah, Tooele, Salt Lake, Davis, and Uintah counties, and Tanner (1941) added records from Duchesne, Washington, Millard, and Carbon counties as well as additional records from Utah County.

Tanner (1941) opined: "The distribution of this species appears to be state wide, although much collecting must be done to varify [sic] this belief." It seems clear that Tanner's belief regarding statewide distribution of this species was incorrect (see, for example, Cox and Tanner 1995).

County

Status

Washington	Native and natural, presence confident
Iron	Native and natural, presence confident
Sanpete	Native and natural, presence confident
Utah	Native and natural, presence confident
Salt Lake	Native and natural, presence confident

Davis	Native and natural, presence confident
Uintah	Native and natural, presence confident
Tooele	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Millard	Native and natural, presence confident
Carbon	Native and natural, presence confident

Ecoregion

Status

Utah High Plateaus	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed the habitats of this species in Utah as coniferous forest, deciduous habitat, sagebrush and rabbitbrush, and scrub oak, mountain mahogany, etc. Cox and Tanner (1995) mentioned its widespread occurrence, "particularly in the foothills and mountain ranges", and stated: "It does not occur in the more arid desert regions" They also reported: "It inhabits forests and grasslands ... and occurs in riparian areas, rocky hillsides, damp meadows, and brushy habitats."

Trends

Population trend in Utah not known; probably stable.

Threats

Collecting is likely the greatest threat to this species in Utah.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

SMOOTH GREEN SNAKE

Opheodrys vernalis

State Taxonomic Comments

Woodbury (1931) referred to this species as *Liopeltis vernalis*, which he called the grass snake as well as the smooth green snake.

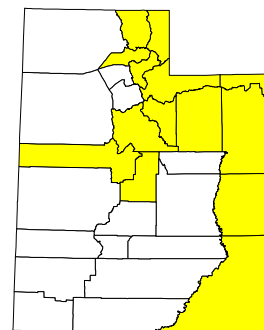
There are many persuasive reasons for splitting the two species of green snakes, the rough (*aestivus*) and the smooth (*vernalis*), which have long been considered congeneric, into separate genera. Under such an arrangement, the species *vernalis* is removed from the genus *Opheodrys* and placed in the genus *Liochlorophis*, and many workers in the herpetological community are using this taxonomic arrangement. Cox and Tanner (1995) are among those who have followed this new arrangement of the green snakes, using the name *Liochlorophis vernalis* in discussing the smooth green snake in Utah.

State Subspecies

No subspecies are currently recognized in this species (i.e., the species is monotypic). Two nominal races were formerly recognized, populations in Utah having been referred to the race *Opheodrys vernalis blanchardi*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5

State Rank: S3

Natural Heritage Ranking Summary

Moderately widespread in Utah in the Wasatch Mountains, the Uinta Mountains, the La Sal Mountains, the Abajo Mountains, and the East Tavaputs Plateau. Thought to be uncommon in Utah.

Estimated Number of Populations (Occurrences)

Possibly more than 20 occurrences.

Abundance

Schwinn and Minden (1979) considered this species to be uncommon in Utah. Cox and Tanner (1995) commented: "Because of its secretive behavior, it has been considered rare."

Range in Utah

Occurs in Utah in the Wasatch and Uinta Mountains, the Abajo Mountains, the La Sal Mountains, and the East Tavaputs Plateau (see map in Cox and Tanner 1995).

<u>County</u>	<u>Status</u>
Utah	Native and natural, presence confident
Uintah	Native and natural, presence confident
San Juan	Native and natural, presence confident
Grand	Native and natural, presence probable
Duchesne	Native and natural, presence probable
Daggett	Native and natural, presence probable
Summit	Native and natural, presence probable
Wasatch	Native and natural, presence probable
Morgan	Native and natural, presence probable
Rich	Native and natural, presence probable
Cache	Native and natural, presence probable
Weber	Native and natural, presence probable
Juab	Native and natural, presence possible
Sanpete	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence probable
Uinta Basin	Native and natural, presence possible

Habitats Utilized in Utah

Schwinn and Minden (1979) gave the habitats of this species in Utah as mountain meadows, parks, and semidesert grasslands, and marshes, wetlands, swampy river bottoms, etc. Cox and Tanner (1995) called this species a "mountain snake" stating: "It is most common to mountain forests and in or near shrubs and low trees along water courses." They further noted that it hides "under rocks or other naturally occurring litter at the margins of forest streams and meadows."

Trends

Population trend in Utah not known; probably stable.

Threats

There probably are few threats to this species in Utah.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

SPOTTED LEAF-NOSED SNAKE

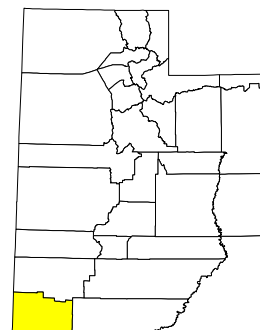
Phyllorhynchus decurtatus

State Subspecies

The nominal race that occurs in Utah is *Phyllorhynchus decurtatus perkinsi*; however, the recognition of subspecies in this species has been questioned. McDiarmid and McCleary (1993), discussing the genus *Phyllorhynchus* and its two named species, wrote: "Although several subspecies of *Phyllorhynchus browni* and *P. decurtatus* currently are recognized, we have doubts as to their evolutionary verity and taxonomic distinctiveness, and question the utility of recognizing certain of them. ... If, after detailed analysis, some populations are shown to be distinct and to have had a separate history, then recognition of subspecies or species may be justified. We believe, however, that after detailed study most of the currently recognized subspecies in each species will be shown to represent color and pattern ecomorphs and provide little toward elucidating the history of the taxa." McCleary and McDiarmid (1993), discussing the species *Phyllorhynchus decurtatus* in particular, repeated this thinking: "Although the subspecies of *Phyllorhynchus decurtatus* listed below are those currently recognized, we have doubts as to the distinctiveness and hence validity of some (perhaps most) of the named populations. ... A detailed review of geographic variation in the Spotted Leaf-nosed Snake, *P. decurtatus*, is long overdue. Once this variation is understood, researchers will be able to determine which subspecies, if any, are deserving of taxonomic recognition." In fact, McCleary and McDiarmid (1993), in mapping the distribution of this species and its subspecies, did not distinguish the ranges of the named races of this species in the United States, including *P. d. perkinsi*, "due to uncertainty in the allocation of specimens from certain areas"

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

A Mojave Desert species that barely enters southwestern Utah on the Beaver Dam Slope in extreme southwestern Washington County. It was first discovered in Utah in 1995 and thus far only one individual has been found in this state.

Estimated Number of Populations (Occurrences)

One occurrence.

Abundance

Only one individual of this species has been documented from Utah; it was found as a road-kill in extreme southwestern Washington County, 11 July 1995 (Bezette 1995). B. Bartholomew (editor's note, in Bezette 1995) stated: "The specimen reported here is the first leafnose snake known from Utah. The animal has been deposited in the Brigham Young University collection BYU # 45605."

The false rumor of the earlier capture of an individual of this species in Utah, prior to the specimen collected in 1995, had circulated "[f]or many years" (see B. Bartholomew, editor's note, in Bezette 1995). Curiously, Schwinn and Minden, 16 years earlier (1979), had indicated, without providing documentation or other notes, that this species was present in the southwestern corner of the state. Whether this was based on the erroneous hearsay referred to by Bartholomew (editor's note, in Bezette 1995) or was mere speculation based on the species' known occurrence nearby in Nevada (see, for example, Stebbins 1966, 1985, Behler and King 1979) is not known; however, it is interesting that they placed this species at the very end of their list of the herptiles of Utah, out of phylogenetic sequence and following two exotic species of turtles also out of sequence, suggesting that it was a very late addition to their list. McDiarmid and McCleary (1993) and McCleary and McDiarmid (1993) apparently did not credit the occurrence of this species or this genus in Utah as indicated by Schwinn and Minden (1979), for they did not map the range of either the species or the genus, even hypothetically, as entering Utah. Like Bartholomew (editor's note, in Bezette 1995), Cox and Tanner (1995) referred to the specimen collected in July 1995 as "[t]he first and only snake of this species verified from Utah".

Range in Utah

Known in Utah from only one locality, on old highway 95 approximately 1.5 miles north of the Arizona boundary, on the Beaver Dam Slope, 2,400 ft. elevation, extreme southwestern Washington County (Bezette 1995, Cox and Tanner 1995).

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

The only report documenting the presence of this species in Utah (Bezette 1995) did not provide habitat information other than that the one individual was found on old highway 95 on the Beaver Dam Slope at 2,400 ft. elevation. Stebbins (1985) noted the preference of this species for sandy or gravelly desert and commented: "Most of its range in the U.S. corresponds closely with the distribution of the creosote bush." Cox and Tanner (1995) noted that creosote bush is common on the Beaver Dam Slope, the only area where this species has been found in Utah.

Schwinn and Minden (1979) listed habitats of this species in Utah as Mojave Desert and "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation"; however, since it appears that their listing of this species as occurring in Utah was based on a false rumor or at best on speculation, their habitat designations for this species probably do not represent actual knowledge of the its habitat in Utah.

Trends

Population information lacking for Utah.

Threats

Threats in Utah not known.

Inventory Needs

Inventory needed to determine abundance and distribution in Utah.

Other Considerations

Like some other species of snakes, especially fossorial species, this species is

rarely encountered except by driving roads at night. It is probably no mere coincidence that the one individual of this species that has been obtained in Utah was found on a road at night. McCleary and McDiarmid (1993) pointed out: "Most collection records [of this species] come from specimens that were either captured alive or found dead on roads. Klauber (1935) noted that until collecting by automobile at night was realized as being useful, the Leaf-nosed Snake was thought to be rare. Gaps in the distributional range often stem from lack of roads in those areas or unsuitable habitat adjacent to roads." To find this species, Stebbins (1985) likewise advised: "Search roads at night; otherwise it is rarely encountered."

WESTERN PATCH-NOSED SNAKE

Salvadora hexalepis

State Taxonomic Comments

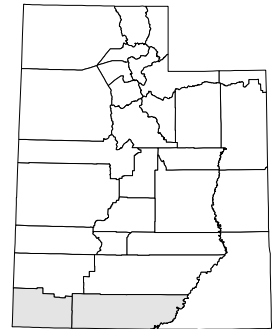
Tanner (1941) referred to this species in Utah as a race of *Salvadora grahamiae*: "*Salvadora grahamiae hexalepis*"; *Salvadora grahamiae* is a related species that is quite distinct from *Salvadora hexalepis*.

State Subspecies

The race that occurs in Utah is *Salvadora hexalepis mojavenensis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in Utah only in southern Washington and Kane counties, where it is fairly common.

Estimated Number of Populations (Occurrences)

Probably considerably more than six occurrences. At least six localities in Utah have been reported (see Tanner 1941, 1954).

Abundance

Cox and Tanner (1995) commented that this species is "fairly common in the Mojave Desert and transition areas...."

Range in Utah

Occurs in Utah in southern Washington and Kane counties (Tanner 1941, Tanner 1954, Cox and Tanner 1995).

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Kane	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Schwinn and Minden (1979) listed "breeding" habitats of this species in Utah as Mojave desert; aquatic habitats; riparian habitats; sagebrush and rabbitbrush; mountain meadows, parks, and desert grasslands; desert shrub (saltbush, greasewood, etc.); and barren habitats; and "nonbreeding" (marginal?) habitats as also including shrub/brush and grasslands. Cox and Tanner (1995), apparently repeating many of Schwinn and Minden's (1979) habitats, stated that this species inhabits "the Mojave Desert and transition areas, which include sagebrush, rabbitbrush, mountain meadows, desert shrub, and the edges of some barren habitats." Both of these sets of authors have presented a rather distorted explanation of the habitats of this species, which utilizes low, arid, open habitats. It does not, for example, occur in mountain meadows or aquatic habitats, and its occasional presence in riparian habitats is more an accidental result of the presence of narrow riparian corridors running through vast expanses of desert than an affinity of this species for riparian zones, though broad, rocky or gravelly, eroded streambeds often resemble open desert and are thus sometimes used by this species as demonstrated by the collection, in such habitat, of one of the first few specimens of this species in Utah.

Trends

Population trend in Utah not known; probably stable.

Threats

Probably not very threatened in Utah.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

GROUND SNAKE

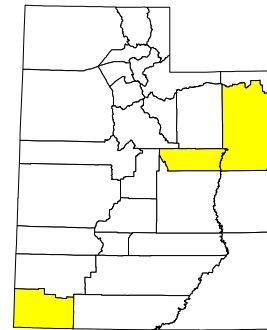
Sonora semiannulata

State Subspecies

Currently considered to be monotypic, i.e., with no subspecies (Frost 1983, Collins 1990). Formerly subspecies were recognized, Utah populations having been referred to the race *Sonora semiannulata isozona*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

A secretive species known in Utah from several localities in southern Washington County and from one location in southern Carbon County.

Estimated Number of Populations (Occurrences)

Probably at least six occurrences (at least five reported in literature).

Abundance

Presumed to be uncommon in its very limited range in Utah.

Range in Utah

Frost (1983) mapped the range of this species as barely entering the extreme southwestern corner of Utah (and indicated only two Utah localities), and

stated: "... just penetrating into Utah along the Virgin River valley" Cox and Tanner, however, mapped the Utah distribution as including not only southwestern Washington County but also south-central Carbon County (approximately southwest of Price) and commented that the species "has been found primarily in Washington County, but a specimen from Carbon County indicates that the species is more widespread in the state." Woodbury (1931) listed three localities in Washington County--Rockville, St. George, and Hurricane--as well as a locality in Uintah County: Vernal.

This last locality record (Vernal) would seem highly unlikely to be valid; indeed, neither Frost (1983), who cited Woodbury (1931), nor Cox and Tanner (1995), who were clearly thoroughly familiar with Woodbury's (1931) work though they did not cite any of their sources, accepted this as a valid or even a questionable record. However, the more recent surprising discovery of this species in Carbon County (Cox and Tanner 1995), itself an unexpected and improbable locality for this species, suggests that the occurrence of this species in Uintah County, which adjoins Carbon County, may not be so unlikely after all, and the Vernal record should not be dismissed without comment as it has been by these authors. The Vernal record may more appropriately be considered questionable but deserving further consideration, and an efforts should be made to relocate this species near Vernal and elsewhere in Uintah County.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Carbon	Native and natural, presence confident
Uintah	Origin unknown, presence possible

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Uinta Basin	Origin unknown, presence possible

Habitats Utilized in Utah

Schwinn and Minden (1979) listed "breeding" habitats of this species in Utah as barren habitats, desert shrub (saltbrush, rabbitbrush), deciduous habitats, Mojave Desert, and "near homes", and "nonbreeding" (marginal?) habitats as also including riparian habitats, "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation", sagebrush

and rabbitbrush, pinyon-juniper, and sand dunes or soft sandy areas. However, in view of the paucity of records of this species in Utah, it is doubtful that the habitats listed by Schwinn and Minden (1979) are based on actual observations of the habitat of this species in Utah; more likely these authors were speculating regarding Utah habitats using general references such as field guides.

Cox and Tanner (1995) wrote: "Its principal habitat in Utah is the Mojave Desert among the Joshua trees ...", which appears to be based on actual knowledge of this species in Utah, but they continued with a list of habitats probably derived from Schwinn and Minden's (1979) list or from general references.

Trends

Population trend in Utah not known.

Threats

Threats in Utah unknown.

Inventory Needs

Inventory needed to elucidate range and abundance in Utah, particularly in Carbon County and in areas between Carbon County and Washington County. Woodbury's (1931) report of this species from Vernal, though questionably valid, deserves serious consideration, and this species should be sought in the vicinity of Vernal and elsewhere in Uintah County.

SOUTHWESTERN BLACKHEADED SNAKE

Tantilla hobartsmithi

State Taxonomic Comments

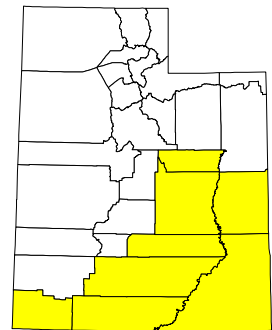
This species has been called, in Utah, by various names: *Tantilla nigriceps* (see Woodbury 1931), *Tantilla utahensis* (see Tanner 1941, 1954), *Tantilla planiceps* (see Behler and King 1979, Cox and Tanner 1995), and *Tantilla hobartsmithi* (see Cole and Hardy 1983, Stebbins 1985, Collins 1990). *Tantilla hobartsmithi* is the accepted name for this species as the genus *Tantilla* is currently understood.

State Subspecies

As the genus *Tantilla* is currently arranged, this species contains no races (i.e., is monotypic).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

A secretive species known in Utah only from southern Washington and Kane counties, and presumably southeastern Garfield County.

Estimated Number of Populations (Occurrences)

Probably more than six occurrences (see Woodbury 1931; Tanner 1941, 1954; Schwinn and Minden 1979; Cole and Hardy 1983; Cox and Tanner 1995).

Abundance

A secretive species: abundance poorly understood. Tanner (1954) reported: "The spring field trip with the herpetology class into Kane County, east of Kanab, produced 18 specimens of this heretofore rare species." Tanner (1941), discussing this species under the name *Tantilla utahensis* (as he did in the previously cited reference [Tanner 1954]), mentioned 5 topotypes and $5 + 1 = 6$ paratypes (probably also from the type locality); although he did not mention the holotype, including it one can assume that at least 12 preserved specimens were collected from the type locality (St. George) of "*T. utahensis*" by 1941. These reports suggest that the species may not be especially rare, at least at certain localities. Cox and Tanner (1995) commented: "It should not be considered rare but is seldom seen."

Range in Utah

In Utah known only from Washington County (Tanner 1941, 1954), Kane County (Tanner 1954), and presumably Garfield County (see note 1 for this species, "Four miles north of Baker Ranch in Halls Ck. drainage", in Schwinn and Minden 1979; also Cole and Hardy 1983, Cox and Tanner 1995). Records of this species in adjacent Mesa County Colorado (Cole and Hardy 1983, Hammerson 1986), suggest the occurrence of this species in the environs of the Colorado River in San Juan, Grand, and Wayne counties, Utah, as well. Cox and Tanner (1995) mentioned that this species has been found in "the foothills of the Henry Mountains" (presumably Garfield County), which possibly may represent the same locality as the Baker Ranch record in Schwinn and Minden (1979), and offered the interesting opinion: "Finding it on the foothills of the Henry Mountains near Star Springs suggests that it may occur further [sic] north in Emery and Carbon Counties."

Although Cox and Tanner (1995) mapped and described the Utah range of this species as including only south-central and southwestern parts of the state, but not eastern Utah, various authors (e.g., Behler and King 1979, Cole and Hardy 1983, and Stebbins 1985) had mapped the distribution of this species as extending across Utah from the southwestern corner of the state to the east-central boundary and into Colorado. Stebbins (1985, map 172) also indicated a questionable locality in Tooele County.

County

Status

Washington	Native and natural, presence confident
Kane	Native and natural, presence confident
Garfield	Native and natural, presence confident
Wayne	Native and natural, presence probable
Emery	Native and natural, presence possible
Carbon	Native and natural, presence possible

San Juan	Native and natural, presence probable
Grand	Native and natural, presence probable

Ecoregion**Status**

Mojave Desert	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Woodbury (1931) reported: "V. M. Tanner found specimens [of this species] near St. George under old logs; and I found one under a rock on a very rocky hillside in the Virgin Mountains near St. George." Tanner (1954), discussing three new localities in Kane County, wrote: "The elevation of these localities is approximately 5000 feet, at least 2000 feet higher than previous records for this species in the State of Utah. In all three localities the snakes were found in rocky patches in the juniper-pinyon pine community."

Schwinn and Minden (1979) listed "breeding" habitats of this species in Utah as desert shrub (saltbush, greasewood, etc.), coniferous forest, and riparian habitats, and "nonbreeding" (marginal?) habitats as additionally including grasslands; rocky cliffs or cliff faces; scrub oak, mountain mahogany, etc.; orchards; and shelterbelts, dwellings, and tree farms. However, these probably represent speculation, using field guides or other general references, rather than actual knowledge of this species in Utah.

Trends

Population trend in Utah unknown.

Threats

Threats in Utah not known.

Inventory Needs

Inventory needed to determine distribution in Kane and Garfield counties as well as to ascertain whether this species occurs in the vicinity of the Colorado River in San Juan, Grand, and Wayne counties as has been hypothesized (see Cole and Hardy 1983, Cox and Tanner 1995). Cox and Tanner's (1995) speculation that this species may occur in Emery and Carbon counties suggests that prospective searches should perhaps be conducted those counties as well. Stebbins' (1985)

Tooele County locality, which he mapped as questionable, is much less likely to be valid but may merit investigation nonetheless.

LYRE SNAKE

Trimorphodon biscutatus

State Taxonomic Comments

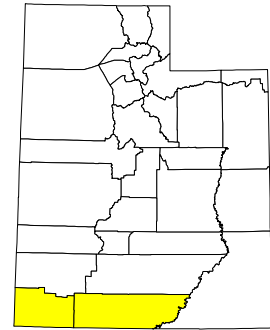
This species was formerly known in Utah as *Trimorphodon lyrophanes* (see, for example, Woodbury 1931, Tanner 1941) and as *Trimorphodon lambda* (see Schwinn and Minden 1979), the latter taxon now being recognized as the race of *Trimorphodon biscutatus* that occurs in Utah.

State Subspecies

The race that occurs in Utah is *Trimorphodon biscutatus lambda*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

Occurs in Utah in Washington County and perhaps Kane County. Seemingly rare, but so secretive that abundance is very difficult to estimate.

Estimated Number of Populations (Occurrences)

At least 2 occurrences in Washington County; possible occurrence(s) in Kane County.

Abundance

Thought to be rare, but this species is so secretive that abundance is very difficult to estimate from known records of occurrence. Cox and Tanner (1995)

made the comments: "It is considered to be rare ... sightings are unusual ... one of Utah's most obscure and rare snakes." Tanner (1941) stated: "Collecting in Utah has produced to date five specimens of the Lyre Snake"

Range in Utah

Occurs in Utah at least in south-central (St. George) and east-central (Springdale-Zion National Park) Washington County (see Tanner 1941); possibly also in Kane County.

Cox and Tanner (1995) said: "...occurs only in Washington County extending, northeastward into Zion National Park"; however, they mapped the distribution of this species into extreme southwestern Kane County, perhaps hypothetically.

Curiously Scott and McDiarmid (1984) in their map of the distribution of this species did not indicate that it occurs in Utah at all, even though in their text they stated that it is found in "extreme southwestern Utah" and their references included Woodbury (1931), who had documented the occurrence of this species in Utah.

Although Schwinn and Minden (1979) indicated that they strongly suspected that this species occurs in Utah "latilong" block 21 (eastern Kane, south-central Garfield, and extreme southeastern San Juan counties), apparently no other authors have agreed with this hypothesis, and available evidence, such as known distribution of the species, does not suggest such occurrence.

County

Status

Washington
Kane

Native and natural, presence confident
Native and natural, presence possible

Ecoregion

Status

Mojave Desert
Colorado Plateau

Native and natural, presence confident
Native and natural, presence confident

Habitats Utilized in Utah

Tanner (1941) mentioned that two Utah specimens had been collected at the base of a hill: "One specimen had crowded between two flakes of a large rock and the other was found in the soil underneath the same rock." He further reported: "A third specimen ... was found under a rock [near the locality of the first two] The fourth specimen was found on the road"

Schwinn and Minden (1979) listed "breeding" habitats in Utah as barren habitats, Mojave Desert, riparian habitats, and desert shrub (saltbush, greasewood, etc.), and "nonbreeding" (marginal?) habitats as additionally including shrub/brush, grassland, "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation", rocky cliffs or cliff faces, pinyon-juniper, and ponderosa pine. These probably represent speculation regarding potential habitats in the state rather than habitats actually documented or observed in this state.

Cox and Tanner (1995) stated: "Inhabiting rocky slopes and desert shrub, it is usually found in crevices formed by ledges in rocky outcroppings."

Trends

Population trend unknown in Utah.

Threats

Threats in Utah not known.

Inventory Needs

Inventory is certainly needed in the southern, or at least southwestern, part of state. More complete knowledge may change State Rank--possibly to S1, maybe even to S3.

SIDEWINDER

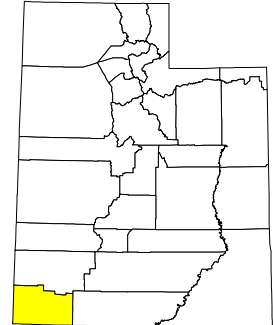
Crotalus cerastes

State Subspecies

The subspecies that occurs in Utah is the type or nominate race, *Crotalus cerastes cerastes*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

A Mojave Desert species that occurs in Utah only in the southwestern part of Washington County. Threatened by habitat loss resulting from rapid urban expansion and presumably by persecution (indiscriminate killing).

Estimated Number of Populations (Occurrences)

Two occurrences: west of the Beaver Dam Mountains to the Nevada border, and immediately north of St. George (Paradise Canyon and vicinity).

Abundance

Coombs (1977?) considered Utah populations to be healthy.

Range in Utah

In Utah only in two areas in southwestern Washington County: west of the Beaver Dam Mountains to the Nevada border, and immediately north of St. George (Paradise Canyon and vicinity). Although Schwinn and Minden (1979) indicated a more extensive suspected or hypothetical Utah range for this species that would include much or most of Kane County, supporting evidence for this greater distribution in Utah seems to be lacking; Cox and Tanner (1995) indicate the Utah range to be restricted to southwestern Washington County.

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Woodbury (1931) mentioned the occurrence of this species "... in the sand hills and flats of Washington County." Regarding this species in Utah, Coombs (1977?) wrote: "Sidewinders seem to prefer [sic] sandy areas, with scattered vegetation, usually creosote bush and oldman sage, although they may occasionally be found in rocky places. They are found only in the lower zones on the Beaver Dam Slope, usually below the Joshua tree zone. They avoid blackbrush zones"

Schwinn and Minden (1979) listed the "breeding" habitats of this species in Utah as shrub/brush, Mojave Desert, and barren habitats, and the "nonbreeding" (marginal?) habitats as including, as well, desert shrub (saltbush, greasewood, etc.), sand dunes or soft sandy areas, "[g]ravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation", riparian habitats, and the Joshua tree association.

Trends

Population trend in Utah not known, but believed to be stable.

Threats

Probably the greatest threat is urban development--the rapid growth of St.

George (for example, the development adjacent to Paradise Canyon). In addition, it should be noted that all species of rattlesnakes, including this one, are persecuted.

Inventory Needs

Inventory needed to resolve the question of whether this species may occur in Kane County as hypothesized by Schwinn and Minden (1979).

SPECKLED RATTLESNAKE

Crotalus mitchellii

State Taxonomic Comments

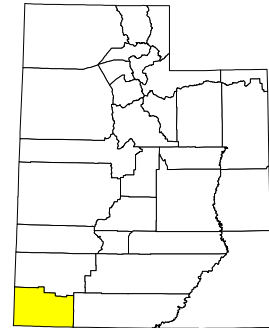
The Global Name, *Crotalus mitchelli* [sic], is evidently a misspelling; the correct spelling is *mitchellii*.

State Subspecies

The race that occurs in Utah is *Crotalus mitchellii pyrrhus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

The rarest rattlesnake in Utah; extremely few (maybe only 8 or 9) individuals ever discovered in the state. In Utah occurs only in the low foothills of the Beaver Dam Slope of extreme southwestern Washington County, where it inhabits steep limestone outcrops; only about 5 square miles of habitat in Utah, with a population of perhaps less than 150 individuals.

Estimated Number of Populations (Occurrences)

Possibly only one; almost certainly no more than four occurrences (see map and text of Coombs 1977?, also Tanner 1960, McCrystal and McCoid 1986).

Abundance

In Utah "... the population may be less than 150" (Coombs 1977?). Coombs (1977?) commented that this "... is the rarest rattlesnake in Utah. Only eight identified specimens are known from Utah."

Range in Utah

In Utah only in the low foothills of the Beaver Dam Slope in extreme southwestern Washington County. Coombs (1977?) stated: "There are only about five square miles, (13 km square) of habitat in Utah"

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Tanner (1960) reported a Utah specimen of this species that "was taken on a rocky NE slope below a ledge. This locality is surrounded by Joshua trees." Coombs (1977?) wrote: "The habitat [of this species in Utah] consists of the steep rocky outcroppings of limestone that make up the low foothills of the Beaver Dam Wash [i.e., Beaver Dam Slope]." Schwinn and Minden (1979) listed the "breeding" habitats of this species in Utah as rocky cliffs or cliff faces, "gravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation", Mojave Desert, desert shrub (saltbush, greasewood, etc.), and riparian habitats, and the "nonbreeding" (marginal?) habitats as additionally including barren habitats and the Joshua tree association. Cox and Tanner (1995), seemingly repeating some of Schwinn and Minden's (1979), as well as Coombs' (1977?) habitat assignments, stated that this species "occurs only in the Mojave Desert portion of the state and has been reported from desert shrub and riparian habitats. Most ... have been found in or near limestone outcroppings on the Beaver Dam Slope." It is questionable whether this species has been, or ever will be, found in Utah in riparian habitats, or even the desert shrub habitat, as indicated by Cox and Tanner (1995) and Schwinn and Minden (1979). In fact, much of Schwinn and Minden's (1979) list of habitats of this species in Utah is questionable, and their list appears to be speculative rather than based on knowledge of this species in Utah.

Trends

Population trend in Utah unknown. (It would be difficult, if not impossible, to perceive a population trend, since the presence of the species in Utah is based on so few reports.)

Threats

Coombs (1977?) did not consider grazing to be a threat because of the inaccessibility to cattle of the steep, rocky areas that this species inhabits; he did, however, warn that this species "should be protected from collection."

Inventory Needs

Inventory needed to assess current abundance and distribution in the state.

MOJAVE RATTLESNAKE

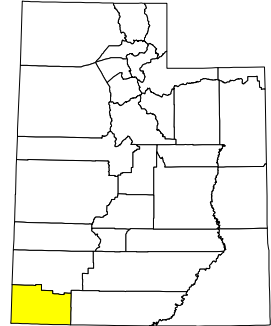
Crotalus scutulatus

State Subspecies

The race that occurs in Utah is the type or nominate subspecies, *Crotalus scutulatus scutulatus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

Occurs in Utah in restricted habitat, the Joshua tree zone below 3,500 feet elevation, in a very small area, the Beaver Dam Wash, of extreme southwestern Washington County, where few have been found.

Estimated Number of Populations (Occurrences)

Possibly only one occurrence.

Abundance

Coombs (1977?) reported it to be uncommon and commented that "[f]ew specimens have been collected in Utah"

Range in Utah

Occurs in Utah only in the Joshua tree zone below 3,500 ft elevation in the Beaver Dam Wash area of extreme southwestern Washington County (Coombs 1977?, Price 1982, Cox and Tanner 1995).

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Coombs (1977?) wrote of this species in Utah: "It inhabits the belt of Joshua trees up to the 3,500 foot (1067 m.) level. The habitat type is mainly Joshua trees, creosote bush, burrow [sic] brush and cholla cactus types, often associated with a very rocky surface. Few have been observed below the Joshua tree line in the flats." Schwinn and Minden (1979) listed the "breeding" habitats of this species in Utah as Mojave Desert, "[g]ravel beds or alluvial deposits or rocky areas composed of rocks, boulders, cobbles, gravel and scarce vegetation", and riparian habitats, and "nonbreeding" (marginal?) habitat as also including barren habitats, desert shrub (saltbush, greasewood, etc.), tortoise dens, and the Joshua tree association. Cox and Tanner (1995) stated: "This is a species with a very restricted habitat, occurring only in the Mojave Desert portion of the state It doesn't venture very high onto the nearby foothills. [It occurs] in the creosote and Joshua tree habitats"

Trends

Population trend in Utah is not known.

Threats

Coombs (1977?) commented that it "should be protected from collectors and not killed under any circumstances." He suggested also that overgrazing could be a threat to this species.

Inventory Needs

Inventory needed to establish an estimate of population in Utah and to define more precisely the area(s) of occurrence.

Birds

COMMON LOON

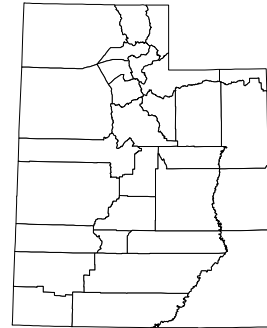
Gavia immer

State Subspecies

This species is monotypic (i.e., has no subspecies).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	Sensitive
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: SZN

Natural Heritage Ranking Summary

Occurs in Utah as an uncommon migrant and winter visitant. Although a few individuals remain through the summer, there is no evidence of breeding in this state.

Estimated Number of Populations (Occurrences)

There are no known occurrences (i.e., breeding populations) in Utah, although "a few remain throughout the summer" (Hayward et al. 1976) and "it has been reported for every month of the year" (Behle et al. 1985).

Abundance

"Essentially an uncommon but regular winter visitant and transient" but "[o]ccasionally, large concentrations of as many as a hundred or more individuals occur" (Behle et al. 1985).

Range in Utah

Found, usually as a transient, "throughout the state, especially in northern Utah at larger bodies of water" (Behle et al. 1985).

<u>County</u>	<u>Status</u>
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N/A	
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<u>Ecoregion</u>	<u>Status</u>
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N/A	
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Habitats Utilized in Utah

Behle (1981) and Behle et al. (1985) noted that this species "[f]requents the larger bodies of water" in Utah. Walters and Sorensen (1983) indicated its habitat in Utah to be "lakes, reservoirs, ponds and sewage lagoons (open water)".

Trends

Trend in Utah not known; believed to be stable.

Other Considerations

Included on the UNHP tracking list only because it is listed as sensitive on the Sawtooth National Forest (part of which extends into northern Box Elder County, Utah) by the U. S. Forest Service, Region 4.

Inventory Needs

Since few individuals remain in Utah through the summer, the remote chance of breeding in the state exists, and any observed behavior suggestive of breeding should be investigated for the possibility of nesting.

AMERICAN WHITE PELICAN

Pelecanus erythrorhynchos

State Subspecies

No races are recognized in this species (i.e., it is monotypic).

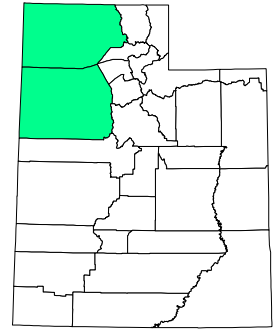
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G3

State Rank: S1B

Natural Heritage Ranking Summary

One nesting site in Utah: Gunnison Island in the Great Salt Lake. Human disturbance of this nesting area is the greatest threat; other threats include contaminants (pesticides and metals), loss of foraging habitat (freshwater wetlands), and natural flooding (inundation of nesting areas).

Estimated Number of Populations (Occurrences)

One extant nesting occurrence; two extirpated nesting occurrences.

Abundance

About 2,800 nesting pairs in recent years.

Range in Utah

Currently nests only on Gunnison Island, Great Salt Lake (Box Elder County). Formerly also nested on Hat Island, Great Salt Lake (Tooele County), and at least once on Rock Island, Utah Lake (Utah County).

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Tooele	Native and natural, presumed extirpated

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) wrote: "The White Pelican occupies somewhat barren islands for resting and nesting and feeds on fish from freshwater bodies nearby." Behle (1981) said that in northeastern Utah this species occurs as a "transient at larger bodies of water." Walters and Sorensen (1983) listed breeding habitats in Utah as "barren islands", "lakes, reservoirs, ponds and sewage lagoons (open water)", and "marshes and wet hummocks", the latter two category of habitats being utilized in migration as well.

Trends

Although there were 2,795 nests, all on Gunnison Island, in 1976 (Rawley 1976), this is less than the 3,300 nests on Gunnison Island and 1,500 nests on Hat Island that were found in 1932 (Behle 1935).

Threats

Evans and Knopf (1993) stated: "Highly sensitive to human intrusions into nesting colony, which cause desertions, especially during courtship and early incubation. Throughout incubation and breeding periods, disturbed parents leave nests, exposing eggs and young to potential temperature extremes and gull predation. Loud and close passes by motor boats and low flying airplanes can cause upflights from colony. Feeding and loafing flocks are also dispersed by approach of motor boats." They also pointed out that historically this species was shot for sport or trophies and was persecuted because of its fish-eating habits, even though most fish consumed are rough fish. They noted: "Shooting is the greatest single source of mortality reported from band returns...."

Evans and Knopf (1993) also mentioned: "Tissues of adults and eggs concentrate organochlorine pesticides and mercury." They pointed out that eggshell thinning is correlated with pesticide concentrations, and shells are now almost 10% thinner in western populations than they were in samples taken before 1940.

Evans and Knopf (1993) also mentioned the negative effects of changes in water levels, which can destroy breeding and foraging areas.

Threats

Although threats in Utah are not known, there probably are few.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

LEAST BITTERN

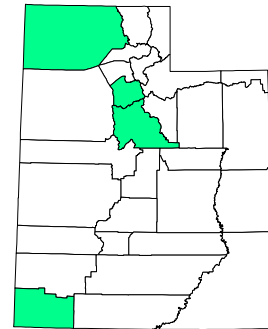
Ixobrychus exilis

State Subspecies

Although the race that occurs in Utah was formerly called *Ixobrychus exilis hesperis*, the race *hesperis* is no longer considered to be distinct from the type race, *exilis* (see Gibbs et al. 1992); thus, Utah populations are *Ixobrychus exilis exilis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S1B

Natural Heritage Ranking Summary

A rare breeding species in Utah, known mainly from freshwater marshes on the north side of the Great Salt Lake (Box Elder County) and from the Virgin River (Washington County); former breeding sites have been lost through alteration of habitat, which is the main threat to the species in Utah.

Estimated Number of Populations (Occurrences)

Almost certainly fewer than five extant breeding occurrences (local breeding populations).

Abundance

"Rare summer resident" in Utah (Behle, Sorensen, and White 1985).

Range in Utah

Known from the marshes around the Great Salt Lake, the Bear River Gun Club and Bear River Migratory Bird Refuge (Box Elder County), and along the Virgin River (Washington County); formerly bred in the area of Hot Springs Lake north of Salt

Lake City (Salt Lake County), before this site was drained (Hayward et al. 1976). Gibbs et al. (1992), in their thorough account of this species in North America, apparently considered it to be so scarce in this state that they did not even indicate the presence of this species in Utah in their range map.

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Salt Lake	Native and natural, presumed extirpated
Utah	Native and natural, presence probable
Washington	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) mentioned the breeding occurrence of this species "at least formerly in the marshes around Great Salt Lake." Walters and Sorensen (1983) indicated its Utah habitat to be "marshes and wet hummocks".

Trends

Population trend difficult to assess because of the secretive nature of this species but believed to be declining; however, it is known that some of the sites formerly used by this species for nesting have since been destroyed. Behle and Perry (1975) wrote of this species in Utah: "Occasional now but may have been an uncommon summer resident formerly as suggested by several observations and sets of eggs in early days"

Threats

Gibbs et al. (1992) stated: "Destruction of wetland habitat is likely the greatest threat to this species"; they also mentioned pollution, acid precipitation, siltation, pesticides, and invasive plant species among threats. They noted, too: "Because Least Bitterns fly low to the ground, collisions with motor vehicles, barbed-wire fences, and transmission lines can be a significant mortality factors ... [and] [a]irboats are another danger; 3% of 607 birds flushed by airboats were struck...."

Inventory Needs

Inventory needed in all suitable marshes in northern Utah (especially around the Great Salt Lake and Utah Lake) and in the Virgin River drainage in Washington County to determine current status in Utah.

GREEN HERON

Butorides virescens

State Taxonomic Comments

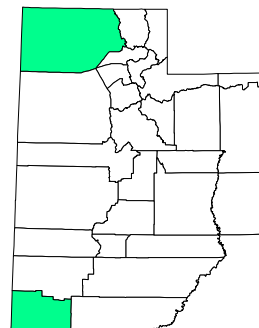
Hayward et al. (1976) referred to this species as the northern green heron. For a time this species was known, in Utah as elsewhere, as the green-backed heron (see, for example, Behle et al. 1985).

State Subspecies

The race that occurs in Utah is *Butorides virescens anthonyi* (see Hayward et al. 1976, Davis and Kushlan 1994). However, Hayward et al. (1976) mentioned: "A male in breeding condition taken at the mouth of Bear River by Huber and Hull 21 June 1927 was examined by Oberholser and Cottam, who judged it to be of the subspecies *B. v. virescens*, the smaller race common to eastern North America." See Behle (1985) for a detailed discussion of the Bear River specimen and the possibility that both races occur in Utah.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1B,SAN

Natural Heritage Ranking Summary

A rare breeder in Utah, known to nest in along Santa Clara Creek and in Beaver Dam Wash, Washington County, and, reportedly, near the mouth of the Bear River, Box Elder County. Rare or perhaps accidental in Utah in other seasons.

Estimated Number of Populations (Occurrences)

About three reported breeding occurrences.

Abundance

"Rare summer resident, transient and winter visitant of localized occurrence"

(Behle et al. 1985).

Range in Utah

Hayward et al. (1976) said that this species "is known to breed in the marshes near the mouth of Bear River", Box Elder County. Wauer (1969) reported nesting along Santa Clara Creek, Washington County. Behle et al. (1985) stated that the species has nested in Beaver Dam Wash, Washington County. Davis and Kushlan (1994) mapped the breeding range as entering the southwest corner of the state (Washington County) and placed a question mark beside the Great Salt Lake.

County

Status

Washington
Box Elder

Native and natural, presence confident
Native and natural, presence confident

Ecoregion

Status

Mojave Desert
Great Basin

Native and natural, presence confident
Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) mentioned that this species "is known to breed in the marshes near the mouth of Bear River" and "nesting in a cottonwood along Santa Clara Creek". Behle (1981) reported a non-breeding record of this species "in some cattails at a large pond". Walters and Sorensen (1983) listed breeding habitats of this species in Utah as desert riparian woodlands, marshes and wet hummocks, and rivers and streams. Behle et al. (1985) stated: "This heron is particularly attracted to irrigated areas with ponds and slow streams deep enough for fish."

Trends

Population trend in Utah difficult to assess--possibly stable.

Threats

The main threat to this species in Utah is habitat alteration--the draining of wetlands and the dewatering of stream courses (e.g., in Washington County).

Inventory Needs

Inventory needed in wetland habitats in northern Utah and in Washington County to determine current status.

TRUMPETER SWAN

Cygnus buccinator

State Taxonomic Comments

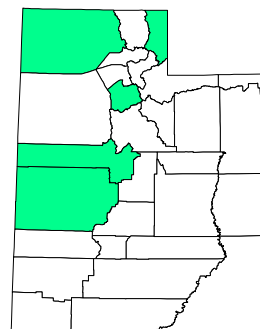
Formerly known as *Olor buccinator* (e.g., in Hayward et al. 1976).

State Subspecies

This species, as currently recognized, has no subspecies. However, it is considered by many to be conspecific with the whooper swan, *Cygnus cygnus*, in which case the taxon that occurs in Utah, the trumpeter swan, would be considered a race, *Cygnus cygnus buccinator*, of the whooper swan (see Mitchell 1994).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	Sensitive
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G4 State Rank: S1N,SHB?

Natural Heritage Ranking Summary

This species is now a rare winter visitor to Utah but is believed formerly to have nested in this state. In 1996 reintroductions were begun using transplants from Idaho. Some are killed in the course of hunting for tundra swans. Lead poisoning from shot and from fishing sinkers is a threat.

Estimated Number of Populations (Occurrences)

No extant breeding occurrences but "probably a nesting species in the northern part of the state in the early days" (Hayward et al. 1976).

Abundance

"Formerly common ... Presently occurs only as a straggler" (Hayward et al. 1976). "

Range in Utah

Old records include: an individuals collected at Spring Lake, Millard County in 1892; and six immature birds captured near Salt Lake City in 1901. More recent historical records are: an individual shot on Great Salt Lake in 1959; one heard (by an observer familiar with calls of this and related species) about 5 miles south of Bear River Migratory Bird Refuge, Box Elder County, in 1965; an individual seen at Fish Springs National Wildlife Refuge, Juab County, in 1968.

<u>County</u>	<u>Status</u>
Juab	Native and natural, presence confident
Salt Lake	Native and natural, presumed extirpated
Box Elder	Native and natural, presence confident
Millard	Native and natural, presumed extirpated
Rich	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Walters and Sorensen (1983) characterized the habitat of this species in Utah as lakes, reservoirs, ponds, and sewage lagoons (open water), which agrees with the various, but few, locality records for this state.

Trends

This species was formerly more common in Utah (Behle and Perry 1975, Hayward et al. 1976). If the species formerly bred in Utah, as is believed (Hayward et al. 1976), it was reduced to a rare winter visitor. However, in the winter of 1996-1997 the Utah Division of Wildlife Resources began transplanting this species from Idaho into northern Utah; it is too soon to evaluate the success of this reintroduction.

Threats

Some of the reintroduced stock have already been inadvertently killed during hunting for the very similar tundra swan, which is a game species in Utah. Lead poisoning from shot and from fishing sinkers has been reported by various workers (see Mitchell 1994).

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

LESSER SCAUP

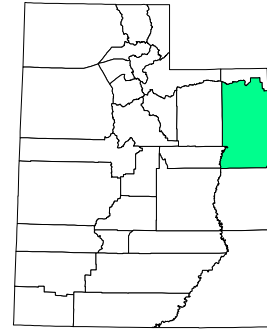
Aythya affinis

State Subspecies

No subspecies are recognized in this species (i.e., the species is monotypic).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1B,S3S4N

Natural Heritage Ranking Summary

This species is a very rare breeder in Utah, there being only two known records of its nesting in Utah, both in Uintah County. It is, however, very common as a migrant and uncommon as a wintering species.

Estimated Number of Populations (Occurrences)

Two known breeding occurrences.

Abundance

Very rare in Utah as a breeding species but common as a migrant and uncommon as a wintering species (Behle et al. 1985).

Range in Utah

Though this species occurs throughout the state as a migrant, the only known reports of its breeding in Utah are from two localities in Uintah County--Ouray National Wildlife Refuge and Pariette Wetlands Wildlife Management Area (Cook 1984).

County**Status**

Uintah

Native and natural, presence confident

Ecoregion**Status**

Uinta Basin

Native and natural, presence confident

Habitats Utilized in Utah

Walters and Sorensen (1983) defined the habitat of this species in Utah as lakes, reservoirs, ponds, and sewage lagoons (open water). The two nesting records in Uintah County reported by Cook (1984) were unaccompanied by details such as habitat.

Trends

Population trend not known in Utah; believed stable.

Threats

Threats in Utah are unknown.

Inventory Needs

Inventory needed in northern Utah during the nesting season.

COMMON MERGANSER

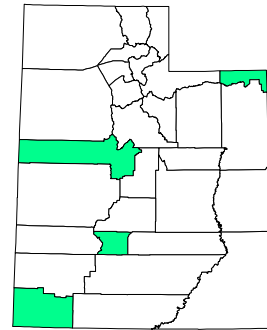
Mergus merganser

State Subspecies

The race that occurs in Utah is *Mergus merganser americanus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S3S4N,SAB

Natural Heritage Ranking Summary

Although this species is a common migrant and an uncommon winter bird in Utah, it is a very rare and irregular nesting species, having nested at least five times in at least three areas of occurrence in this state.

Estimated Number of Populations (Occurrences)

Three nesting occurrences.

Abundance

Exceptionally rare breeder in Utah; has nested in the state at least five times. (Common as a migrant; uncommon as a wintering species.)

Range in Utah

Although widespread as a migrant and as a wintering bird, the three breeding occurrences are scattered, but very localized: Otter Creek, Piute County (1940); both forks of the Virgin River, Zion National Park, Washington County (1972, 1973, 1974); Fish Springs National Wildlife Refuge, Juab County (1982) (Behle et al. 1985).

Cook (1984), in calling this species a permanent resident in the Uinta Basin, seems to have implied breeding there, but Behle et al. (1985), questioned this and concluded that breeding by this species in the Uinta Basin has not been confirmed.

Behle (1981) mentioned four summer records, in July 1959, along the Green River in the Flaming Gorge area; one of these was the observation of "a female with two large young in Kingfisher Canyon, mile 309, on 24 July [1959]."

<u>County</u>	<u>Status</u>
Piute	Native and natural, presence confident
Washington	Native and natural, presence confident
Juab	Native and natural, presence confident
Daggett	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Utah High Plateaus	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence possible

Habitats Utilized in Utah

Walters and Sorensen (1983) gave the breeding habitats of this species in Utah as marshes and wet hummocks; rivers and streams; lakes, reservoirs, ponds, and sewage lagoons; this species is known to nest in the first two of these habitats.

Trends

Population trend as a breeding species not known--seemingly irregular or "casual".

Threats

Threats in Utah unknown. There is, of course, considerable human visitation pressure at the two most recent sites known to have been utilized for nesting by this species in Utah, so human disturbance of nesting could be greatest threat other than, perhaps, predation.

Inventory Needs

Summer inventory for nesting needed in the three areas where the species is

known to have nested in Utah and in the Uinta Basin, where nesting may occur but has not been adequately documented.

CALIFORNIA CONDOR

Gymnogyps californianus

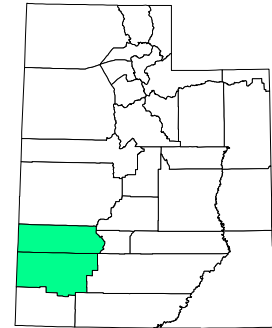
State Taxonomic Comments

Hayward et al. (1976) discussed this species in Utah using the name *Vultur*

californianus. Henshaw (1875), in the first report of this species in Utah, applied to it the name *Pseudogryphus californianus*, which he called the California vulture.

State Subspecies

This species is monotypic (i.e., has no subspecies).



Agency Status

US Fish and Wildlife Service:	Listed Endangered (Experimental, Non-essential population in Utah).
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat

Natural Heritage Ranking

Global Rank: G1 State Rank: SR

Natural Heritage Ranking Summary

Two historical reports (early 1870s and early 1930s) of this species in Utah are difficult to assess. This species was surely absent (extirpated if formerly present) from Utah for many years. The first two of multiple planned releases of captive-raised individuals in extreme northern Arizona have taken place (December 1996 and May 1997), and it is expected that some of the released

birds will eventually move into and take up residence in southern Utah. Although this species is federally listed as endangered, the population being established through releases in Arizona has been designated "experimental, nonessential".

Estimated Number of Populations (Occurrences)

There are no known occurrences in Utah currently.

Abundance

Possibly rare in Utah historically and subsequently extirpated. Hayward et al. (1976) considered this species to have been "[f]ormerly a rare visitor".

In December 1996 reintroductions in extreme north-central Arizona were begun; it is expected that eventually a few of the reintroduced individuals will take up residence in Utah.

Range in Utah

This species has been reported twice, historically, in Utah. One historical report was from eastern Beaver County in the early 1870s; the other historical report, with weaker documentation (i.e., anecdotal, hearsay), was from western Iron County in the early 1930s (see Hayward et al. 1976, Behle et al. 1985). Behle and Perry (1975) considered this species to have been "[f]ormerly a wide-ranging visitant" Hayward et al. (1976) wrote: "Formerly ... probably limited to the southern part of the state."

County

Status

Beaver	Native and natural, presumed extirpated
Iron	Native and natural, presumed extirpated

Ecoregion

Status

Great Basin	Native and natural, presumed extirpated
-------------	---

Habitats Utilized in Utah

Unknown: No habitat information accompanied either of the two historical reports of this species in Utah, and the locality data are not sufficiently precise to allow habitat to be determined from known locations.

Trends

If this species did in fact historically inhabit Utah, then it was extirpated, as ultimately it was everywhere within its former range. Reintroductions in northern Arizona may eventually lead to colonization of southern Utah and establishment of a breeding population in this state.

Threats

If this species spreads into Utah from the Arizona release site in extreme north-central Arizona, the greatest threat in Utah may be human persecution (e.g., shooting).

Other Considerations

Henshaw (1875) reported the observation of what he believed to this species in eastern Beaver County near Beaver, 25 November [year not explicitly stated in original account--variously interpreted as 1871 (Behle et al. 1985) or 1872 (Harris 1941, Behle and Perry 1975, Hayward et al. 1976)--but almost certainly was 1872 based on the itinerary given in the original source]; this observation has been questioned by some (e.g., Worthen 1968) and accepted by others (e.g., Harris 1941). In 1932 A. W. Woodbury was told "that condors were occasionally seen by sheepherders during the winter in western Iron County" (Hayward et al. 1976).

Inventory Needs

Inventory needed to ascertain whether captive-raised birds released in Arizona may take up residence in Utah. Also, evidence (in the form of bones, feathers, eggshell fragments, etc.) should be sought on cliff ledges and in caves in Iron, Beaver, and other southern counties in order to resolve questions of former occurrence in Utah.

OSPREY

Pandion haliaetus

State Subspecies

The race that occurs in Utah is *Pandion haliaetus carolinensis*.

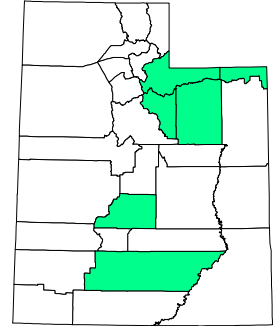
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S1S2B

Natural Heritage Ranking Summary

Widespread in Utah as a migrant but limited to a small number of breeding pairs at one site of occurrence, Flaming Gorge Reservoir. Formerly much more common and widespread in Utah as a breeding species. Original decline in Utah was probably due to pesticide contamination, which impaired reproduction; now vulnerable because of small breeding population at one area of occurrence, which could be eliminated by a single disaster.

Estimated Number of Populations (Occurrences)

Probably only one extant breeding occurrence (at most, very few); at least five or six other, extirpated breeding occurrences known.

Abundance

Probably fewer than 20 breeding pairs in the state.

Range in Utah

Migrates through the state. Currently breeds in Utah almost exclusively in the Flaming Gorge area, so far as known.

Formerly bred in other areas of the state. Hayward et al. (1976) stated: "All nesting records have been from mountain areas where there are lakes or reservoirs." There have been at least three breeding records for Fish Lake, Sevier County (Bee and Hutchings 1942, Hayward et al. 1976). Hayward (1931) reported nesting in Wasatch, Summit, and Duchesne counties. Eyre and Paul (1973) said that breeding pairs had been observed at Fish Lake, Panguitch Lake, Flaming Gorge, and the Green River.

<u>County</u>	<u>Status</u>
Daggett	Native and natural, presence confident
Wasatch	Native and natural, presumed extirpated
Summit	Native and natural, presumed extirpated
Duchesne	Native and natural, presumed extirpated
Sevier	Native and natural, presumed extirpated
Garfield	Native and natural, presumed extirpated

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presumed extirpated

Habitats Utilized in Utah

Behle and Perry (1975) mentioned habitat of this species in Utah as "mountain lakes". Hayward et al. (1976) cited sources from the late nineteenth century that indicated the former occurrence of this species "around the marshes of Great Salt Lake". Hayward et al. (1976) also stated: "All nesting records [in Utah] have been from mountain areas where there are lakes or reservoirs. ... All of the nesting sites have been in tall trees."

Walters and Sorensen (1983) listed breeding habitats in Utah as cliffs, bluffs, etc.; coniferous forest; montane riparian woodlands (including narrow-leaved cottonwood, big-toothed maple, box elder, river birch, dogwood, alder, willows, etc.); lakes, reservoirs, ponds, sewage lagoons; and rivers and streams. They listed an additional habitat used during migration--desert riparian woodlands (including Fremont cottonwood, willows, etc.).

Trends

Hayward et al. (1976) said: "Formerly a sparse but regular summer resident in Utah; now greatly reduced in numbers and considered to be rare and endangered."

Threats

Though the breeding population has perhaps stabilized at a very low level, or

may even be increasing slowly, the population is particularly vulnerable because of its small size and the fact that it is now largely restricted to one site of occurrence, where a single stochastic event such as a disaster could virtually eliminate it from Utah as a breeding species. The drastic decline in breeding that took place in Utah probably occurred for the same reasons that it is known to have occurred elsewhere--namely environmental contamination by pesticides, such as DDT, which interferes with successful reproduction. These pesticides are carried through run-off into rivers and lakes where they are concentrated through the food chain, finally entering fish, the exclusive prey of ospreys.

Inventory Needs

Inventory needed to determine whether this species is recolonizing former breeding sites.

BALD EAGLE

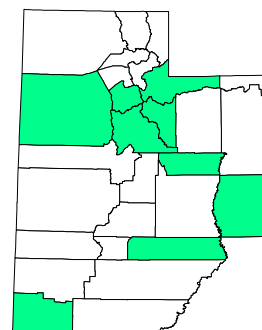
Haliaeetus leucocephalus

State Subspecies

It is believed that the nesting population in Utah represents the race *Haliaeetus leucocephalus leucocephalus*, but this has not been conclusively demonstrated. The wintering population is thought to be *Haliaeetus leucocephalus alascanus*, and the presence of this race in Utah in winter has been established (Behle 1985).

Agency Status

US Fish and Wildlife Service:	Listed Threatened
US Forest Service Region 4:	Threatened
US Bureau of Land Management:	Threatened
Utah Division of Wildlife Resources:	State Threatened



Natural Heritage Ranking

Global Rank: G4 State Rank: S1B,S3N

Natural Heritage Ranking Summary

Fairly common and widespread in winter but now exceedingly rare and much reduced from former times as a breeder in Utah, with only four pairs nesting in three counties.

Estimated Number of Populations (Occurrences)

Four extant breeding occurrences; formerly at least five other breeding occurrences.

Abundance

Exceptionally rare as a breeding species (four pairs in 1996). Fairly common in winter, when an estimated average of 1,243 individuals are present in the state (Gerrard 1983).

Range in Utah

Though widespread in winter, extremely limited in its breeding occurrences: one

in Carbon County, two in Grand County, and one (new in 1996) in Salt lake County. Formerly reported to nest in at least five other counties: Tooele, Utah, Wasatch, Summit, and Wayne (see Hayward et al. 1976).

<u>County</u>	<u>Status</u>
Carbon	Native and natural, presence confident
Grand	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Summit	Native and natural, presumed extirpated
Tooele	Native and natural, presumed extirpated
Utah	Native and natural, presumed extirpated
Wasatch	Native and natural, presumed extirpated
Wayne	Native and natural, presumed extirpated
Washington	Origin data uncertain, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presumed extirpated
Wasatch & Uinta Mtns.	Native and natural, presumed extirpated

Habitats Utilized in Utah

Walters and Sorensen (1983) listed only wintering habitats of this species in Utah: rivers and streams; lakes, reservoirs, ponds, and sewage lagoons; montane riparian woodlands (including narrow-leafed cottonwood, big-toothed maple, box elder, river birch, dogwood, alder, willows, etc.); desert riparian woodlands (including Fremont cottonwood, willows, etc.); submontane shrub (including Gambel oak, dwarf maple, and mountain mahogany); croplands; and orchards, shelterbelts, and tree farms. Although formerly much more widespread and abundant as a breeder, the few recent nesting records are mostly from riparian habitats.

Trends

Hayward et al. (1976) wrote: "Early observations indicate that the Bald Eagle ... nested in some numbers in former times." Although in 1996 the nesting population in this state increased from three to four pairs, this population is still very much lower than it had been.

Threats

Though threats to this species are probably lower now than earlier, such a small breeding population is threatened, at the very least, by its own small size. A

single death, eliminating half of one pair, could reduce the breeding population in Utah by 25%.

Inventory Needs

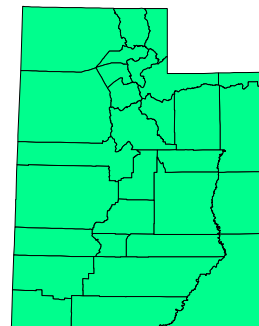
Inventory for this species in Utah is relatively complete.

NORTHERN GOSHAWK

Accipiter gentilis

State Subspecies

The race that occurs in Utah is *Accipiter gentilis atricapillus*.



Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat

Natural Heritage Ranking

Global Rank: G4

State Rank: S3

Natural Heritage Ranking Summary

Occurs in scattered populations in montane conifer-aspen forests throughout Utah as an uncommon permanent resident and migrant.

Estimated Number of Populations (Occurrences)

Probably more than 20 and perhaps fewer than 100 occurrences.

Abundance

"Uncommon permanent resident" (Behle et al. 1985).

Range in Utah

Occurs (in proper habitat) "throughout the state" (Behle et al. 1985).

County

Status

Duchesne
Daggett

Native and natural, presence confident
Native and natural, presence confident

Summit	Native and natural, presence possible
Cache	Native and natural, presence possible
Rich	Native and natural, presence possible
Weber	Native and natural, presence possible
Morgan	Native and natural, presence possible
Salt Lake	Native and natural, presence probable
Wasatch	Native and natural, presence possible
Beaver	Native and natural, presence possible
Box Elder	Native and natural, presence possible
Carbon	Native and natural, presence possible
Emery	Native and natural, presence possible
Garfield	Native and natural, presence possible
Grand	Native and natural, presence possible
Iron	Native and natural, presence possible
Juab	Native and natural, presence possible
Kane	Native and natural, presence possible
Millard	Native and natural, presence possible
Piute	Native and natural, presence possible
San Juan	Native and natural, presence possible
Sanpete	Native and natural, presence possible
Sevier	Native and natural, presence possible
Tooele	Native and natural, presence possible
Utah	Native and natural, presence probable
Wayne	Native and natural, presence possible
Davis	Native and natural, presence possible
Uintah	Native and natural, presence probable
Washington	Native and natural, presence probable

Ecoregion **Status**

Wasatch & Uinta Mtns.	Native and natural, presence confident
Colorado Plateau	Native and natural, presence possible
Columbia Plateau	Native and natural, presence possible
Great Basin	Native and natural, presence possible
Utah High Plateaus	Native and natural, presence possible
Uinta Basin	Native and natural, presence possible

Habitats Utilized in Utah

Occurs in Utah principally in montane conifer-aspen forest (to treeline) (White et al. 1965, Hayward et al. 1976, Behle 1981, Behle et al. 1985), where "thick stands of conifers and aspen groves near permanent water are favored nesting sites" (Behle 1981), but occasionally nests in narrow-leaf cottonwoods along streams in lower valleys as low as about 5600 ft. elevation (White et al. 1965). Behle (1981) mentioned two individuals, at different localities, that were found in "juniper-pinyon forest"; these two observations, however, were apparently outside the breeding season, possibly in late September.

Trends

Population trend in Utah not known; perhaps stable. However, the Utah Division of Wildlife Resources' "Utah Sensitive Species List" (March 1997) indicates: "The goshawk's population appear [sic] to have declined across the range and particularly in the Colorado Plateau ecoregion."

Threats

Threats in Utah not known but almost certainly include habitat loss (logging of montane forests, clearing of riparian areas, fire) and the taking of nestlings for falconry purposes.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

COMMON BLACK-HAWK

Buteogallus anthracinus

State Taxonomic Comments

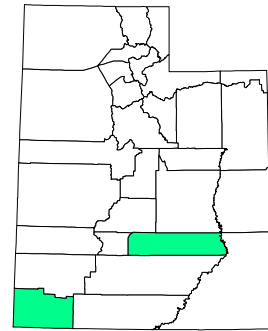
Formerly known by the common names "black hawk" (e.g., Hayward et al. 1976) and "common black hawk" (e.g., Behle et al. 1985).

State Subspecies

The type or nominate race, *Buteogallus anthracinus anthracinus*, occurs in Utah.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G4G5 State Rank: S1B

Natural Heritage Ranking Summary

A very rare nesting species in southern Washington County, first discovered in Utah in 1962. Has been seen regularly and has nested regularly in recent years.

Estimated Number of Populations (Occurrences)

One, possibly two, occurrence(s).

Abundance

One or two nesting pairs.

Range in Utah

Southern Washington County, where one or two pairs regularly nest. There was an observation at Capitol Reef National Park, Wayne County, in the fall of 1971 (Kingery 1972, Hayward et al. 1976), which would represent a transient; however, Behle et al. (1985) considered this record to be questionable.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Wayne	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Walters and Sorensen (1983) gave the habitat of this species in Utah as desert riparian woodlands (including Fremont cottonwood, willows, etc.). Most of the individuals of this species that have been seen in Utah, and seemingly all nests that have been located in this state, have been in cottonwoods along streams (see Hayward et al. 1976 for discussion).

Trends

First observed in the state in 1962, when nesting was established (Carter and Wauer 1965). Has been seen more often in the state since that time and has become a regular nesting species. There may even be two pairs nesting in Utah in recent summers.

Threats

Threats not known in Utah. It is to be hoped that others will not feel the need to collect more specimens of this species in Utah, since Wauer (1969) has already done so and the specimen is accessible (the museum collection, Zion National Park).

Inventory Needs

Continued inventory is needed to determine long-term nesting status of this species in southwestern Utah.

SWAINSON'S HAWK

Buteo swainsoni

State Subspecies

This species is monotypic (i.e., has no subspecies).

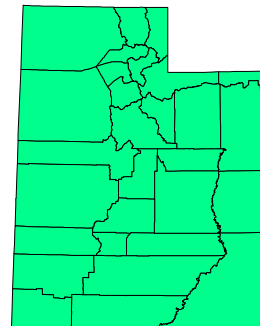
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G4

State Rank: S3B,SRN

Natural Heritage Ranking Summary

Occurs throughout Utah as an uncommon summer resident and common migrant.

Estimated Number of Populations (Occurrences)

Probably many more than 20 occurrences; possibly more than 100.

Abundance

"Uncommon summer resident" (Behle et al. 1985).

Range in Utah

Occurs (in proper habitat) "throughout the state" (Hayward et al. 1976).

County

Status

Uintah

Native and natural, presence confident

Washington

Native and natural, presence confident

Summit

Native and natural, presence confident

Wasatch	Native and natural, presence confident
Beaver	Native and natural, presence possible
Box Elder	Native and natural, presence possible
Cache	Native and natural, presence possible
Carbon	Native and natural, presence possible
Daggett	Native and natural, presence possible
Davis	Native and natural, presence possible
Duchesne	Native and natural, presence possible
Emery	Native and natural, presence possible
Garfield	Native and natural, presence possible
Grand	Native and natural, presence possible
Iron	Native and natural, presence possible
Juab	Native and natural, presence possible
Kane	Native and natural, presence possible
Millard	Native and natural, presence possible
Morgan	Native and natural, presence possible
Piute	Native and natural, presence possible
Rich	Native and natural, presence possible
Salt Lake	Native and natural, presence possible
San Juan	Native and natural, presence possible
Sanpete	Native and natural, presence possible
Tooele	Native and natural, presence possible
Sevier	Native and natural, presence possible
Utah	Native and natural, presence possible
Wayne	Native and natural, presence possible
Weber	Native and natural, presence possible

Ecoregion **Status**

Wyoming Basins	Native and natural, presence possible
Colorado Plateau	Native and natural, presence confident
Columbia Plateau	Native and natural, presence possible
Great Basin	Native and natural, presence possible
Utah High Plateaus	Native and natural, presence possible
Mojave Desert	Native and natural, presence possible
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Occurs in Utah in "open plains", "agricultural valleys", and at "lower elevations in the mountains" (Behle et al. 1985, Hayward et al. 1976). Behle (1981) reported that in the Uinta Basin this species "frequent[s] open country such as farming areas with cultivated fields, grasslands, [and] the edges of marshlands" but noted that as a visitant or migrant it also is rarely encountered in "brushy areas and scrub desert".

Trends

Hayward et al. (1976) mentioned: "Its numbers have declined recently ..."; however, these authors did not indicate whether they were referring to the known general, range-wide trend or more specifically to local changes in the Utah population. Wauer and Carter (1965), comparing recent data for Zion National Park with older reports (Presnall 1935), noted: "... [A]pparently it is less common today than in previous years"

Threats

Although Hayward et al. (1976) mentioned that this species has suffered recently from "heavy persecution", they may have been referring to threats throughout the range of the species. Because this species feeds heavily on grasshoppers, agricultural pesticide use probably is a threat in Utah.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

FERRUGINOUS HAWK

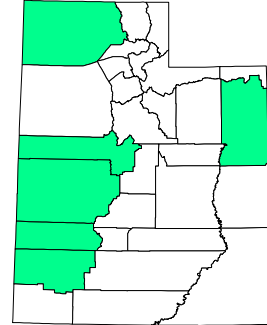
Buteo regalis

State Subspecies

This species is monotypic (i.e., has no subspecies).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Threatened
Utah Division of Wildlife Resources:	State Threatened



Natural Heritage Ranking

Global Rank: G4 State Rank: S2N,S2S3B

Natural Heritage Ranking Summary

Although widespread in Utah and a fairly common breeding species, known to have declined in recent years in at least the northern part of the state.

Estimated Number of Populations (Occurrences)

Certainly more than 20 occurrences, possibly more than 100.

Abundance

"Common summer resident ... uncommon in winter" according to Behle et al. (1985). Most other sources (Hayward et al. 1976, Walters and Sorensen 1983, Utah Ornithological Society Bird Records Committee 1994) have considered this species to be only fairly common.

Range in Utah

Occurs throughout most of Utah in proper habitat. Walters and Sorensen (1983) indicated that this species is a resident with breeding documented in the northwestern half of the state; they indicated, moreover, the absence of breeding records from the southeastern half of Utah and considered this species to be only a migrant in much of the southeastern corner of the state. This

distributional pattern was followed by Bechard and Schmutz (1995), who mapped the species as absent from southeastern Utah. It is possible that the apparent absence of this species as a breeding species in southeastern Utah is merely a misperception based on lack of data.

<u>County</u>	<u>Status</u>
Uintah	Native and natural, presence confident
Box Elder	Native and natural, presence probable
Juab	Native and natural, presence probable
Millard	Native and natural, presence probable
Beaver	Native and natural, presence probable
Iron	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence probable
Uinta Basin	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) noted that in Utah this species is "found mainly in open desert country." Behle et al. (1985) reiterated this, saying that in Utah it resides "in lowland open desert terrain." Walters and Sorensen (1983) listed pinyon-juniper, barren cliffs and bluffs, sagebrush-rabbitbrush, and cold desert shrub (including saltbrush and greasewood) as habitats utilized by this species in Utah during the breeding season and noted that the species "forages widely in valleys".

Trends

Bechard and Schmutz (1995), citing Olendorff (1993), stated: "Between 1979 and 1992, populations stable in Arizona, Colorado, Idaho", three states that adjoin Utah, but "[d]eclines in past 10 yrs have been confirmed only in n. Utah and e. Nevada"

Threats

Mining, gas and oil development, cultivation, grazing, and small mammal control probably are the main threats to this species in Utah. Bechard and Schmutz (1995) stated: "Pairs nesting near active petroleum wells experience lower productivity than those that nest farther away."

Inventory Needs

Inventory needed in the southeastern half of Utah, especially the southeastern corner, to resolve questions of status (especially breeding status) in that part of the state.

MERLIN

Falco columbarius

State Taxonomic Comments

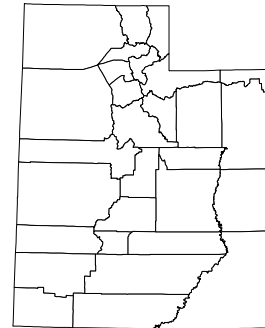
Formerly was known as the pigeon hawk.

State Subspecies

Three races of this species occur in Utah (Behle 1985). As migrants and wintering birds two races are present in the state: the type race, *columbarius*, and the race *suckley*; formerly some migrants in the state were referred to a third race, *bendirei*, but this race is no longer recognized, having been synonymized with the race *columbarius*. Summer birds are thought to be the race *richardsonii*; some migrants are probably of this race as well.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S3N,SHB

Natural Heritage Ranking Summary

Uncommon as a migrant and wintering species, very rare in summer, formerly nested in the state but no nesting records in more than 100 years.

Estimated Number of Populations (Occurrences)

Historically nested in Utah; two sets of eggs were collected, in 1868 and 1869, in the Wasatch Mountains (Hayward et al. 1976). There are no recent records of breeding in the state, although a few individuals are present in the summer (Behle 1985).

Abundance

A few individuals are present in summer, but no recent nesting is known. Uncommon in migration and rare in winter.

Range in Utah

The few summer resident birds seem to be limited to the Wasatch Mountains, where they are reported to occur regularly (Behle 1985).

County **Status**

Locality data not specific to county.

Ecoregion **Status**

Wasatch & Uinta Mtns. Native and natural, presence possible

Habitats Utilized in Utah

Walters and Sorensen (1983) listed no breeding habitats for this species in Utah, the very few breeding records in this state being historical; migrating and wintering habitats that they identified were croplands; orchards, shelterbelts, and tree farms; arid grasslands (at lower elevations); cold desert shrub (including saltbrush and greasewood); sagebrush-rabbitbrush (at lower elevations); desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations); and residential areas, parks, golf courses, and cemeteries.

Behle (1981), writing of this species in northeastern Utah, stated: "Chiefly inhabits open woodland situations in valleys and river bottoms where scattered clumps of trees occur. May occasionally venture higher into the mountains." Behle et al. (1985) said that this species occurs in Utah during summer "in mountains at mid-elevations" and "in winter in lowland foothills and valleys."

Trends

There is little doubt that a decline in the breeding population occurred long ago; current trend in the summer population is not known.

Threats

Threats in Utah not known. Particularly it is not known what caused the decline in breeding in Utah more than 100 years ago.

Inventory Needs

Summer inventory for nesting pairs needed in the Wasatch Mountains.

PEREGRINE FALCON

Falco peregrinus

State Taxonomic Comments

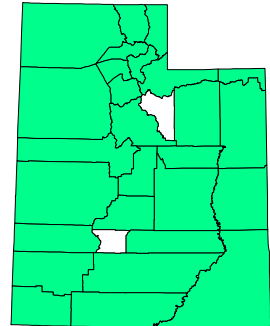
An older common name for this species was duck hawk.

State Subspecies

The resident (breeding) race in Utah is *Falco peregrinus anatum*. Probably most migrants are also the race *anatum* (Behle 1985), but at least a few migrants in Utah are known to be of the race *Falco peregrinus tundrius*.

Agency Status

US Fish and Wildlife Service:	Endangered
US Forest Service Region 4:	Endangered
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G4 State Rank: S2

Natural Heritage Ranking Summary

Though greatly reduced from its former abundance in Utah, this species has in recent years recovered from the decline suffered earlier. Breeds mainly in the southern part of the state and in smaller numbers along the Wasatch Front.

Estimated Number of Populations (Occurrence)

Probably more than 50 occurrences (local "populations").

Abundance

About 180 breeding pairs in the state (fide C. White). Formerly much more abundant; Porter and White (1973) estimated: "The present total population of the peregrine in Utah is possibly only 10 percent of what it has been in historic [sic] times."

Range in Utah

Currently breeds mainly on the Colorado Plateau and to a lesser extent along the Wasatch Front. Formerly bred throughout much of the state. Porter and White (1973) said: "Historically, the peregrine is known to have nested in 13 counties of Utah and is suspected of nesting in at least three others." In their map of "known and suspected breeding distribution", only two counties have no shading indicating known or suspected breeding: Wasatch and Piute.

<u>County</u>	<u>Status</u>
Grand	Origin data uncertain, presence possible
Washington	Native and natural, presence confident
Utah	Native and natural, presence possible
Box Elder	Native and natural, presence possible
Weber	Native and natural, presence possible
Davis	Native and natural, presence possible
Salt Lake	Native and natural, presence possible
Tooele	Native and natural, presence possible
Uintah	Native and natural, presence possible
Beaver	Origin data uncertain, presence possible
Cache	Origin data uncertain, presence possible
Carbon	Origin data uncertain, presence possible
Daggett	Origin data uncertain, presence possible
Duchesne	Origin data uncertain, presence possible
Emery	Origin data uncertain, presence possible
Garfield	Origin data uncertain, presence possible
Iron	Origin data uncertain, presence possible
Juab	Origin data uncertain, presence possible
Kane	Origin data uncertain, presence possible
Millard	Origin data uncertain, presence possible
Morgan	Origin data uncertain, presence possible
Rich	Origin data uncertain, presence possible
San Juan	Origin data uncertain, presence possible
Sanpete	Origin data uncertain, presence possible
Sevier	Origin data uncertain, presence possible
Summit	Origin data uncertain, presence possible
Wayne	Origin data uncertain, presence possible

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) noted the occurrence of this species in Utah "especially in areas near marshlands." Walters and Sorensen (1983) characterized the breeding habitat of this species in Utah as cliffs, bluffs, caves, and rock pockets (often near water). Its habitats during migration in this state they listed as various water-associated habitats; croplands; orchards, shelterbelts, and tree farms; cold desert shrub (including saltbrush and greasewood); and sagebrush-rabbitbrush (at lower elevations). Its wintering habitats in Utah they gave as desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations) and marshes and wet hummocks. Downtown city buildings and artificial nest sites are also used by at least introduced individuals of this species in Utah (Behle et al. 1985).

Trends

May be increasing since its historical decline in Utah.

Threats

The main threat currently probably is alteration of habitat.

Other Considerations

Numerous individuals raised in captivity have been released in Utah.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

SAGE GROUSE

Centrocercus urophasianus

State Taxonomic Comments

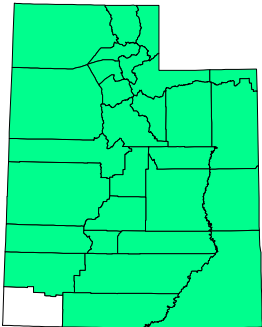
The population in southeastern Utah, San Juan County, (and adjacent southwestern Colorado) appears to be taxonomically distinct, but has not yet been formally described and named as a new taxon. This taxon is being referred to in government (e.g., U. S. Fish and Wildlife Service) documents as a distinct species with a scientific name. However, this putative species has not, so far as is known, been formally described and named, and thus the name that is in use appears to be a nomen nudum, having no nomenclatural validity.

State Subspecies

The race that occurs throughout most of the state is *Centrocercus urophasianus urophasianus*. A morphologically and behaviorally distinct population, representing another, as yet undescribed, taxon (presumably a new race or perhaps even a new species as has been informally suggested) occurs in southeastern Utah, in San Juan County, and in adjacent southwestern Colorado.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

Although widespread in Utah, with about 125 strutting grounds in at least 24 counties, this species is noticeably declining in distribution and abundance as a result of loss, degradation, and fragmentation of its habitat.

Estimated Number of Populations (Occurrences)

There are about 125 strutting grounds in Utah (fide D. Mitchell).

Abundance

It is estimated that there are 2,000 to 2,500 pairs in the state (fide D. Mitchell).

Range in Utah

The species is widespread in the state, in proper habitat. There are extant populations in at least 20 counties, though some of these populations are very small.

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Cache	Native and natural, presence confident
Morgan	Native and natural, presence confident
Rich	Native and natural, presence confident
Summit	Native and natural, presence possible
Juab	Native and natural, presence possible
Sanpete	Native and natural, presumed extirpated
Tooele	Native and natural, presence confident
Beaver	Native and natural, presence confident
Garfield	Native and natural, presence confident
Iron	Native and natural, presence confident
Kane	Native and natural, presence possible
Millard	Native and natural, presumed extirpated
Piute	Native and natural, presence confident
Sevier	Native and natural, presence confident
Wayne	Native and natural, presence confident
Daggett	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Uintah	Native and natural, presence confident
Wasatch	Native and natural, presence confident
Carbon	Native and natural, presence confident
Emery	Native and natural, presence confident
San Juan	Native and natural, presence confident
Grand	Native and natural, presumed extirpated
Weber	Native and natural, presumed extirpated
Salt Lake	Native and natural, presumed extirpated
Utah	Native and natural, presumed extirpated
Davis	Native and natural, presumed extirpated

<u>Ecoregion</u>	<u>Status</u>
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Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) wrote: "Originally throughout the state ... wherever sagebrush or mixed grasslands and sagebrush were prevalent. ... [Now] restricted to rangelands At the present time their principal habitat is sagebrush communities where there are small streams or springs." Walters and Sorensen (1983) identified the habitat of this species, both breeding and wintering, in Utah as sagebrush-rabbitbrush (at lower elevations).

Trends

The population of this species is definitely declining in Utah.

Threats

This species is seriously threatened in Utah because of loss, degradation, and fragmentation of its habitat. Hayward et al. (1976) mentioned that "much of the original habitat has been taken up by agriculture" and the species has "been restricted to rangelands" in Utah.

SHARP-TAILED GROUSE

Tympanuchus phasianellus

State Taxonomic Comments

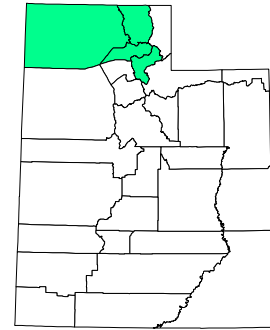
Woodbury et al. (1949) referred to this species in Utah using the name *Pedioecetes phasianellus*, and Behle and Perry (1975) called it *Pedioecetes phasianellus*.

State Subspecies

The race that occurs in Utah is *Tympanuchus phasianellus columbianus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G4 State Rank: S1S2

Natural Heritage Ranking Summary

In Utah this species occurs in four northern counties--Box Elder, Cache, Morgan, and Weber--where its distribution and abundance are much reduced as a result of loss of habitat for agriculture.

Estimated Number of Populations (Occurrence)

There are at least 22 (perhaps as many as 27) dancing grounds in the state (fide D. Mitchell).

Abundance

It is estimated that about 500 pairs exist in Utah (fide D. Mitchell).

Range in Utah

Known to occur in northern Utah in four counties: Box Elder, Cache, Morgan, and Weber.

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Weber	Native and natural, presence confident
Cache	Native and natural, presence confident
Morgan	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) referred to the habitat of this species in Utah as "grassland and sagebrush". Walters and Sorensen (1983) listed the breeding habitats of this species in Utah as sagebrush-rabbitbrush (at lower elevations) and arid grasslands (at lower elevations), and its wintering habitats as agricultural croplands and grasslands, in addition to sagebrush-rabbitbrush.

Trends

Behle et al. (1985) stated: "Originally was much more widespread and common but most of its requisite habitat has been utilized for agriculture." The population in Utah is currently believed to be stable.

Threats

Loss of the habitat of this species to agriculture is the greatest threat.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

COMMON MOORHEN

Gallinula chloropus

State Taxonomic Comments

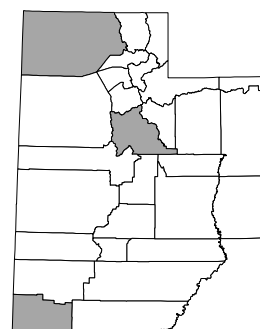
This species was formerly called, in North America, the common gallinule.

State Subspecies

Hayward et al. (1976) and Behle (1981) assigned the Utah population of this species to the race *Gallinula chloropus cachinnans*. However, species boundaries in this bird and its close relatives elsewhere, especially those in Hawai'i and Australia, are not at all clear, and thus the validity of subspecies formerly recognized in this species is uncertain.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S1

Natural Heritage Ranking Summary

A very rare resident species known to nest in only three areas in Utah: near Washington, Washington County; at Utah Lake, Utah County; at Bear River Migratory Bird Refuge, Box Elder County. Threatened by draining and by flooding of wetlands.

Estimated Number of Populations (Occurrence)

An extremely rare nesting species in Utah. At least two confirmed breeding occurrences and several occurrences of suspected breeding.

Abundance

Breeding population apparently is very small, probably fewer than ten pairs in the state.

Range in Utah

Known to have bred the sewage ponds near Washington in Washington County (Behle et al. 1985), at Utah Lake in Utah County (Hayward et al. 1976), and at Bear River Migratory Bird Refuge, Box Elder County (Behle et al. 1985). Behle et al. (1985), however, added the note: "Unfortunately, as of the date of this writing (summer 1984) most of the Bear River marshes are flooded, and the Washington sewage ponds have been drained, thus affecting two of the known breeding sites." Although the Bear River marshes have since recovered, the Washington sewage ponds have remained drained.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Utah	Native and natural, presence confident
Box Elder	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Behle and Perry (1975) and Behle (1981) mentioned the occurrence of this species in Utah in marshes. Hayward et al. (1976) wrote of two (or three) individuals of this species "in a small area of open water in the otherwise dense growth of cattails and tules." Walters and Sorensen (1983) reported the habitat of this species in Utah as marshes and wet hummocks. Behle et al. (1985) referred to known breeding of this species in the Bear River marshes and at the Washington sewage ponds.

Trends

The loss of the Washington sewage ponds, the best known and perhaps the most regularly used breeding site, represents a significant loss in potential breeding in the state. Whether the species has reestablished breeding at the Bear River marshes in the years since the flood of the mid-1980s is not known. It is clear, though, that the species has experienced a decline in breeding in the state in recent years.

Threats

Recent threats have been great and are both natural and anthropogenic, the natural threat being flooding of breeding sites and the anthropogenic threat being draining of nesting areas.

Inventory Needs

Current inventory needed to determine current breeding status in southern Washington County, at Utah Lake, and in the Bear River marshes.

SANDHILL CRANE

Grus canadensis

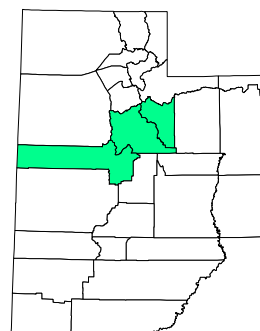
State Subspecies

Two races are known to occur in Utah. *Grus canadensis tabida* "is the breeding form and probably the principal migrant" (Behle 1985). The type race, *Grus canadensis canadensis*, "is known from Utah from only one migrant individual" but "may be more common in migration than this one specimen would indicate" (Behle 1985).

Behle (1981) speculated: "Possibly the migrant cranes that occur in northeastern Utah in migration represent two subspecies, *G. c. tabida* and *G. c. rowani*, the Canadian race. Tacha et al. (1992) noted that the race *rowani* was among those recognized in recent literature but pointed out that Tacha et al. (1985) "questioned the propriety of separating medium-size *rowani* from smaller *canadensis* and larger *tabida*, demonstrating a continuum in morphology and random pairing among the supposed subspecies and identifying several *rowani* in Alaska (well outside *rowani* range) during the breeding season."

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S1B

Natural Heritage Ranking Summary

Though a common migrant in parts of northern Utah, especially along the Green River in northeastern Utah, this species is a very rare nesting species in the state, there being nesting records from at least Utah, Juab, and Wasatch counties. Most recent reports of nesting in the state are from the Strawberry Reservoir area in Wasatch County.

Estimated Number of Populations (Occurrence)

At least four nesting localities, in three counties, are known.

Abundance

Very rare as a breeding species; fairly common as a migrant.

Range in Utah

Highly localized in northern Utah as a nesting species. There are nesting records from Utah County (1900, 1939), Juab County (1940, 1946), and Wasatch County (1969 and later). Behle (1981) mentioned "an occasional pair nesting in the Strawberry Reservoir area." Behle (1981) noted that "large numbers of these cranes occur in migration in northeastern Utah, especially along the Green River in the Jensen-Stewart Lake and Ouray areas."

County

Status

Utah	Native and natural, presumed extirpated
Wasatch	Native and natural, presence confident
Juab	Native and natural, presumed extirpated

Ecoregion

Status

Great Basin	Native and natural, presumed extirpated
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) noted this as "a migrant and breeding species along the Bear River and in nearby marshlands" Behle (1981) mentioned "migrating flocks would come to rest for the night on the large, flat sandbars in the Green River" Walters and Sorensen (1983) listed the breeding habitats of this species in Utah as marshes and wet hummocks and pastures and wet, lowland meadows, with migrating habitats additionally including agricultural croplands.

Trends

This species is much reduced in Utah as a breeder. On the other hand, Behle (1981) commented: "The population of Sandhill Cranes in the intermountain region has been increasing in recent years. Consequently large numbers of these cranes occur in migration..." in Utah.

Threats

The loss of wetlands is probably the greatest threat to this species in Utah now.

Inventory Needs

Hayward et al. (1976) said that "nesting birds should be looked for along the Bear River in Rich County in the vicinity of Woodruff and Randolph."

WHOOPING CRANE

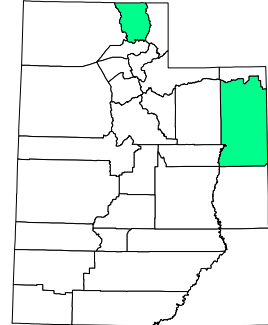
Grus americana

State Subspecies

This species is monotypic (i.e., has no subspecies).

Agency Status

US Fish and Wildlife Service:	Listed Endangered
US Forest Service Region 4:	Endangered
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1 State Rank: SEN

Natural Heritage Ranking Summary

This species is not native to Utah. A few (1-4) individuals migrate through and occasionally spend the summer in northern--especially northeastern--Utah, but these individuals are from an artificially established population (totalling 4 individuals) that summers in Idaho and winters in New Mexico.

Estimated Number of Populations (Occurrence)

There are no occurrences (i.e., breeding populations) in Utah.

Abundance

As many as four individuals have been seen in Utah during migration (autumn of 1976, spring of 1976). Single individuals have twice (1976 and 1977) spent the summer in Utah; it is possible that these were the same individual (Behle 1981).

Range in Utah

Utah is not within the natural range of this species, and Utah is not within the breeding range, natural or artificial, of this species.

This species has been known to migrate through northern, particularly northeastern, Utah and even to spend the summer in northeastern Utah, but no

reproduction has occurred in Utah and the very few individuals that have been discovered in this state are the result of introductions made in Idaho.

Most Utah observations of this species have been in Uintah County (Behle 1981, White et al. 1983, Cook 1984), although the species has been seen once in Cache County (Kingery 1982).

<u>County</u>	<u>Status</u>
Uintah	Introduced, presence confident
Cache	Introduced, presence confident

<u>Ecoregion</u>	<u>Status</u>
Uinta Basin	Introduced, presence confident
Wasatch & Uinta Mtns.	Introduced, presence confident

Habitats Utilized in Utah

Various types of wetlands (particularly marshes), as well as pastures and cultivated fields.

Trends

"Population" trend in Utah stable or perhaps increasing.

Threats

No threats to this species are known in Utah.

Inventory Needs

The possibility exists for a pair of mature individuals to spend the summer in Utah and, thus, potentially to nest in this state; continued monitoring of favorable sites in Uintah County is needed to determine this, should it occur.

Other Considerations

A population of four individuals has been established at Gray's Lake Refuge, Idaho, through cross-fostering. In 1975 eggs of this species were placed in the nests of sandhill cranes, which incubated, hatched, and raised the foster young (Lewis 1995). These individuals, for the most part, now migrate with the sandhill cranes between the nesting grounds in Idaho and wintering grounds in New Mexico, passing through Utah en route. In 1976 a yearling bird spent the summer in and near Ouray National Wildlife Refuge, Uintah County, and probably the same individual resided there again during the summer of 1977 (Behle 1981).

Migrating individuals have been observed at Stewart Lake Wildlife Management Area, Pelican Lake, and other localities in Uintah County (Behle 1981, White et al. 1983, Cook 1984) as well as at Hyrum, Cache County (Kingery 1982). There are published observations of this species in Utah for (at least) the years 1976, 1977, 1978, 1981, 1982, and 1983 (Behle 1981, White et al. 1983, Cook 1984).

MOUNTAIN PLOVER

Charadrius montanus

State Taxonomic Comments

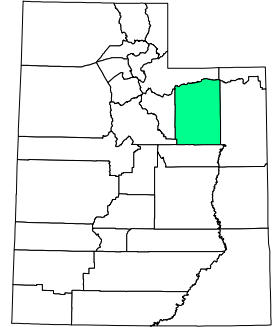
Woodbury et al. (1949) referred to this species as *Eupoda montana*.

State Subspecies

No subspecies are recognized (i.e., this species is monotypic).

Agency Status

US Fish and Wildlife Service:	Listing Candidate
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G2 State Rank: S1B,SZN

Natural Heritage Ranking Summary

This species is a very rare, localized nester in Duchesne County and probably elsewhere in the Uinta Basin. Breeding in Utah was confirmed in 1978 and more recently in 1993 and has been observed in every breeding season since then. The species is also a rare migrant occasionally encountered in various parts of the state.

Estimated Number of Populations (Occurrence)

Nesting has been documented at a few locations.

Abundance

The breeding population in Utah is considered to be very small.

Range in Utah

Known to nest in Utah only in a few places in the Uinta Basin. The first nesting

record for this species in Utah was of a nest with three eggs photographed in 1978 (Day 1994). Day (1994) reported three nests that were found in 1993 in Duchesne County, and nesting has been documented in 1994, 1995, and 1996.

County **Status**

Duchesne Native and natural, presence confident

Ecoregion **Status**

Uinta Basin Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) said that this species "is at home on the higher plains of eastern Montana, Wyoming, and Colorado", but they considered it to be "only a casual migrant in Utah." Walters and Sorensen (1983) gave its habitat in migration through Utah as sagebrush-rabbitbrush (at lower elevations). Behle et al. (1985) considered it to be a "transient found mostly at upland moist meadows and seepage areas".

Day (1994) described the general area in which the first nests of this species were found in Utah as "... a highly varied topography of sand/gravel washes, dry upland benches dominated by low-growing shrubs of *Artemesia* [sic] sp. and *Chrysothamnus* sp., rocky cliffs, and outcroppings. Greasewood (*Sarcobatus vermiculatus*) predominates in ravines and low-lying areas. Indian rice grass (*Oryzopsis hymenoides*), galleta (*Hilaria jamesii*) and blue grama (*Bouteloua gracilis*) are common understory grasses. ... Elevations vary from approximately 1,524 m to 1,920 m." Day (1994) further described the particular areas used by this species: "A nest ... was discovered ... in a slightly sloped, scarified area approximately 60 m from a producing [oil] well. Another nest ... was ... in a flat area of sparse grasses ... [or] in a large, flat area of sparse, low-growing grasses 12 m from an unimproved dirt road. A third nest ... was ... located ... in moderately dense sagebrush (*Artemesia* [sic] *nova*) Broods primarily used moderately dense, low-growing (<30 cm) shrub complexes with open understory, which differs from the open, short-grass habitat most researches describe Plovers also were seen on and around the many [oil] well pads and dirt access roads"

Trends

Breeding by this species in Utah has only recently been carefully investigated; so little is known about its nesting history in the state that its population trend in Utah is difficult to assess.

Threats

The greatest threat to the nesting of this species in Utah is probably from oil and gas exploration and production in its breeding areas. Knopf (1996) suggested that historical alteration of native grassland habitats caused by the "[r]emoval of native grazers--prairie dogs, bison, and pronghorns" may have led to the decline of this species. He also pointed out that this "[s]pecies is 'tame,' highly approachable, and does not flee far", which makes it an easy and tempting target for hunters.

Inventory Needs

Inventory needed to determine abundance and distribution of the breeding population.

LONG-BILLED CURLEW

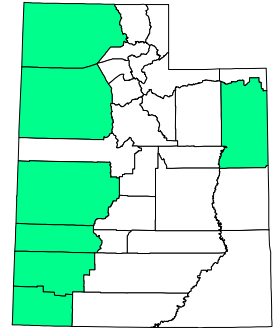
Numenius americanus

State Subspecies

"The breeding population [in Utah] represents the race *N. a. americanus* while the race *parvus* occurs in migration" (Behle et al. 1985), but see Hayward et al. (1976) for discussion.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S3B

Natural Heritage Ranking Summary

Widespread in the state as a migrant, and fairly common but localized as a breeding species, mainly in northwestern Utah. Declining as a result of agricultural activities (destruction and alteration of habitat and direct disturbance of nesting sites).

Estimated Number of Populations (Occurrence)

Probably more than 20 occurrences (local breeding populations).

Abundance

"A fairly common summer resident and migrant ..." (Hayward et al. 1976). "Common summer resident in localized areas ..." (Behle et al. 1985).

Range in Utah

Occurs as a migrant (transient) throughout most of Utah; however, Walters and Sorensen (1983) had no records of this species from the southeastern quarter of the state. Breeds mainly in the northwestern quarter of the state, "... but

nesting has been confirmed elsewhere near Fillmore and Milford, Millard County [actually Milford is in central Beaver County], and Parowan, Iron County, and pairs have been seen near Lund, Iron County[,] and Enterprise, Washington County, suggesting that the species nests occasionally at these localities" (Behle et al. 1985). Cook (1984) presented evidence suggestive of nesting in Uintah County, but confirmation of breeding in northeastern Utah is lacking.

<u>County</u>	<u>Status</u>
Millard	Native and natural, presence confident
Beaver	Native and natural, presence confident
Iron	Native and natural, presence confident
Washington	Native and natural, presence confident
Uintah	Native and natural, presence confident
Box Elder	Native and natural, presence confident
Tooele	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident

Habitats Utilized in Utah

Arid or desert grasslands are favored nesting habitats elsewhere. Known to nest in Utah in agricultural croplands, but also utilizes grassy shorelines and arid grasslands during the breeding season, and during migration uses these habitats as well as mudflats (Walters and Sorensen 1983).

Trends

"Its numbers seem to be gradually diminishing ..." (Hayward et al. 1976).
 "Reduced in numbers today compared with former times" (Behle et al. 1985). "All of the early explorers and naturalists who visited the state were aware of these large and conspicuous birds, and indications are that they were very common ..." (Hayward et al. 1976).

Threats

Hayward et al. (1976) considered "disturbances by man and livestock on its breeding grounds" to be the cause of its population decline in Utah.

Inventory Needs

Inventory needed to determine the status of this species in southeastern Utah and to determine the extent of its breeding distribution in the southwestern

part of the state. It is also possible that this species may breed in northeastern Utah, for which confirmation is lacking.

CASPIAN TERN

Sterna caspia

State Taxonomic Comments

Woodbury et al. (1949) used the name *Hydroprogne caspia* for this species in Utah.

State Subspecies

No subspecies are recognized (i.e., the species is monotypic).

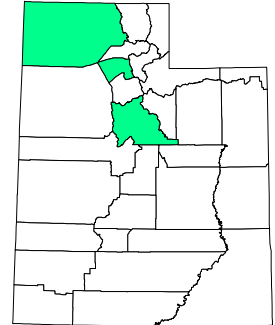
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S1B

Natural Heritage Ranking Summary

Nests at a few locations in northern Utah: mainly islands in Utah Lake and Great Salt Lake and Bear River Migratory Bird Refuge.

Estimated Number of Populations (Occurrence)

Five or fewer occurrences (nesting colonies).

Abundance

Behle et al. (1985) called this species an "[u]ncommon summer resident in northern Utah and transient through the state."

Range in Utah

Known nesting sites (Hayward 1935, Hayward et al. 1976, Behle et al. 1985) are: Rock Island, Utah Lake, Utah County; Egg Island, Great Salt Lake, Davis County;

Hat Island, Great Salt Lake, Box Elder County; and dikes and an artificial island at Bear River Migratory Bird Refuge, Box Elder County. Not all of these sites are currently (e.g., Rock Island in Utah Lake) or continuously used for nesting.

<u>County</u>	<u>Status</u>
Utah	Native and natural, presumed extirpated
Davis	Native and natural, presence confident
Box Elder	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) mentioned nesting on islands in Utah and Great Salt lakes and on dikes in wetlands. Walters and Sorensen (1983), too, noted the habitat where the species is known to nest in Utah as "barren islands and dikes", and they listed other breeding and migrating habitats as marshes and wet hummocks and lakes, reservoirs, ponds, and sewage lagoons.

Trends

Population trend unknown, perhaps stable.

Threats

Threats include fluctuations in water levels, which can make breeding sites unsuitable, human disturbance of nesting colonies, and predation by California gulls on eggs and nestlings.

Inventory Needs

Inventory for this species in Utah is relatively complete.

BLACK TERN

Chlidonias niger

State Subspecies

The race that occurs in Utah is *Chlidonias niger surinamensis*.

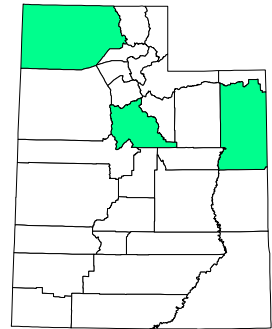
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G4

State Rank: S2B

Natural Heritage Ranking Summary

Formerly common but now uncommon and localized breeder in northern Utah in at Utah Lake, Great Salt Lake, Pelican Lake, and the Green River.

Estimated Number of Populations (Occurrence)

Probably about five occurrences (nesting colonies).

Abundance

"Uncommon summer resident" (Behle et al. 1985).

Range in Utah

Nests in small colonies in the marshes around Utah Lake (Utah County), Great Salt Lake (Box Elder County), and Pelican Lake (Uintah County) (Hayward 1967), and sandbars in or along the Green River (Uintah County).

County

Status

Utah

Native and natural, presence confident

Box Elder	Native and natural, presence confident
Uintah	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
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Great Basin	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) mentioned "breeding in marshes around Great Salt Lake", and Hayward et al. (1976) as well noted that this species "breeds in small colonies in the marshes around Great Salt Lake and Utah Lake". Walters and Sorensen (1983) considered its breeding and migrating habitats in Utah to be marshes and wet hummocks and lakes, reservoirs, ponds, and sewage lagoons.

Trends

Has declined in recent years, formerly having been common in northern Utah.

Threats

Threats include habitat loss (for agriculture, residential, and commercial development), changes in water levels (flooding and draining), and pesticide use.

Inventory Needs

Inventory for this species in Utah is relatively complete.

WHITE-WINGED DOVE

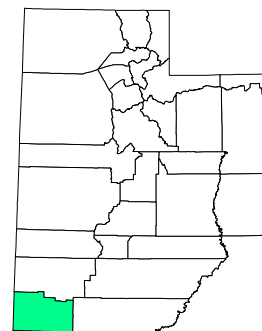
Zenaida asiatica

State Subspecies

The race that occurs in Utah is *Zenaida asiatica mearnsi*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S2B

Natural Heritage Ranking Summary

Breeds in Utah only in southern Washington County; strays to other parts of the state.

Estimated Number of Populations (Occurrence)

Very few breeding localities (but probably more than five).

Abundance

"Rare summer resident" (Behle et al. 1985).

Range in Utah

Breeds in southern Washington County, but "[t]here are a few records scattered about the state" (Behle et al. 1985), including Juab County, Morgan County, Salt Lake County, and Box Elder County (Hayward et al. 1976).

County

Status

Washington	Native and natural, presence confident
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<u>Ecoregion</u>	<u>Status</u>
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Mojave Desert	Native and natural, presence confident
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Habitats Utilized in Utah

Hayward et al. (1976) referred to the habitat of this species in Utah as "especially the hot, dry desert country of the southwest [part of the state]." Walters and Sorensen (1983) listed the breeding habitats of this species in Utah as desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), where the species is known to nest, as well as Joshua tree, creosote bush, blackbrush.

Trends

Population trend not known; believed to be stable, possibly increasing.

Threats

Threats in Utah unknown; believed to be few.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

PASSENGER PIGEON

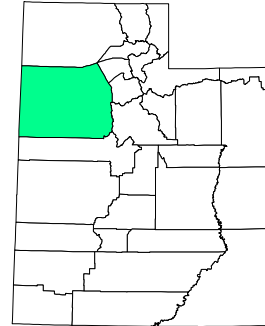
Ectopistes migratorius

State Subspecies

No subspecies are recognized in this extinct species.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Extinct
Utah Division of Wildlife Resources:	Extinct



Natural Heritage Ranking

Global Rank: GX State Rank: SX

Natural Heritage Ranking Summary

This species has been extinct for nearly a century, having formerly occurred abundantly in eastern North America. Historically the species was recorded as an accidental in several neighboring states (Wyoming, Idaho, and Nevada) and thus may rarely have strayed into Utah. The only evidence of its former occurrence in this state is prehistoric: a partial wing bone recovered from an archaeological site, 9,500 to 10,000 years old, on the Great Salt Lake.

Estimated Number of Populations (Occurrences)

There are no current or known historical occurrences of this species in Utah.

Abundance

This species became extinct around the turn of the century, the last known individual having died in captivity in 1914 in Ohio. The species was not historically recorded, even as an accidental, in Utah. Ridgway (1877), discussing an immature individual of this species that he collected in western Nevada in 1867, when this species was still astoundingly abundant in eastern North America, wrote: "... it [the passenger pigeon] cannot be considered as more than an occasional straggler in the country west of the

Rocky Mountains."

Range in Utah

Only one locality for this species is known in Utah, a prehistoric aboriginal site on Stansbury Island, Tooele County (Parmalee 1980).

County

Status

Tooele

Origin unknown, presumed extinct

Ecoregion

Status

Great Basin

Origin unknown, presumed extinct

Habitats Utilized in Utah

One partial wing bone, identified as of this species, recovered from an archaeological site, 9,500 to 12,000 years old, on the Great Salt Lake is the only evidence of the prehistoric occurrence of this species in what is now Utah. How far the bone was transported to reach this site is unknown. Even if the bone was carried only a short distance to the site where it was uncovered, what the habitat was at this site 9,500 to 12,000 years ago is also not known.

Trends

This species is extinct.

Threats

Now extinct and not known to have occurred, even accidentally, in Utah within historical times. Overhunting in eastern North America was the main threat to the species.

Other Considerations

This species is included here because of its inclusion on the Utah Division of Wildlife Resources' "Utah Sensitive Species List". The species became extinct nearly a century ago, mainly the result of overhunting. Although historically this species was of casual or accidental occurrence in the adjacent states of Wyoming, Idaho, and Nevada (Schorger 1973, Ridgway 1877, Ryser 1985) and thus may occasionally have strayed through Utah, there are no historical records of its former presence in this state. The only record of this species in Utah is that of "a partial left humerus (missing distal end)" recovered from an

archaeological site 9,500 to 12,000 years old (Parmalee 1980).

Assuming that the one partial wing bone has been correctly identified, doubt still remains regarding the prehistoric occurrence of this species in Utah. The one fragment of evidence of the species in Utah was taken from an archaeological site, to which it presumably was transported by people long ago, and thus does not represent a locality of natural occurrence. The question of how far the bone was carried by prehistoric people--i.e., whether the bone may have been carried to this site from a location outside of the boundaries of modern Utah, possibly from very far away like some other animal remains (e.g., marine mollusk shells) found at such sites in Utah--cannot be easily dismissed.

Inventory Needs

Although of no conservational consequence, the further discovery of ancient remains of the species in Utah would be of at least minor academic interest.

YELLOW-BILLED CUCKOO

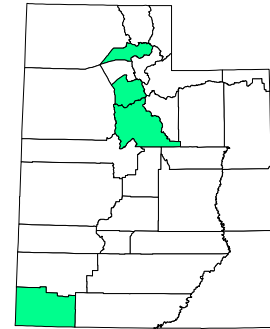
Coccyzus americanus

State Subspecies

The race that occurs in Utah is *Coccyzus americanus occidentalis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Threatened
Utah Division of Wildlife Resources:	State Threatened



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2B

Natural Heritage Ranking Summary

A rare breeding species in localized riparian situations scattered throughout the state. Less common than formerly; threatened by loss of riparian habitat.

Estimated Number of Populations (Occurrences)

Few breeding occurrences; probably about 10 or more.

Abundance

"Rare" (Behle et al. 1985). "Rare summer visitor in the Virgin River Valley" (Wauer and Carter 1965).

Range in Utah

This species occurs in a highly localized manner: "in favored habitats throughout the state" (Hayward et al. 1976). Hayward et al. (1976) summarized specimen records and sightings from Weber, Cache, and Washington counties. Hayward et al. (1976) also reported: "Several sets of eggs have been taken in Weber, Salt Lake, Utah, and Washington counties", which is indisputable, if unfortunate, evidence of breeding in these counties.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Weber	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Utah	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) said of habitat of this species "breeding in streamside or cultivated trees and willows of the lower valleys and canyons of the state". Hayward et al. (1976) wrote: "It lives in the woodlands along streams in the lower valleys." Walters and Sorensen (1983) listed the breeding habitats of this species in Utah as desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), where the species is known to nest, as well as orchards, shelterbelts, and tree farms and residential areas, parks, golf courses, and cemeteries.

Trends

"Seemingly less common now than formerly" (Behle et al. 1985).

Threats

The greatest threat to this species in Utah is the continuing loss of riparian habitat, which it requires.

Inventory Needs

Inventory needed in riparian habitats, especially in streamside cottonwood stands, particularly in the southern part of the state.

FLAMMULATED OWL

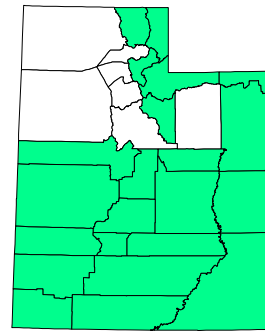
Otus flammeolus

State Subspecies

The nominal subspecies that occurs in Utah is the type (or nominate) race, *Otus flammeolus flammeolus*; however, some authors do not recognize any subspecies in this species, in which case the species would be monotypic (see McCallum 1994).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G4 State Rank: S3S4B

Natural Heritage Ranking Summary

Widespread in the forested mountains of Utah and probably at least fairly common if not common.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences.

Abundance

Variously considered in Utah to be "sparse" (Hayward et al. 1976), rare (Walters and Sorensen 1983), "uncommon" (Behle et al. 1985), and common (Utah Ornithological Society Bird Records Committee 1994). Probably this species is at least fairly common in proper habitat in the state but often is not detected where it is present. McCallum (1994) noted: "Until about 1970 considered rare by many authors ...", possibly because of the difficulty of detecting this species, but "[n]ow considered common by many authors; may be most abundant owl of western pine forests...."

Range in Utah

Occurs in Utah throughout the mountainous areas. McCallum (1994) mapped the distribution in Utah as including the Wasatch Mountains, the Uinta Mountains, the Deep Creek Mountains, the La Sal Mountains, the Abajo Mountains, and the mountains of the central Utah High Plateaus from the Pine Valley Mountains to the Wasatch Mountains. Walters and Sorensen (1983) indicated breeding in the southwestern and the north-central parts of the state.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Cache	Native and natural, presence probable
Piute	Native and natural, presence probable
Rich	Native and natural, presence probable
Sevier	Native and natural, presence probable
Sanpete	Native and natural, presence probable
Summit	Native and natural, presence probable
Uintah	Native and natural, presence probable
Wasatch	Native and natural, presence probable
Wayne	Native and natural, presence probable
San Juan	Native and natural, presence probable
Morgan	Native and natural, presence probable
Millard	Native and natural, presence probable
Kane	Native and natural, presence probable
Iron	Native and natural, presence probable
Beaver	Native and natural, presence probable
Daggett	Native and natural, presence probable
Carbon	Native and natural, presence probable
Emery	Native and natural, presence probable
Juab	Native and natural, presence probable
Grand	Native and natural, presence probable
Garfield	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Utah High Plateaus	Native and natural, presence probable
Wasatch & Uinta Mtns.	Native and natural, presence probable
Great Basin	Native and natural, presence probable
Colorado Plateau	Native and natural, presence probable

Habitats Utilized in Utah

In Utah "... it lives in forested areas especially in the mountains" where "[i]t

is known to nest in woodpecker holes" (Hayward et al. 1976). Walters and Sorensen (1983) listed its habitats in Utah as coniferous forest and aspen forest. McCallum (1994), writing about the species throughout its range, stated: "Nests and/or singing birds almost always found in or near open conifer forest with (1) some large old trees, (2) scattered thickets of saplings and/or shrubs, and (3) clearings. Nests almost always found in stands containing (but not limited to) yellow pine ..., although aspen is also a frequent component of nesting habitat in Colorado ... and Nevada"

Trends

Population trend in Utah unknown; probably stable.

Threats

Threats in Utah are not known. Loss of habitat through timber harvest is likely a threat in this state. McCallum (1994) opined: "Most visible impact of humans is loss of nest cavities. At present, most immediate human threat to species in North America may be cutting (authorized and unauthorized) of dead trees for firewood. ... Recruitment of snags (dead trees or branches with good potential for holes) and health of woodpecker populations essential to conservation of all cavity-nesting owls. ... Extirpation of flickers by introduced European Starlings (*Sturnus vulgaris*) would probably be disastrous."

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BURROWING OWL

Speotyto cunicularia

State Taxonomic Comments

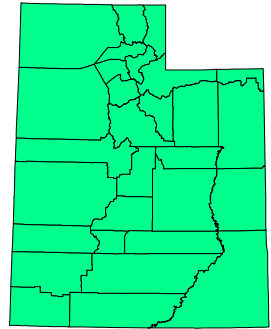
Most recent authors who have discussed this species in Utah (e.g., Hayward et al. 1976, Behle 1981, Walters and Sorensen 1983, Behle 1985) have used the name *Athene cunicularia*, by which name it was "officially" known for many years.

State Subspecies

The race that occurs in Utah is *Speotyto cunicularia hypugaea*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G4 State Rank: S3B

Natural Heritage Ranking Summary

This species is an uncommon summer resident and migrant throughout Utah, though locally common in many areas. The species has been declining in Utah, primarily as a result of habitat loss to agriculture.

Estimated Number of Populations (Occurrences)

Certainly more than 20 occurrences, possibly more than 100.

Abundance

"Locally rather common" (Hayward et al. 1976), "[u]ncommon summer resident generally, but may be common in localized areas" (Behle et al. 1985), and uncommon summer resident (Utah Ornithological Society Bird Records Committee 1994).

Range in Utah

Occurs during summer and in migration in proper habitat throughout Utah. Haug et al. (1993) mapped all of Utah as within the breeding range of this species.

Walters and Sorensen (1993) indicated its presence as a summer resident with breeding documented in all but 3 of the 23 "latilong" blocks covering the state, these 3 being in south-central or southeastern Utah.

<u>County</u>	<u>Status</u>
Millard	Native and natural, presence probable
Beaver	Native and natural, presence probable
Box Elder	Native and natural, presence probable
Cache	Native and natural, presence probable
Carbon	Native and natural, presence probable
Daggett	Native and natural, presence probable
Davis	Native and natural, presence possible
Duchesne	Native and natural, presence probable
Emery	Native and natural, presence probable
Garfield	Native and natural, presence probable
Grand	Native and natural, presence probable
Iron	Native and natural, presence probable
Juab	Native and natural, presence probable
Kane	Native and natural, presence probable
Morgan	Native and natural, presence probable
Piute	Native and natural, presence probable
Rich	Native and natural, presence probable
Salt Lake	Native and natural, presence probable
San Juan	Native and natural, presence probable
Sanpete	Native and natural, presence probable
Summit	Native and natural, presence probable
Tooele	Native and natural, presence probable
Uintah	Native and natural, presence confident
Utah	Native and natural, presence probable
Wasatch	Native and natural, presence probable
Washington	Native and natural, presence probable
Weber	Native and natural, presence possible
Sevier	Native and natural, presence possible
Wayne	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Wyoming Basins	Native and natural, presence probable

Colorado Plateau	Native and natural, presence probable
Columbia Plateau	Native and natural, presence probable
Great Basin	Native and natural, presence probable
Utah High Plateaus	Native and natural, presence probable
Mojave Desert	Native and natural, presence probable
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence probable

Habitats Utilized in Utah

Hayward et al. (1976) mentioned the occurrence of this species in Utah "in desert valleys ... especially in prairie dog colonies." Walters and Sorensen (1983) listed the breeding habitats in Utah as arid grassland, cold desert shrub (including saltbrush and greasewood), and sagebrush-rabbitbrush.

Trends

"Formerly common in Salt Lake and Utah Lake valleys, but mostly driven from the[se] more populated areas ..." (Hayward et al. 1976). "Formerly was more abundant ..." (Behle et al. 1985).

Threats

Loss of habitat to agriculture is considered by most authors to be the greatest threat to this species in Utah. Hayward et al. (1976) mentioned that this species was "mostly driven from the more populated areas [in the valleys along the Wasatch Front] when much of the land was taken up for agriculture." Behle et al. (1985) commented that "with increased utilization of land, it is now usually confined to relatively undisturbed areas." Haug et al. (1993) identified, in addition to habitat destruction, use of pesticides (insecticides and rodenticides) and vehicle collisions (road mortality) as significant threats. Prairie dog control (persecution and elimination of prairie dogs) is also a threat due to the importance to this species of prairie dog burrows for nest sites.

Inventory Needs

Inventory perhaps needed to determine status in parts of south-central and southeastern Utah (see Walters and Sorensen 1983).

SPOTTED OWL

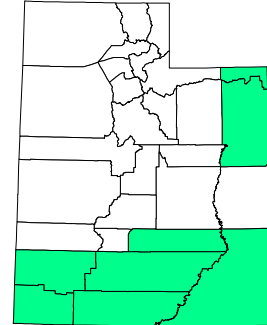
Strix occidentalis

State Subspecies

The race that occurs in Utah is *Strix occidentalis lucida*.

Agency Status

US Fish and Wildlife Service:	Threatened
US Forest Service Region 4:	Threatened
US Bureau of Land Management:	Threatened
Utah Division of Wildlife Resources:	State Threatened



Natural Heritage Ranking

Global Rank: G3 State Rank: S1

Natural Heritage Ranking Summary

In Utah this species occurs mainly on the Colorado Plateau in six counties in the southern part of the state and has recently been discovered at Dinosaur National Monument near the Colorado-Utah boundary. Its populations in Utah are small and scattered, mainly in rocky canyon country.

Estimated Number of Populations (Occurrences)

Rinkevich et al. (1995) mapped about 33 localities in Utah, representing about 18 or 19 separate occurrences ("populations").

Abundance

If each of the approximately 33 Utah localities mapped by Rinkevich et al. (1995) represents a pair, then this would imply a population of about 66 adults in Utah. This is probably a minimal estimate.

Range in Utah

Occurs in southern Utah on the Colorado Plateau and in 1996 was confirmed in

Dinosaur National Monument, near the Colorado-Utah boundary. Occurs in Iron, Washington, Kane, Garfield, Wayne, and San Juan counties in southern Utah (see mapped occurrences in Rinkevich et al. 1995) and may occur as well in Uintah and Daggett counties in northeastern Utah.

<u>County</u>	<u>Status</u>
Garfield	Native and natural, presence confident
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident
Uintah	Native and natural, presence confident
Washington	Native and natural, presence confident
Wayne	Native and natural, presence confident
Iron	Native and natural, presence confident
Daggett	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident

Habitats Utilized in Utah

Hayward et al. (1976) said that this species occurs in Utah "especially in the pinyon-juniper woodlands" Behle (1981), writing of this species in northeastern Utah, commented: "Found generally in dense coniferous forests, pinyon-juniper woodland and other tall shrubby vegetation especially where adjacent to cliffs. Shaded ravines and wooded canyons are favored areas for daytime roosting. ... Trees may be utilized for nesting but mostly holes in rock walls are chosen. ... [One individual,] [w]hen first observed, ... was perched on a large dead stump in a dense aspen grove near [a] spring." Walters and Sorensen (1983) listed breeding habitats of this species in Utah as steep-walled canyons, pinyon-juniper, and desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), and indicated that all of these are habitats where the species is known to nest.

Rinkevich et al. (1995) wrote: "Mexican spotted owls nest, roost, forage, and disperse in a diverse array of biotic communities. Mixed-conifer forests are commonly used throughout most of the range In general these forests are dominated by Douglas-fir and/or white fir, with codominant species including southwestern white pine, limber pine, and ponderosa pine The understory often contains the above coniferous species as well as broadleaved species such as Gambel oak, maples, boxelder, and New Mexico locust. ... In the northern portion of the range, including southern Utah, southern Colorado, and far

northern Arizona and New Mexico, [these] owls occur primarily in steep-walled, rocky canyons In the northern portion of the range (southern Utah and Colorado), most nests are in caves or on cliff ledges in steep-walled canyons." They also noted that it has been "suggested that spotted owls are relatively intolerant of high temperatures" and it has been "observed that Mexican spotted owls produced more metabolic heat than great horned owls, and were less able to dissipate that heat. This may lead these owls to seek out cool microsites during periods of high ambient temperature. Mexican spotted owls typically nest and roost in closed-canopy forests or deep shady canyons; both situations provide cool microsites"

Trends

Rinkevich et al. (1995) stated: "We have inadequate data to estimate population trends in Mexican spotted owls."

Threats

Moir et al. (1995) considered fire, logging, grazing, and recreational activities to be threats to the Mexican race of this species; however, Block et al. (1995) regarded the threat significance of fire on the Colorado Plateau to be moderate and that of timber harvest on the Colorado Plateau to be low.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

GREAT GRAY OWL

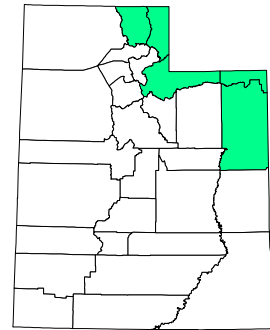
Strix nebulosa

State Subspecies

The subspecies that occurs in North America is the type (or nominate) race, *Strix nebulosa nebulosa*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: SAN

Natural Heritage Ranking Summary

Appears in northern Utah irregularly and probably in response to harsh winter conditions north of Utah, although there has been one report in summer that may represent post-breeding wandering.

Estimated Number of Populations (Occurrences)

There are no occurrences (i.e., local breeding populations) in Utah.

Abundance

"A species of rare and accidental occurrence in Utah" (Hayward et al. 1976). "Accidental" (Behle and Perry 1975). "Casual, based on two specimens and several observations" (Behle et al. 1985). Occasional (seldom found in the state and not reported annually) according to the Utah Ornithological Society Bird Records Committee (1994).

Range in Utah

Scattered observations are from the extreme north-central and northeastern parts of the state: Cache, Rich, Summit, Daggett, and Uintah counties (see Behle and Perry 1975, Hayward et al. 1976, Wagner and Marti 1981, Behle 1981, and Behle et al. 1985). Bull and Duncan (1993) mapped the resident range of this species as approaching Utah only as close as extreme northwestern Wyoming and indicated extreme north-central and northeastern Utah as being at the "limits of occasional occurrence in winter."

The only known summer record for this state was of one individual observed "on July 30, 1962[,] at Spirit Lake, 10,600 feet elevation in the Uinta Mountains of northwestern [sic] Utah" (Behle and Perry 1975, Behle 1981), but the date of this observation, 30 July, is so late (see Figure 6, "Annual cycle of breeding ...", in Bull and Duncan 1993) that it suggests post-breeding wandering. Wagner and Marti (1981), in citing this Spirit Lake report, erroneously stated that the locality is in Uintah County; Spirit Lake is in Daggett County (at the Summit County line), as correctly reported by Hayward et al. (1976).

<u>County</u>	<u>Status</u>
Cache	Native and natural, presence confident
Rich	Native and natural, presence confident
Summit	Native and natural, presence confident
Daggett	Native and natural, presence confident
Uintah	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wyoming Basins	Native and natural, presence possible
Columbia Plateau	Native and natural, presence possible
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Of the several published reports of this species in Utah, only one (Wagner and Marti 1981) makes any mention of habitat: "One was observed in a cottonwood grove at the south end of Bear Lake, Rich Co." (Although no habitat information has been provided by the various authors who have discussed the reported summer observation at Spirit Lake, the area surrounding the lake is montane coniferous forest--including Engelmann spruce and Douglas-fir--and open meadows. The habitats at other Utah localities--near Logan, near Oakley, and near Jensen--are difficult to guess because of the vagueness of the locational information, but they may have been deciduous riparian areas or roadside pastures.)

Bull and Duncan (1993) stated the breeding habitat of this species to be: "In southern parts of range, deciduous or coniferous forests up to 2,800 m elevation." They also noted: "In Idaho and Wyoming, over 90% of sightings of this species in lodgepole pine (*Pinus contorta*)/Douglas fir (*Pseudotsuga menziesii*)/aspen (*Populus tremuloides*) zone" The winter habitat they described as "[g]enerally the same as breeding habitat, except at lower elevation with thinner snow ..." at some localities and at others "... also open fields with scattered large trees, shrubbery, and fence-rows ... especially during irruption winters when many individuals move south."

Trends

No apparent trend in Utah, and no breeding or resident population, so far as known. Wagner and Marti (1981) speculated that climatological factors (harsh winter conditions: lower than normal temperatures and higher than normal snowfall) north of Utah may drive this species south into Utah during some winters; this so-called "irruptive" or "invasive" southern wandering response to harsh northern winters is of course well-known and has been discussed by many authors (see discussion in Bull and Duncan 1993).

Threats

Threats in Utah would seem to be low; however, of the very few individuals that have been discovered in this state, the first was shot and mounted and another reportedly was "hit by a car ... and died in captivity" and also was mounted (Wagner and Marti 1981). Bull and Duncan (1993) in fact noted that "[i]n Canada, collision with automobiles and shooting are major causes of death ...", but these authors also stated: "Timber harvest has greatest potential impact on populations."

Inventory Needs

The one summer record of this species in Utah, at Spirit Lake, suggests that inventory for this species in the summer in the Uinta Mountains may be warranted.

SHORT-EARED OWL

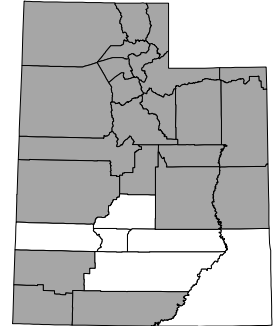
Asio flammeus

State Subspecies

The subspecies that occurs in mainland North America is *Asio flammeus flammeus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population, distribution, and/or habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

Occurs as a breeding species in northern Utah and probably throughout the state as a migrant. Apparently has declined along the Wasatch Front as a result of urban and agricultural encroachment of its habitat.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences (i.e., local breeding populations).

Abundance

Common (Behle and Perry 1975, Hayward et al. 1976) or uncommon (Behle et al. 1985, Utah Ornithological Society Bird Records Committee 1994) in Utah.

Range in Utah

Breeds in the northern one-half to two-thirds of the state (see Walters and Sorensen 1983) and probably a migrant throughout. Said to be "[l]ess common in the Colorado River Basin" (Hayward et al. 1976) or "in eastern Utah" (Behle et

al. 1985). A nesting record in Uintah County was reported by Behle (1981).

Strangely, Holt and Leasure (1993) mapped this species as occurring in Utah almost only as a nonbreeding species, with only a mere "sliver" of the northernmost counties (Box Elder, Cache, and Rich) along the Idaho border being within the breeding range of this species. Walters and Sorensen (1983), however, indicated that breeding has been documented in 9 of the 23 "latilong" blocks in Utah, those 9 blocks all being in the northern two-thirds of the state; in fact, of the 13 northernmost "latilong" blocks in Utah, only 4 lacked documented breeding of this species.

<u>County</u>	<u>Status</u>
Uintah	Native and natural, presence confident
Box Elder	Native and natural, presence confident
Cache	Native and natural, presence probable
Carbon	Native and natural, presence probable
Daggett	Native and natural, presence probable
Davis	Native and natural, presence probable
Duchesne	Native and natural, presence probable
Emery	Native and natural, presence probable
Grand	Native and natural, presence probable
Iron	Native and natural, presence probable
Juab	Native and natural, presence probable
Kane	Native and natural, presence probable
Millard	Native and natural, presence probable
Morgan	Native and natural, presence probable
Rich	Native and natural, presence probable
Salt Lake	Native and natural, presence probable
Sanpete	Native and natural, presence probable
Summit	Native and natural, presence probable
Tooele	Native and natural, presence probable
Utah	Native and natural, presence probable
Wasatch	Native and natural, presence probable
Washington	Native and natural, presence probable
Weber	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Wyoming Basins	Native and natural, presence probable
Colorado Plateau	Native and natural, presence probable
Columbia Plateau	Native and natural, presence probable
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence probable
Mojave Desert	Native and natural, presence possible

Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence probable

Habitats Utilized in Utah

Walters and Sorensen (1983) listed the habitats in Utah where this species is known to nest as marshes and wet hummocks, agricultural croplands (non-woody), arid grasslands; they listed other habitats utilized during the breeding season as cold desert shrub (including saltbrush and greasewood) and sagebrush-rabbitbrush. They considered all of these habitats to be utilized during winter.

Trends

"Seemingly, the species has decreased markedly along the Wasatch Front in recent years" (Behle et al. 1985).

Threats

Probably the greatest threat to this species in Utah, especially along the Wasatch Front, is loss of habitat as a result of agricultural and urban development.

Inventory Needs

Inventory needed to clarify status in the southern half of the Utah, especially the southeastern quarter of the state.

LEWIS' WOODPECKER

Melanerpes lewis

State Taxonomic Comments

Formerly this species was placed in its own monotypic genus and was called *Asyndesmus lewis* (see, for example, Wauer and Carter 1965, Behle and Perry 1975).

State Subspecies

This species is monotypic (i.e., has no subspecies).

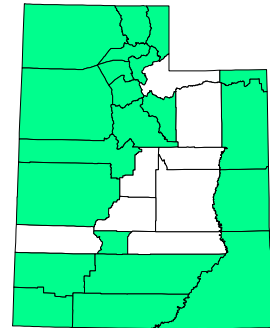
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G4G5

State Rank: S2S3

Natural Heritage Ranking Summary

Widespread but generally uncommon and declining in Utah. Much less common now than formerly.

Estimated Number of Populations (Occurrences)

Almost certainly more than 5 occurrences (i.e., local breeding populations) but possibly fewer than 20.

Abundance

Uncommon (Behle and Perry 1975, Walters and Sorensen 1983, Behle et al. 1985, Utah Ornithological Society Bird Records Committee 1994); "somewhat erratic and uncommon" (Hayward et al. 1976). However, in northeastern Utah, Behle (1981) considered this species to be a "[c]ommon summer resident".

Range in Utah

Possibly occurs throughout Utah, although Walters and Sorensen (1983) had records for only 14 of the 23 Utah "latilong" blocks. Noticeably lacking in their "latilong" study were records for much of the Colorado Plateau; this, however, probably is more a reflection of lack of adequate sampling in some areas than of the real absence of this species from those areas.

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Cache	Native and natural, presence confident
Daggett	Native and natural, presence probable
Davis	Native and natural, presence probable
Garfield	Native and natural, presence possible
Grand	Native and natural, presence probable
Iron	Native and natural, presence probable
Juab	Native and natural, presence possible
Kane	Native and natural, presence probable
Millard	Native and natural, presence possible
Morgan	Native and natural, presence probable
Piute	Native and natural, presence possible
Rich	Native and natural, presence probable
Salt Lake	Native and natural, presence probable
San Juan	Native and natural, presence confident
Tooele	Native and natural, presence confident
Uintah	Native and natural, presence confident
Utah	Native and natural, presence confident
Wasatch	Native and natural, presence probable
Washington	Native and natural, presence confident
Weber	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Columbia Plateau	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence possible
Mojave Desert	Native and natural, presence possible
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence possible

Habitats Utilized in Utah

Walters and Sorensen (1983) listed the known nesting habitats in Utah as agricultural orchards, shelterbelts, and tree farms, montane riparian woodlands (including narrow-leaved cottonwood, big-toothed maple, box elder, river birch, dogwood, alder, willows, etc., at lower elevations), and desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations); they considered this species also to utilize submontane shrub (including Gambel's oak, dwarf maple, and mountain mahogany) during the breeding season. They considered this species to use the above habitats as well as urban residential areas, parks, golf courses, and cemeteries during migration and winter.

Trends

"Formerly much more abundant" (Behle et al. 1985).

Threats

"...[T]he decline [of this species in Utah is] attributed by some to starlings preempting their nesting sites" (Behle et al. 1985). The destruction of riparian habitat is probably a threat in this state as well.

Inventory Needs

Inventory needed to determine current status of this species, especially in parts of south-central and west-central Utah.

ACORN WOODPECKER

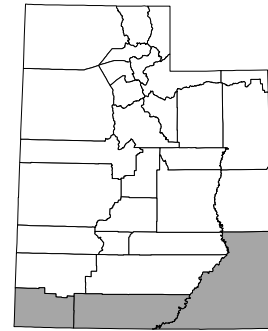
Melanerpes formicivorus

State Subspecies

The race that occurs in Utah is believed to be *Melanerpes formicivorus aculeata* (see Hedges 1985).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2

Natural Heritage Ranking Summary

In Utah this species occurs only in the extreme southern part of the state where there are three isolated populations: in extreme eastern Washington, extreme southwestern Kane, and east-central San Juan counties.

Estimated Number of Populations (Occurrences)

Three occurrences.

Abundance

Seemingly only a very small population in Utah.

Range in Utah

Small populations are present in Zion National Park, Washington County (Hedges 1985); in Coral Pink Sand Dunes, Kane County (Hedges 1985, 1987); and in Devil's Canyon (and vicinity), San Juan County (LaRue 1987).

<u>County</u>	<u>Status</u>
San Juan	Native and natural, presence confident
Washington	Native and natural, presence confident
Kane	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Hedges (1985) described the site of the first documented record of this species in Utah: "Habitat at this location was composed of an understory of pinyon pine (*Pinus edulis*), Utah juniper (*Juniperus utahensis*), and Gambel's oak (*Quercus gambelii*) with a few small groups of ponderosa pine (*Pinus ponderosa*). The understory vegetation was primarily snowberry (*Symphoricarpus albus*), black sagebrush (*Artemisia nova*), and several species of grasses and forbs." At a second site, Hedges (1985) reported: "Habitat ... was predominantly barren sand dunes interspersed with single or small groups of ponderosa pine. Large stands of ponderosa pine, pinyon pine, and Utah juniper occurred adjacent to the dunes...." LaRue (1987), documenting the first Utah specimen of this species, which was found as a road-kill, characterized the locality as "an area of pinyon pine-Utah juniper woodland, interspersed with ponderosa pine and Gambel oak and other transition zone vegetation."

Trends

Population trend in Utah unknown; the recent observations of this species may indicate that the species is increasing in abundance in Utah, but it may be that the species was simply overlooked in the past.

Threats

Threats in Utah are not known.

Other Considerations

Although this species has been seen regularly, in all seasons, for a number of years at both Coral Pink Sand Dunes State Park, Kane County, and Devil's Canyon, San Juan County, no nesting records are yet known in Utah, though it is believed that the species breeds in the state.

Inventory Needs

Further inventory for this species in areas of ponderosa pine forest in southern Utah is needed to determine abundance and extent of distribution in the state.

WILLIAMSON'S SAPSUCKER

Sphyrapicus thyroideus

State Subspecies

The race that occurs in Utah is *Sphyrapicus thyroideus nataliae*.

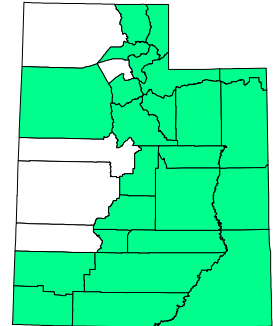
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S2S3B,SAN

Natural Heritage Ranking Summary

Occurs throughout most of the mountainous parts of Utah (Wasatch, Uinta, La Sal, Abajo, and mountains of central Utah High Plateaus), where it is an uncommon breeding species; casual in winter.

Estimated Number of Populations (Occurrences)

Probably at least 6 occurrences (i.e., local breeding populations).

Abundance

Uncommon summer resident (Hayward et al. 1976, Behle and Perry 1975, Behle et al. 1985, Utah Ornithological Society Bird Records Committee 1994), casual in winter (Behle and Perry 1975, Behle et al. 1985).

Range in Utah

Occurs in Utah in the Wasatch, Uinta, La Sal, and Abajo mountains, and the mountains of the central Utah High Plateaus. Walters and Sorensen (1983) had summer records of this species in 11 of the 23 "latilong" blocks in Utah, with breeding

confirmed in 4 blocks; in one additional block this species was reported as a migrant.

<u>County</u>	<u>Status</u>
Iron	Origin data uncertain, presence probable
Kane	Origin data uncertain, presence probable
Garfield	Origin data uncertain, presence confident
Washington	Origin data uncertain, presence confident
Sevier	Origin data uncertain, presence probable
San Juan	Origin data uncertain, presence confident
Grand	Origin data uncertain, presence probable
Duchesne	Origin data uncertain, presence confident
Daggett	Origin data uncertain, presence probable
Summit	Origin data uncertain, presence confident
Cache	Origin data uncertain, presence probable
Morgan	Origin data uncertain, presence probable
Weber	Origin data uncertain, presence probable
Sanpete	Origin data uncertain, presence probable
Tooele	Origin data uncertain, presence possible
Wasatch	Origin data uncertain, presence probable
Utah	Origin data uncertain, presence probable
Uintah	Origin data uncertain, presence probable
Salt Lake	Origin data uncertain, presence probable
Rich	Origin data uncertain, presence probable
Piute	Origin data uncertain, presence probable
Wayne	Origin data uncertain, presence probable
Emery	Origin data uncertain, presence possible
Carbon	Origin data uncertain, presence possible

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Origin data uncertain, presence confident
Utah High Plateaus	Origin data uncertain, presence confident
Wasatch & Uinta Mtns.	Origin data uncertain, presence confident

Habitats Utilized in Utah

Walters and Sorensen (1983) listed coniferous forest and aspen forest as the habitats in which this species is known to breed in Utah; they listed coniferous forest as well as montane riparian woodlands and desert riparian woodlands as habitats used by this species during migration in Utah. Behle (1981) reviewed nesting records in northeastern Utah, which were from "mixed yellow pine-aspen forest" and "forest of alpine fir, Douglas fir and aspen". Behle et al. (1985)

stated that in Utah in summer this species is "resident in mountains in the coniferous fir-aspen forest and particularly in ponderosa pines".

Trends

Population trend in Utah not known, possibly declining.

Threats

The principal threat to this species in Utah is loss of habitat through timber harvest.

Inventory Needs

This species seems not to have been reported in the Deep Creek Mountains or the Raft River Mountains, and it is unclear whether there are records of its occurrence in the Pine Valley Mountains; thus, inventory, especially confirmation of nesting, should be directed toward these three ranges.

THREE-TOED WOODPECKER

Picoides tridactylus

State Taxonomic Comments

This species was formerly called the northern three-toed woodpecker (see, for example, Behle and Perry 1975, Hayward et al. 1976, and Behle 1981).

State Subspecies

The race that occurs in Utah is *Picoides tridactylus dorsalis*.

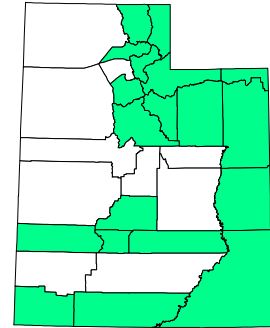
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in the Wasatch and Uinta mountains as well as the La Sal Mountains and some of the higher mountains of southwestern Utah. Although possibly common in the Uinta Mountains, it is generally rare in the state.

Estimated Number of Populations (Occurrences)

Possibly fewer than 20 occurrences (i.e., local breeding populations).

Abundance

Most authors (Behle and Perry 1975, Hayward et al. 1976, Behle 1981, and Behle et al. 1985) have considered this species to be common in the Uinta Mountains but uncommon elsewhere in Utah. The Utah Ornithological Society Bird Records Committee (1994) listed the species as rare.

Range in Utah

Occurs in Utah in the Wasatch and Uinta mountains, the La Sal Mountains, and some of the higher ranges of the southwestern part of the Utah High Plateaus.

<u>County</u>	<u>Status</u>
Beaver	Native and natural, presence probable
Kane	Native and natural, presence probable
Piute	Native and natural, presence probable
Sevier	Native and natural, presence probable
Washington	Native and natural, presence probable
San Juan	Native and natural, presence probable
Grand	Native and natural, presence probable
Daggett	Native and natural, presence probable
Duchesne	Native and natural, presence probable
Summit	Native and natural, presence probable
Wasatch	Native and natural, presence probable
Utah	Native and natural, presence probable
Uintah	Native and natural, presence probable
Salt Lake	Native and natural, presence probable
Rich	Native and natural, presence probable
Morgan	Native and natural, presence probable
Cache	Native and natural, presence probable
Weber	Native and natural, presence probable
Wayne	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence probable
Utah High Plateaus	Native and natural, presence probable
Wasatch & Uinta Mtns.	Native and natural, presence probable

Habitats Utilized in Utah

Walters and Sorensen (1983) indicated that the breeding habitat of this species in Utah is limited to spruce-fir forest (including alpine fir, Engelmann spruce, blue spruce, and white fir). They gave the wintering habitat in Utah as spruce-fir forest and aspen forest.

Trends

Population trend in Utah not known, perhaps stable.

Threats

Probably not very threatened in Utah. Timber harvest may be a threat in Utah.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

SOUTHWESTERN WILLOW FLYCATCHER

Empidonax traillii extimus

State Taxonomic Comments

The species to which this race belongs was formerly known as Traill's flycatcher, which included both the species now known as the willow flycatcher (*Empidonax traillii*) and the species now known as the alder flycatcher (*Empidonax alnorum*). Behle (1985) commented: "Few species have had such a confused nomenclatural history with so many differences of opinion among systematists as to the validity of several proposed races as the Willow or Traill's Flycatcher."

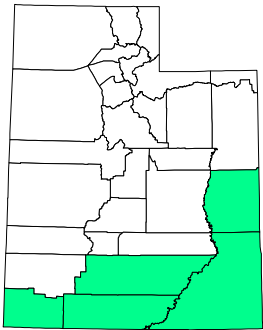
Behle (1985) called attention to the fact that earlier Utah reports (e.g., Behle 1943, Woodbury and Russell 1945) assigned examples of the southwestern race (*extimus*) to the race *brewsteri*, "on the basis of the A.O.U. Check-list".

State Subspecies

This race, *extimus*, is one of two races of the species *Empidonax traillii* that breed in Utah; the other Utah race, *adastus*, is a common breeding species in the northern half of Utah. A third race, the type or nominate race, *Empidonax traillii traillii*, has been reported as a migrant in Utah, based on one specimen (Behle 1985); two other races, *brewsteri* and *campestris*, "probably occasionally occur [in Utah] as migrants, but so far their occurrence has not been substantiated by specimens of record" (Behle 1985). See Behle's (1985) account of this species for discussion of the taxonomy and nomenclatural history of this species and its subspecies, including the southwestern race, in Utah.

Agency Status

US Fish and Wildlife Service:	Endangered
US Forest Service Region 4:	Endangered
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G5T2 State Rank: S1B

Natural Heritage Ranking Summary

This subspecies has declined throughout its range, including southern Utah, where in 1996 surveys 25 individuals were detected at 11 locations in 4 counties (Washington, Garfield, Grand, and San Juan).

Estimated Number of Populations (Occurrences)

About eleven occurrences, based on 1996 surveys (McDonald et al. 1997).

Abundance

Surveys in 1996 revealed 25 individuals in Utah (McDonald et al. 1997). The actual population is presumably larger.

Range in Utah

Occurs in roughly the southern third of the state. In 1996 surveys this race was detected in four counties in Utah: Washington, Garfield, Grand, and San Juan (McDonald et al. 1997).

Behle (1985) mapped the localities of 12 specimens representing "pure" examples of this race; all of these were in extreme southern Utah--six in southern Washington County, three in Kane County, and three in southwestern San Juan County. Behle (1985) considered specimens from northeastern San Juan County, southern Grand County, and eastern Emery County not to be of this race but rather to be "pure" examples of the northern race (*adastus*). Behle (1985) also pointed out: "An extensive area of intergradation between the two races is found in the central part of the state." This raises the question of whether the recent surveys for the southwestern race (*extimus*) are including individuals of the northern race (*adastus*) in reports of the southwestern race--in particular, all of the Grand County and some of the San Juan County records. Even other recent survey reports (e.g., those from Garfield County) may represent intergrades (i.e., *adastus* x *extimus*).

County

Status

Garfield	Native and natural, presence confident
Grand	Native and natural, presence confident
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident
Washington	Native and natural, presence confident

Ecoregion

Status

Colorado Plateau	Native and natural, presence confident
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Habitats Utilized in Utah

McDonald et al. (1997) reported details of the habitats of three locations in southwestern Utah where this subspecies was detected in 1996, including the site of "the only known active southwestern willow flycatcher nest in southern Utah." The habitat of one site along the Virgin River "consisted of dense tamarisk, with young *Salix* ..., and a few Russian olives." At another site along the Virgin River, "*Salix* was the dominant plant species ..., coupled with a mix of *Salix* and tamarisk edge, directly south of a large, fallen tree. ... In the area of first detection, the *Salix* was approximately 6 m in height and 24 cm in diameter. At last detection, the tamarisk was approximately 6 m high." At the third site, where nesting was discovered, there was "a dense mix of tamarisk, *Salix*, Russian olive, *Typha* and *Phragmites*. The nest was located 1.1 m above the ground in a fork of what is believed to be a dead *Salix* tree approximately 15 cm in diameter and 1.6 to 1.8 m in height. The *Salix* tree was located in fairly open vegetation, approximately 40 m northeast of the Duck Pond edge." Table 2 (McDonald et al. 1997) indicates that there were also cottonwoods (*Populus* sp.) present at this site. Aside from this site where the nest was found, "[t]here was no other site within the survey area [in southwestern Utah] that had older *Salix* tree clumps intermixed with a multilayered herbaceous understory, and not totally dominated by tamarisk." McDonald et al. (1997, Table 5), summarizing survey results for ten other sites in southern Utah where this subspecies was detected in 1996, indicated the habitats of seven of these sites; all seven were characterized by the presence of willows (*Salix* sp.), and at five of the sites tamarisk (*Tamarix* sp.) was also present, apparently more abundant than willows at three sites.

Trends

This race has declined markedly in recent years throughout its range, including southern Utah.

Threats

Although the cause(s) of the decline in this subspecies are not completely understood, the loss of critical riparian habitat must be considered a threat. The species to which this race belongs is known to be heavily parasitized by brown-headed cowbirds (see, for example, Lowther 1993), and this subspecies is not an exception; agriculture, ranching, clearing of woody vegetation and other human modifications of habitat favor brown-headed cowbirds.

Inventory Needs

Although inventory for this subspecies in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

VERMILION FLYCATCHER

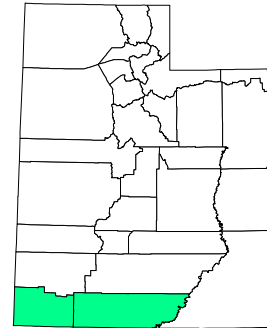
Pyrocephalus rubinus

State Subspecies

The race that occurs in Utah is *Pyrocephalus rubinus flammeus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S2B,SAN

Natural Heritage Ranking Summary

A rare breeding species in extreme southwestern Utah--southern Washington and possibly extreme southwestern Kane counties. An occasional individual is present in Utah in winter.

Estimated Number of Populations (Occurrences)

Very few occurrences but possibly more than five.

Abundance

"Rare" (Behle et al. 1985); "sparse" (Hayward et al. 1976).

Range in Utah

Occurs in Utah only in the southwestern corner of the state: southern Washington and perhaps southwestern Kane counties.

County**Status**

Washington
Kane

Native and natural, presence confident
Native and natural, presence possible

Ecoregion**Status**

Mojave Desert
Colorado Plateau

Native and natural, presence confident
Native and natural, presence possible

Habitats Utilized in Utah

Woodbury et al. (1949) said that this species occurs in Utah in Washington and possibly Kane counties, "breeding in orchards and probably in mesquite and wash willows." Hayward et al. (1976) stated that this species is found in "the low deserts of southern Utah." Walters and Sorensen (1983) considered the Utah habitat of this species to be desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), indicating that this is a habitat in which it is known to nest.

Trends

Population trend in Utah not known.

Threats

The greatest threat to this species in Utah probably is the loss or alteration of riparian habitat.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BROWN-CRESTED FLYCATCHER

Myiarchus tyrannulus

State Taxonomic Comments

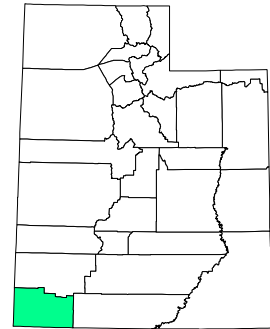
This species was formerly known as Wied's crested flycatcher.

State Subspecies

The race that occurs in Utah is *Myiarchus tyrannulus magister*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S1B

Natural Heritage Ranking Summary

This species barely enters extreme southwestern Utah, where it is rare in Beaver Dam Wash in extreme southwestern Washington County.

Estimated Number of Populations (Occurrences)

One occurrence.

Abundance

Very rare. ("Rare summer resident" [Behle and Perry 1975, Behle et al. 1985].)

Range in Utah

This species reaches the northern limit of its range in extreme southwestern Utah, where it is "known only from Beaver Dam Wash" (Behle et al. 1985), in extreme southwestern Washington County. The species was first discovered at

Beaver Dam Wash in 1966 (Wauer 1968).

<u>County</u>	<u>Status</u>
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Washington	Native and natural, presence confident
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<u>Ecoregion</u>	<u>Status</u>
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Mojave Desert	Native and natural, presence confident
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Habitats Utilized in Utah

Wauer (1968) mentioned that the first Utah specimen of this species was "among the cottonwood foliage at Beaver Dam" when collected; he further described the general habitat of the area: "There are sparse cottonwood growths throughout, and a single large cottonwood-willow woodland situated at the upper end of the wash about 20 miles north of Beaver Dam. That area was visited by the author A mating pair was found and the male [the second Utah specimen of this species] collected."

Walters and Sorensen (1983) considered the habitat of this species in Utah to be desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations) and indicated that the species is known to nest in this habitat.

Trends

Population trend in Utah unknown.

Threats

Threats in Utah not known.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BLACK-TAILED GNATCATCHER

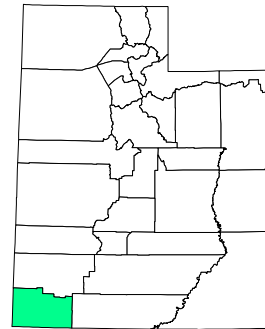
Polioptila melanura

State Subspecies

The race that occurs in Utah is *Polioptila melanura lucida*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S1B

Natural Heritage Ranking Summary

A southwestern desert species that reaches the northern limit of its distribution in extreme southwestern Utah, where it is known to breed only in Beaver Dam Wash, extreme southwestern Washington County.

Estimated Number of Populations (Occurrences)

One occurrence.

Abundance

Behle et al. (1985) commented that this species is "[r]are" in the one area of its occurrence "where there is a small breeding population."

Range in Utah

This species reaches the northern limit of its range in extreme southwestern Utah where it occurs as a nesting species only in Beaver Dam Wash, extreme southwestern Washington County (White et al. 1983, Behle et al. 1985). Nesting was first documented in Utah, in Beaver Dam Wash, in 1984 (Behle et al. 1985).

County**Status**

Washington

Native and natural, presence confident

Ecoregion**Status**

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

White et al. (1963) discussed three pairs of gnatcatchers reported to be this species in the Beaver Dam Wash; only for the last pair did these authors make any mention of habitat: the pair having been "in joshua tree habitat".

Trends

Population trend in Utah unknown.

Threats

Threats in Utah not known.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

VEERY

Catharus fuscescens

State Taxonomic Comments

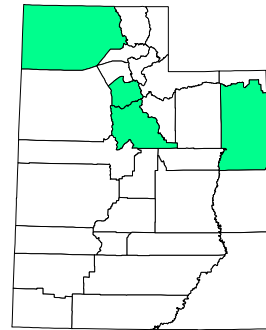
Woodbury et al. (1949) for this species used the name *Hylocichla fuscescens*.

State Subspecies

The race that occurs in Utah is *Catharus fuscescens salicicola*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S2B

Natural Heritage Ranking Summary

A rare breeding species in northern Utah in the Raft River Mountains, the Wasatch Mountains, probably the Uinta Mountains, and possibly along the Green River in the Uinta Basin; seemingly has declined considerably in abundance in Utah.

Estimated Number of Populations (Occurrences)

Probably fewer than 20 occurrences (local breeding populations).

Abundance

"Rare summer resident" (Behle et al. 1985).

Range in Utah

Occurs in northern Utah in the Raft River Mountains, the Wasatch Mountains, probably the Uinta Mountains, and possibly along the Green River in the Uinta

Basin. Hayward et al. (1976) reported three sets of eggs collected in the 1930s; two of the sets were from Utah County (Provo and Provo River near Provo) and one was from Salt Lake County (City Creek). Behle and Sealander (1952) reported a specimen collected in mid-June in the Raft River Mountains, Box Elder County, that apparently was in breeding condition, and Hayward et al. (1976) mentioned a specimen collected near Jensen, Uintah County, in July.

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Utah	Native and natural, presence confident
Uintah	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Columbia Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Uinta Basin	Native and natural, presence possible

Habitats Utilized in Utah

Woodbury et al. (1949) stated that this species breeds in northern Utah "in streamside thickets from 4500 to 9000 feet altitude." Hayward et al. (1976) said that in Utah this species "is a summer inhabitant of streamside woodlands especially in the lower valleys." Walters and Sorensen (1983) did not list this as a breeding species in Utah but did indicate its habitats as a migrating species in this state as montane riparian woodland (including narrow-leaved cottonwood, big-toothed maple, box elder, river birch, dogwood, alder, willows, etc., at lower [sic] elevations) and desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations). Behle et al. (1985) (possibly repeating Hayward et al. 1976) stated that in northern Utah this species occurs "in riparian woodlands along streams in lower valleys."

Trends

"From available records it would appear that this species was much more common in the early days of settlement than it is at present" (Hayward et al. 1976).

Threats

Commenting on the decline of this species in Utah, Hayward et al. (1976) wrote: "Apparently it has not been able to adjust to the pressures of human population." Moskoff (1995) said: "Fragmentation and loss of second-growth and

woodland breeding habitat threaten populations ...", and "[f]ragmentation increases likelihood of nest parasitism by Brown-headed Cowbird."

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

GRAY CATBIRD

Dumetella carolinensis

State Taxonomic Comments

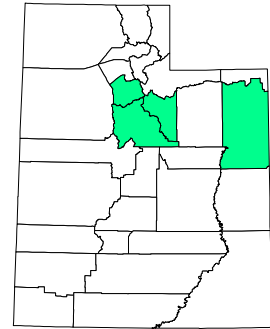
This species was formerly known by the common name of simply "the catbird".

State Subspecies

Although some authors (e.g., Behle 1981, Behle et al. 1985) have assigned the Utah population of this species to the race *Dumetella carolinensis ruficrissa*, the species is currently considered to be monotypic (i.e., having no subspecies) by many (see Cimprich and Moore 1995).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S2B

Natural Heritage Ranking Summary

Formerly more common, this species is known to nest currently in only three areas in north-central Utah: Parleys Canyon, Salt Lake County; Provo Canyon, Utah County; and Heber Valley, Wasatch County. At least formerly nested in northeastern Utah along the Green River.

Estimated Number of Populations (Occurrences)

Seemingly only three extant breeding occurrences.

Abundance

According to Behle et al. (1985) this species is "[r]are and localized".

Range in Utah

Of local occurrence "in central northern and northeastern Utah at lower elevations" and "[k]nown to breed only in Parleys and Provo Canyons and Heber Valley in northern Utah" (Behle et al. 1985), in other words, only in three restricted areas in Salt Lake, Utah, and Wasatch counties. There are old records of nesting in Uintah County (Twomey 1942, Behle 1981).

<u>County</u>	<u>Status</u>
Utah	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Wasatch	Native and natural, presence confident
Uintah	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Uinta Basin	Native and natural, presence possible

Habitats Utilized in Utah

Woodbury et al. (1949) stated that in Utah this species breeds "in dense thickets of streamside or other shrubbery from 4500 to 7000 feet altitude." Hayward et al. (1976) said that in Utah this species "lives in thickets along the lower valley streams or ditch banks and in similar habitats around dwellings and parks."

Behle (1981) wrote of this species in northeastern Utah: "Found in lowland valleys in brushy areas and willow thickets along streams." Behle (1981) also noted the presence of this species "in the vicinity of the Ashley Creek marshes", where "at least four pairs nested ... utilizing the dense thickets near the marshes" and also mentioned an earlier report of this species "in the woods around the marshes".

Walters and Sorensen (1983) considered breeding and migrating habitats of this species in Utah to be montane riparian woodlands (including narrow-leaved cottonwood, big-toothed maple, boxelder, river birch, dogwood, alder, willows, etc., at lower [sic] elevations) and desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations). Behle et al. (1985) stated that this species is a summer resident "at lower elevations where it inhabits brushy areas along streams as well as thickets in parks, cemeteries and residential areas of cities."

Trends

Behle et al. (1985) commented: "May have been more common in earlier times than at present." Indeed, older records (Twomey 1942, Behle 1981), particularly along the Green River in Uintah County and along the Emery-Grand county line, suggest that the species at least has been more widespread and common as a breeding species in the state, if it is true, as Behle et al. (1985) imply, that this species no longer breeds along the Green River. Walters and Sorensen's "latilong" study (1983) suggests that the species may still breed in northeastern Utah.

Citing Ridgway, Hayward et al. (1976) noted: "During his observations of 1869, Ridgway ... found this species to be one of the most abundant birds in the Wasatch region", which also suggests that the species has declined greatly in Utah.

Threats

Threats in Utah are not known; loss of riparian habitat may be a threat.

Other Considerations

With more complete information on breeding of this species in Utah, it may be appropriate to "downlist" its conservational concern status.

Inventory Needs

Inventory for this species in Utah relatively complete.

CRISSAL THRASHER

Toxostoma crissale

State Taxonomic Comments

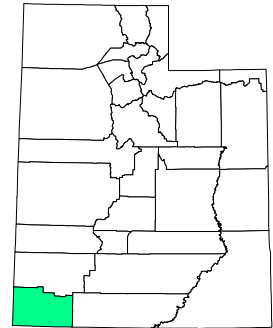
Formerly known as *Toxostoma dorsale* (e.g, Woodbury et al. 1949, Behle and Perry 1975, Hayward et al. 1976, Behle 1976, Walters and Sorensen 1983).

State Subspecies

The race that occurs in Utah is *Toxostoma crissale coloradense*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

This species occurs in Utah only in the southwestern corner of the state where it breeds in the Virgin River valley of southwestern Washington County.

Estimated Number of Populations (Occurrences)

Presumably few breeding occurrences in its very limited Utah range.

Abundance

"Uncommon" (Hayward et al. 1976, Behle et al. 1985) in the limited area of its occurrence in Utah.

Range in Utah

Occurs in Utah only in the southwestern corner of the state in the Virgin River valley, southern (mainly southwestern) Washington County, with at least one observation at Kanab, Kane County (Hayward et al. 1976, Behle et al. 1985).

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) said that in Utah this species inhabits "tall brush or streamside trees in low hot valleys." Walters and Sorensen (1983) listed the breeding and wintering habitats of this species in Utah as Joshua tree, creosote bush, and blackbrush, and desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations).

Trends

Population trend unknown, presumed to be stable.

Threats

Threats in Utah not known.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

LE CONTE'S THRASHER

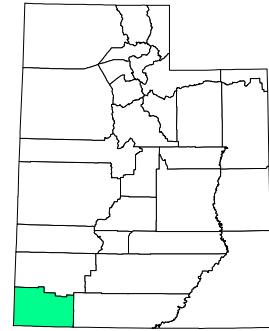
Toxostoma lecontei

State Subspecies

The race that occurs in Utah is considered to be the nominate or type race, *Toxostoma lecontei lecontei*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G4

State Rank: S1

Natural Heritage Ranking Summary

A Mojave desert species that occurs in Utah only on the Beaver Dam Slope of extreme southwestern Washington County. Although singing territorial males are well known in this one area, females and evidence of nesting await discovery in Utah.

Estimated Number of Populations (Occurrences)

One occurrence.

Abundance

Very rare in the one area of its Utah occurrence.

Range in Utah

Barely enters Utah in the extreme southwest corner of Washington County, where it is known from the west slope of the Beaver Dam Mountains.

County**Status**

Washington

Native and natural, presence confident

Ecoregion**Status**

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) mentioned two reported Utah localities for this species and indicated its habitat to be "mesquite and joshua tree areas". Hayward et al. (1976) noted that a specimen of this species was collected 10 May 1891 by C. Hart Merriam in the Beaver Dam Mountains and that "Merriam in his notes indicated that it was rather common on the west side of this mountain range where it lived in close association with the Cactus Wren." Walters and Sorensen (1983) listed both breeding and wintering habitat of this species in Utah as Joshua tree, creosote bush, blackbrush. Behle et al. (1985) stated: "Most [Utah] records are from the Beaver Dam Mountains area where it is found in stands of Joshua Trees, cholla cactus and creosote bushes."

Trends

Population trend in Utah not known.

Threats

Threats in Utah unknown. Sheppard (1996) mentioned All Terrain Vehicles as a threat to the habitat of this species; he also noted fire, pesticides, and land development as threats.

Inventory Needs

Inventory needed to establish breeding status conclusively.

Other Considerations

Although this species is presumed to breed in Utah, territorial, singing males being well known in the one area where it is found in the state, females have not been documented and no nests or conclusive evidence of breeding (e.g., fledglings) have yet been discovered in the state (fide S. Hedges, 1996).

PHAINOPEPLA

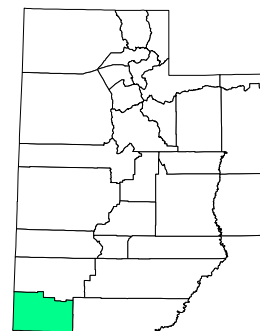
Phainopepla nitens

State Subspecies

The race that occurs in Utah is *Phainopepla nitens lepida*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1N,S2B

Natural Heritage Ranking Summary

In Utah breeds only in southern Washington County; rare in winter.

Estimated Number of Populations (Occurrences)

Probably fewer than 20 occurrences (i.e., nesting populations).

Abundance

"Uncommon" (Hayward et al. 1976, Behle et al. 1985).

Range in Utah

Occurs in Utah only in the Virgin River valley of southern Washington County and "extraliminally at Kanab", Kane County (Behle et al. 1958, Behle 1976).

County

Status

Washington	Native and natural, presence confident
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<u>Ecoregion</u>	<u>Status</u>
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Mojave Desert	Native and natural, presence confident
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Habitats Utilized in Utah

Woodbury et al. (1949) wrote that in Utah this species breeds "in mesquite, streamside trees or orchards". Walters and Sorensen (1983) indicated the breeding and wintering habitats of this species in Utah to be desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), in which habitat the species is known to nest, and Joshua tree, creosote bush, blackbrush.

Trends

Population trend in Utah unknown.

Threats

Threats not known in Utah. (This species seems to be particularly sensitive to disturbances near its nests and is quick to abandon nests.)

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

BELL'S VIREO

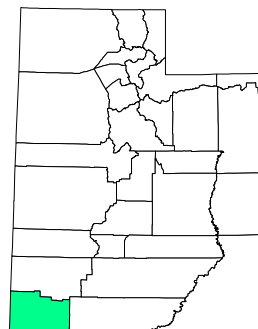
Vireo bellii

State Subspecies

The race that occurs in Utah is *Vireo bellii arizonae*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2B

Natural Heritage Ranking Summary

This species occurs in Utah only in the Virgin River valley of southern Washington County, where it is a breeding species.

Estimated Number of Populations (Occurrences)

Probably five or fewer occurrences (i.e., local breeding populations).

Abundance

Rare or uncommon (Hayward et al. 1976., Behle 1976, Behle et al. 1985). Behle (1976) stated: "This is an uncommon species in southwestern Utah but enough records exist to suggest that it occurs regularly and has breeding status." Behle et al. (1985) considered it to be generally rare, "but common in Beaver Dam Wash."

Range in Utah

In Utah only in the Virgin River valley of southern Washington County.

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) reported this species in Utah "along Virgin River streamside willows and tamarix". Walters and Sorensen (1983) considered the breeding habitat of this species in Utah to be desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), a habitat in which nesting is known in Utah.

Trends

Population trend in Utah unknown.

Threats

Threats to this species are not known in Utah. Brown (1993), however, pointed out: "In sw. U.S., riparian habitat modifications--including agriculture, urbanization, firewood cutting, grazing, flood control projects, and reservoir construction--have reduced habitat for this species." It should be noted that nests of this species are heavily parasitized by brown-headed cowbirds (see, for example, Lowther 1993), which are favored by human alterations of the environment such as clearing of woody vegetation, agriculture, and ranching.

Inventory Needs

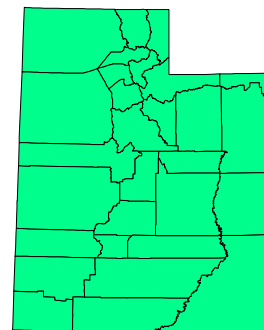
Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

COMMON YELLOWTHROAT

Geothlypis trichas

State Subspecies

Behle and Perry (1975) stated: "Resident race over most of Utah is *occidentalis* with an intergrading population in extreme southwestern Utah toward *scirpicola*. The race *campicola* also occurs in migration." Others (e.g., Hayward et al. 1976 and Behle et al. 1985) have followed these subspecific assignments. See Behle (1985) for detailed discussion.



Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population, distribution, and/or habitat

Natural Heritage Ranking

Global Rank: G5

State Rank: S3B

Natural Heritage Ranking Summary

Occurs statewide and is fairly common or common. The habitats of this species, wetlands and riparian areas, are threatened by alteration and destruction in Utah.

Estimated Number of Populations (Occurrences)

Almost certainly more than 100 occurrences.

Abundance

In Utah variously considered "[c]ommon" (Behle and Perry 1975), "rather common"

(Hayward et al. 1976), fairly common (Walters and Sorensen 1983), "[u]ncommon" (Behle et al. 1985), and common (Utah Ornithological Society Bird Records Committee 1994).

Range in Utah

Occurs throughout Utah. Walters and Sorensen (1983) had records for all but one of the 23 "latilong" blocks in Utah.

<u>County</u>	<u>Status</u>
Washington	Origin data uncertain, presence probable
Beaver	Origin data uncertain, presence probable
Box Elder	Origin data uncertain, presence probable
Cache	Origin data uncertain, presence probable
Carbon	Origin data uncertain, presence probable
Daggett	Origin data uncertain, presence probable
Davis	Origin data uncertain, presence probable
Duchesne	Origin data uncertain, presence probable
Emery	Origin data uncertain, presence probable
Garfield	Origin data uncertain, presence probable
Grand	Origin data uncertain, presence probable
Iron	Origin data uncertain, presence probable
Juab	Origin data uncertain, presence probable
Kane	Origin data uncertain, presence probable
Millard	Origin data uncertain, presence probable
Morgan	Origin data uncertain, presence probable
Piute	Origin data uncertain, presence probable
Rich	Origin data uncertain, presence probable
Salt Lake	Origin data uncertain, presence probable
San Juan	Origin data uncertain, presence probable
Sanpete	Origin data uncertain, presence probable
Sevier	Origin data uncertain, presence probable
Summit	Origin data uncertain, presence probable
Tooele	Origin data uncertain, presence probable
Uintah	Origin data uncertain, presence probable
Utah	Origin data uncertain, presence probable
Wasatch	Origin data uncertain, presence probable
Washington	Origin data uncertain, presence probable
Wayne	Origin data uncertain, presence probable
Weber	Origin data uncertain, presence probable

<u>Ecoregion</u>	<u>Status</u>
Wyoming Basins	Origin data uncertain, presence probable

Colorado Plateau	Origin data uncertain, presence probable
Columbia Plateau	Origin data uncertain, presence probable
Great Basin	Origin data uncertain, presence probable
Utah High Plateaus	Origin data uncertain, presence probable
Mojave Desert	Origin data uncertain, presence probable
Uinta Basin	Origin data uncertain, presence probable
Wasatch & Uinta Mtns.	Origin data uncertain, presence probable

Habitats Utilized in Utah

Walters and Sorensen (1983) listed habitats utilized in Utah during both breeding and migration as marshes and wet hummocks, montane riparian woodlands, and desert riparian woodlands.

Trends

Population trend in Utah not known; perhaps declining.

Threats

In Utah the habitats of this species, wetlands and riparian areas, are especially subject to alteration and destruction.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

AMERICAN REDSTART

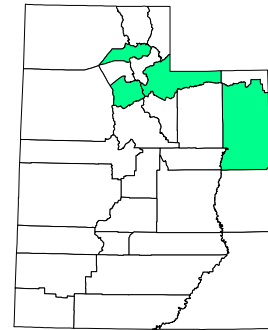
Setophaga ruticilla

State Subspecies

The race that occurs in Utah is *Setophaga ruticilla tricolora*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S2B,SZN

Natural Heritage Ranking Summary

Formerly more common; now a rare breeding species in northern Utah and a rare migrant in other parts of the state.

Estimated Number of Populations (Occurrences)

Probably fewer than 20 occurrences (local breeding populations).

Abundance

"A sparse breeder" (Hayward et al. 1976); "[r]are summer resident" and "rare transient" (Behle et al. 1985).

Range in Utah

Hayward et al. (1976) reported that this species nested "in streamside woodlands near Provo in the early 1930s" and reviewed early records (that seem suggestive of breeding) for Salt Lake, Summit, Utah, Weber, and Uintah County. Behle (1981) summarized records for Uintah County, including a summer-taken specimen, and Walters and Sorensen (1983) indicated its presence in this area of northeastern

Utah in summer but with breeding not confirmed.

<u>County</u>	<u>Status</u>
Salt Lake	Native and natural, presence confident
Summit	Native and natural, presence confident
Weber	Native and natural, presence confident
Uintah	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) stated that in Utah this species breeds "in deciduous trees of valleys and low canyons", and Hayward et al. (1976) repeated these words verbatim though without indication that they were quoting. Behle (1981) said that this species in northeastern Utah occurs in "deciduous woodlands in the lowland valleys and river bottomlands, especially riparian growths of shrubby vegetation such as willows." Walters and Sorensen (1983) indicated that in Utah both the breeding and the migrating habitats of this species are montane riparian woodlands (including narrow-leafed cottonwood, big-toothed maple, box elder, river birch, dogwood, alder, willows, etc., at lower [sic] elevations) and desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), and that in both habitats nesting is known in Utah. Behle et al. (1985) mentioned that in Utah this species is "usually found in riparian vegetation in valleys and canyon bottoms at mid-elevations."

Trends

"Apparently more common formerly than at present" (Hayward et al. 1976), and early records support this conclusion.

Threats

Threats to this species in Utah are not understood. Behle et al. (1985) said that it is "usually found in riparian vegetation in valleys and canyon bottoms at mid-elevations." Loss of riparian habitat, then, likely is an important threat.

PAINTED REDSTART

Myioborus pictus

State Taxonomic Comments

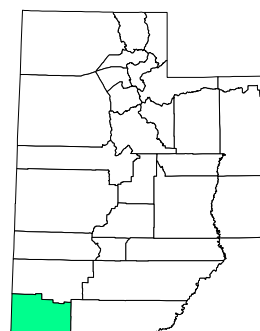
Formerly was called *Setophaga picta* (see, for example, Wauer and Carter 1965, Wauer 1969, Behle and Perry 1975).

State Subspecies

Hayward et al. (1976) referred Utah examples to the type (or nominate) race, *Myioborus pictus pictus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S1B

Natural Heritage Ranking Summary

This species reaches the northern limit of its range in Washington County, where it has been observed several times in Zion National Park and once in Beaver Dam Wash; the only known breeding locality in Utah is the Pine Valley Mountains.

Estimated Number of Populations (Occurrences)

One breeding occurrence known for Utah.

Abundance

"An uncommon and perhaps accidental visitor" (Hayward et al. 1976). "Casual, based on four credible observations, all from southwestern Utah and all in April or May" (Behle et al. 1985). Hayward et al. (1976) and Walters and Sorensen

(1983) summarized six April and May records.

Range in Utah

Found in Utah only in Washington County. Hayward et al. (1976) described the range of this species in Utah as being "the Virgin River area in southwestern Utah." Five published records of this species in Utah are from Zion National Park (Presnall 1935, Wauer 1969, Kingery 1975); the only other published Utah record is from Beaver Dam Wash (Behle and Perry 1975). All of these six published Utah records were April and May observations.

The most significant Utah record, which confirms breeding by this species in the state, has not yet been published: in late July 1993 a juvenile was observed begging for food from an adult in Pine Park Campground in Pine Park, northern Washington County (Haney 1996).

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Colorado Plateau

Native and natural, presence confident

Utah High Plateaus

Native and natural, presence confident

Habitats Utilized in Utah

Wauer (1969) described the habitat of the second record (at least three individuals) of this species in Utah: "Douglas fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) grow along the shady north slope [of the canyon], and willow (*Salix* sp.), box elder (*Acer negundo*), and cottonwood (*Populus fremontii*) grow along the waterway, which drops 25 ft to a pool at the base of a sandstone ridge. Gambel's oak (*Quercus gambelii*) and scrub oak (*Quercus turbinella*) are common along the south slope."

Trends

Population trend in Utah not known; conceivably increasing.

Threats

Threats to this species in Utah are not known.

Inventory Needs

Inventory needed to clarify breeding status and distribution in Utah, particularly in the Pine Valley Mountains and the higher parts of Zion National Park.

Other Considerations

It is possible that this species is in the process of expanding its breeding range northward into Utah.

YELLOW-BREASTED CHAT

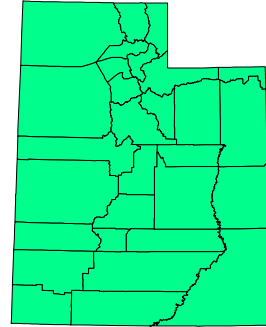
Icteria virens

State Subspecies

The race that occurs in Utah is *Icteria virens auricollis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S3S4B

Natural Heritage Ranking Summary

A common summer resident of statewide occurrence in Utah. Loss of riparian habitat is the greatest threat.

Estimated Number of Populations (Occurrences)

Probably more than 100 occurrences.

Abundance

Most authors (Behle and Perry 1975, Hayward et al. 1976, Behle 1981, Behle et al. 1985, Utah Ornithological Society Bird Records Committee 1994) have considered this species to be a "common summer resident" in Utah.

Range in Utah

Occurs throughout Utah. Walters and Sorensen (1983) had records for all but one of the 23 "latilong" blocks in Utah.

County**Status**

Washington	Native and natural, presence probable
Box Elder	Native and natural, presence probable
Cache	Native and natural, presence probable
Carbon	Native and natural, presence probable
Daggett	Native and natural, presence probable
Davis	Native and natural, presence probable
Duchesne	Native and natural, presence probable
Emery	Native and natural, presence probable
Garfield	Native and natural, presence probable
Grand	Native and natural, presence probable
Iron	Native and natural, presence probable
Juab	Native and natural, presence probable
Kane	Native and natural, presence probable
Millard	Native and natural, presence probable
Morgan	Native and natural, presence probable
Piute	Native and natural, presence probable
Rich	Native and natural, presence probable
Salt Lake	Native and natural, presence probable
San Juan	Native and natural, presence probable
Sanpete	Native and natural, presence probable
Sevier	Native and natural, presence probable
Summit	Native and natural, presence probable
Tooele	Native and natural, presence probable
Uintah	Native and natural, presence probable
Utah	Native and natural, presence probable
Wasatch	Native and natural, presence probable
Washington	Native and natural, presence probable
Wayne	Native and natural, presence probable
Weber	Native and natural, presence probable

Ecoregion**Status**

Wyoming Basins	Native and natural, presence probable
Colorado Plateau	Native and natural, presence probable
Columbia Plateau	Native and natural, presence probable
Great Basin	Native and natural, presence probable
Utah High Plateaus	Native and natural, presence probable
Mojave Desert	Native and natural, presence probable
Uinta Basin	Native and natural, presence probable
Wasatch & Uinta Mtns.	Native and natural, presence probable

Habitats Utilized in Utah

Walters and Sorensen (1983) listed the known breeding habitats in Utah as montane riparian woodlands and desert riparian woodlands. They indicated that during migration in Utah this species utilizes submontane shrub (including Gambel's oak, dwarf maple, and mountain mahogany) in addition to the two breeding habitats.

Trends

Population trend in Utah not known; perhaps stable.

Threats

Loss of riparian habitat is probably the greatest threat to this species in Utah.

Other Considerations

Yellow-breasted chat is no longer considered to be a sensitive species by any federal or state management agencies in Utah. Yellow-breasted chat was considered a sensitive species by the Utah Division of Wildlife Resources and the US Bureau of Land Management when this report was originally produced (September 1997).

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

SUMMER TANAGER

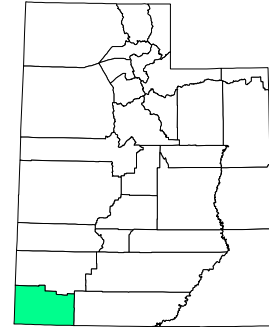
Piranga rubra

State Subspecies

The race that occurs in Utah is *Piranga rubra cooperi*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S2B

Natural Heritage Ranking Summary

Occurs in Utah in the southwest corner of the state, where it breeds in Beaver Dam Wash and along the Virgin River and its tributaries in southern Washington County.

Estimated Number of Populations (Occurrences)

Probably five or fewer occurrences (local breeding populations).

Abundance

The first report of this species in Utah was in 1962 (Zimmerman 1962). Since then, "[t]his species seems to have become fairly well established as a breeder" (Hayward et al. 1976). "Uncommon summer resident" (Behle et al. 1985).

Range in Utah

As a breeding species, occurs "in streamside cottonwoods and willows at Beaver

Dam Wash and in the Virgin River Valley in Washington County" (Hayward et al. 1976). It has also been seen near Parowan, Iron County (Murie 1963), and there is even "an extralimital observation from Eureka [northeastern Juab County]" (Behle and Perry 1975).

<u>County</u>	<u>Status</u>
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Washington	Native and natural, presence confident
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<u>Ecoregion</u>	<u>Status</u>
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Mojave Desert	Native and natural, presence confident
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Habitats Utilized in Utah

Hayward et al. (1976) mentioned that this species is "a breeder in streamside cottonwoods and willows at Beaver Dam Wash and in the Virgin River Valley in Washington County." Behle et al. (1985) wrote that this species is found in Utah "in willows and cottonwoods of valley floors in the Virgin River Valley and its tributaries".

Trends

Population trend in Utah uncertain--may be increasing.

Threats

Threats to this species in Utah are not known. Robinson (1996) indicated that there are few threats to this species but commented: "Probably largest effect of human activity is through habitat destruction."

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

ABERT'S TOWHEE

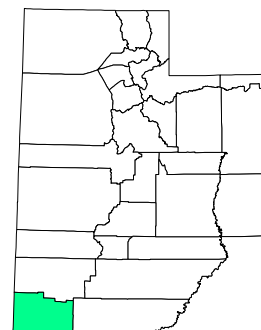
Pipilo aberti

State Subspecies

Hayward et al. (1976) assigned the Utah population of this species to the race *Pipilo aberti aberti*, but Behle (1976) argued that the race that occurs in Utah is *Pipilo aberti dumeticolus*. Behle et al. (1985) followed this usage, and Behle (1985) argued again that "[t]he Utah population of the Abert Towhee should bear the name *Pipilo aberti dumeticolus*" (See Behle 1976 and 1985 for explanations.) Tweit and Finch (1994) said: "The subspecific history of this species is confusing ...", and "... to avoid confusion, we define populations geographically rather than by formal subspecies names." (See Tweit and Finch 1994 for further discussion of the problem of subspecies in this species.)

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2

Natural Heritage Ranking Summary

Occurs in Utah only in the extreme southwestern corner of the state, in the southern and western parts of Washington County, where it has declined by 50% in the last 20 years.

Estimated Number of Populations (Occurrences)

Probably 20 or fewer occurrences (local breeding populations).

Abundance

Behle (1976) stated that "it is definitely a fairly common resident" in southwestern Utah.

Range in Utah

"A resident of the Virgin River valley in extreme southwestern Utah" (Hayward et al. 1976). "Most records are from along Santa Clara Creek southwest of St. George (Behle et al. 1985), "Utah. In the southwest along Virgin River south of LaVerkin, Santa Clara Creek south of Gunlock Reservoir, and minor tributaries (S. Hedges pers. comm.)" (Tweit and Finch 1994).

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) stated that in Utah this species breeds "in the tall leafy shrubbery of streamsides." Hayward et al. (1976), writing of this species in Utah, repeated this--"tall leafy shrubbery of streamsides" (without quotes, however). Walters and Sorensen (1983) considered both the breeding and the wintering habitat of this species in Utah to be desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), in which habitat breeding is known in Utah. Behle et al. (1985) said that the habitat of this species in Utah is "thickets along streams."

Trends

Declining precipitously: "Beaver Dam Wash, UT, has lost all suitable habitat (S. Hedges pers. comm.)", and "S. Hedges (pers. comm.) estimates Utah population has declined by 50% in the last 20 yr because of habitat loss from housing and golf course development" (Tweit and Finch 1994).

Threats

Habitat loss is a serious threat to this species in Utah (see comments of S. Hedges reported in Tweit and Finch 1994). Tweit and Finch (1994) also referred to a study in Arizona in which it was found that "[a]fter removal of cows ..., spring densities of Abert's Towhees in cottonwood-willow habitat increased from 56.5 to 107.2 birds/40 ha over 5 yr", which illustrates the impact that ranching

can have on this species.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

RUFOUS-CROWNED SPARROW

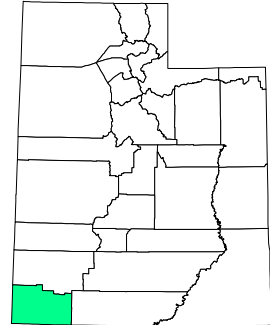
Aimophila ruficeps

State Subspecies

The race that occurs in Utah is *Aimophila ruficeps scottii*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

This species barely enters southwestern Utah, where it occurs in a few areas in southeastern Washington County, having first been detected in the state in the mid-1960s.

Estimated Number of Populations (Occurrences)

Probably five or fewer occurrences (local nesting populations).

Abundance

"Rare permanent resident" (Behle et al. 1985).

Range in Utah

Breeds in Utah only in a few isolated areas in southeastern Washington County: near Virgin and in Zion National Park (Behle et al. 1985).

County**Status**

Washington

Native and natural, presence confident

Ecoregion**Status**

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Behle and Perry (1975) stated that in Utah this species is found in "a relict grassland habitat", where it is known to breed. Behle et al. (1985), too, said that this species is "known to occur in the nesting season only in limited areas of relict grassland in southwestern Utah."

Trends

Population trend in Utah unknown. First discovered in Utah in the mid-1960s (see Hayward et al. 1976 for a discussion of confusion regarding the date of the first discovery). Perhaps the species has spread northward into the state, or maybe it was simply overlooked in the past.

Threats

Threats not known in Utah.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

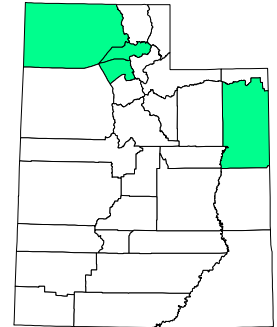
GRASSHOPPER SPARROW

Ammodramus savannarum

State Subspecies

The race that occurs in Utah is *Ammodramus savannarum perpallidus*. The type locality of this subspecies is Antelope Island, Great Salt Lake, Davis County.

In 1869 when the type specimen was collected, this taxon was considered to be abundant on Antelope Island; it is now extirpated as a breeder on Antelope Island and throughout most of its former breeding range in northern Utah.



Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range

Natural Heritage Ranking

Global Rank: G4

State Rank: S1B

Natural Heritage Ranking Summary

Historically abundant in dry grasslands of northern Utah, this species has been reduced, through the loss of its habitat to agriculture and the degradation of its habitat by overgrazing, to, so far as is known, a single breeding population near Golden Spike National Historic Site, Box Elder County.

Estimated Number of Populations (Occurrences)

One known extant occurrence (breeding population).

Abundance

Hayward et al. (1976) considered this species to be "very rare" in Utah.

Range in Utah

Formerly occurred throughout much of northern Utah, where breeding was documented near Ogden, Weber County; probably also bred on Antelope Island, Great Salt Lake, Davis County (see Hayward et al. 1976). The possibility of former breeding in the Uinta Basin was implied by Behle (1981). Behle et al. (1985) stated: "The only recent breeding record is from near Golden Spike National Historic Site, Box Elder County."

<u>County</u>	<u>Status</u>
Box Elder	Native and natural, presence confident
Weber	Native and natural, presumed extirpated
Davis	Native and natural, presumed extirpated
Uintah	Native and natural, presumed extirpated

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident
Uinta Basin	Native and natural, presumed extirpated

Habitats Utilized in Utah

Woodbury et al. (1949) stated that this species bred in "the grassy areas of northern Utah". Behle and Perry (1975) also mentioned "its grassland habitat" in Utah. Hayward et al. (1976) said that "this bird lived in the dry grassy plains" "in the valleys of northern Utah". Walters and Sorensen (1983) considered both the breeding and migrating habitats of this species in Utah to be arid grasslands (at lower elevations) and indicated that nesting is known in this habitat in Utah. Behle et al. (1985) mentioned the Utah habitat of this species as "grassland areas."

Trends

"Formerly a common breeder in the valleys of northern Utah ..."; on Antelope Island in 1869 it was "considered ... to be abundant"; "common in September 1871 near Ogden, Weber County"; "common in the fields near Bountiful, Davis County, in 1872" (Hayward et al. 1976), but "now very rare." If the historical reports are accurate, a precipitous decline has taken place during the last century.

Threats

Loss and degradation of habitat appears to have been and to be the greatest

threat to this species in Utah. Hayward et al. (1976) wrote: "Early observers reported that this bird lived in the dry grassy plains. Since most of the dry grasslands in Utah were soon taken up for farmlands or else were heavily overgrazed, it is likely that the species' disappearance was a result of the loss of its native habitat." Similarly, Behle (1981), discussing its presence in the Uinta Basin of northeastern Utah, said that "decades of overgrazing have extirpated the requisite habitat of the species...."

Other Considerations

Hayward et al. (1976) opined: "By the restoration of much of this grassland in recent years it is possible that the Grasshopper Sparrow might become reestablished."

Inventory Needs

Prospective searches for as-yet unknown breeding populations in northern Utah, especially in Box Elder County, are needed.

HOODED ORIOLE

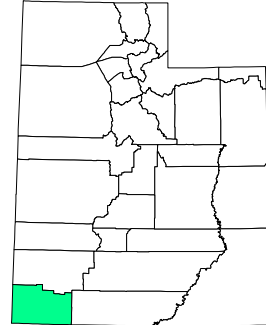
Icterus cucullatus

State Subspecies

The race that occurs in Utah is *Icterus cucullatus nelsoni*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S2B

Natural Heritage Ranking Summary

Occurs in Utah only in the extreme southwest corner of the state, in southwestern Washington County, where it occurs along the Virgin River and its tributaries.

Estimated Number of Populations (Occurrences)

Probably five or fewer occurrences (local breeding populations).

Abundance

Although reported to be an "uncommon summer resident" (Hayward et al. 1976, Behle 1976, Behle et al. 1985) within its limited range in Utah, records suggest that it is actually quite rare in the state.

Range in Utah

All (four) reported Utah specimens apparently have been taken in Beaver Dam Wash, extreme southwestern Washington County (see Hayward et al. 1976). Behle et al. (1985), however, stated: "Found mostly in wooded areas in the Virgin River

Valley and its tributaries, occasionally venturing out into adjacent drier areas of Joshua Trees and creosote bushes."

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) mentioned the occurrence of this species "in lower Sonoran streamsid es of southwestern Utah" and mentioned a specimen collected "in cottonwoods" and another "under a mulberry tree". Walters and Sorensen (1983) gave the breeding habitat of this species in Utah as desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations), indicating that nesting is known in this habitat. Behle et al. (1985) wrote of this species in Utah: "Found mostly in wooded areas in the Virgin River Valley and its tributaries, occasionally venturing out into the adjacent drier areas of Joshua Trees and creosote bushes."

Trends

Population trend in Utah not known.

Threats

The greatest threat to this species in Utah almost certainly is destruction and alteration of its riparian habitat. This species is heavily parasitized by the brown-headed cowbird, which is favored by human alteration of habitat (farming, ranching, clearing of woody vegetation, urbanization).

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

EVENING GROSBEAK

Coccothraustes vespertinus

State Taxonomic Comments

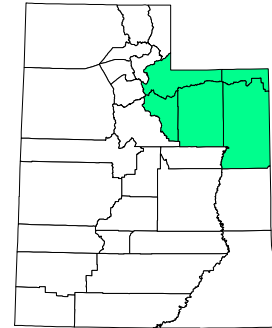
Various authors in the past (e.g., Woodbury et al. 1949, Behle and Perry 1975, Behle 1981) referred to this species in Utah by the older name *Hesperiphona vespertina*; it is now known as *Coccothraustes vespertinus*.

State Subspecies

The race that occurs in Utah is *Coccothraustes vespertinus brooksi*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S2B?,SZN

Natural Heritage Ranking Summary

Presumed to be a rare breeder in the higher mountains of Utah, such as the Wasatch and Uinta Mountains; common but erratic throughout the state as a migrant and wintering species.

Estimated Number of Populations (Occurrences)

Hayward et al. (1976) said that "[i]t has been reported as nesting in small numbers ... in higher mountains." Behle (1981) called the species a "rare breeder at higher elevations" but presented evidence only suggestive of breeding in northeastern Utah (specimens collected in breeding condition; e.g., enlarged gonads, brood patches). Behle et al. (1985) were even less certain, saying "[p]robably is ... a sparse breeder in some localities ...in the mountains."

Abundance

As a breeding species occurs "in small numbers" (Hayward et al. 1976), is "rare" (Behle 1981), or "sparse" (Behle et al. 1985). As a migrant and a winter bird it is more common but erratic or irregular.

Range in Utah

Its (presumed) breeding distribution in Utah is the "higher mountains" (Hayward et al. 1976; also Behle 1981, Behle et al. 1985), apparently the Wasatch Mountains and the Uinta Mountains and perhaps others of sufficient elevation to provide suitable habitat. Outside the breeding season it occurs throughout the state.

<u>County</u>	<u>Status</u>
Uintah	Native and natural, presence confident
Daggett	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Summit	Native and natural, presence probable
Wasatch	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Woodbury et al. (1949) mentioned breeding of this species "in the mountains" of Utah and its wintering "in the valleys throughout Utah". Hayward et al. (1976) wrote of this species in Utah: "A common but erratic winter resident in lower valleys throughout the state where it is found in small flocks feeding on buds and fruits of native and ornamental trees. It has been reported as nesting in small numbers in conifer and deciduous trees in higher mountains." Behle (1981), writing of this species in northeastern Utah, said: "As a winter visitant [to the lowlands] frequents ornamental trees, especially box elders and maples whose seeds afford food for the birds. As a breeder shows an affinity for stands of aspens or mixed aspen-coniferous forest [at higher elevations]." Walters and Sorensen (1983) gave the breeding habitat of this species in Utah as coniferous forest, indicating that nesting is known in this habitat in Utah, and listed its wintering habitats as residential areas, parks, golf courses, and cemeteries; desert riparian woodlands (including Fremont cottonwood, willows, etc., at lower elevations); and orchards, shelterbelts, and tree farms. Behle et al. (1985) said that the species is in Utah "winter visitant in lowland valleys throughout

the state" and "probably ...a sparse breeder in some localities in the aspen-coniferous forests in the mountains."

Trends

Population trend in Utah not known.

Threats

Threats in Utah not known. Habitat loss resulting from timber harvest, particularly clear-cutting, may be the main threat.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

Mammals

PREBLE'S SHREW

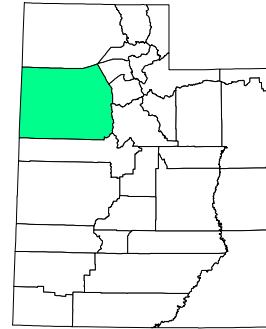
Sorex preblei

State Subspecies

No subspecies have been proposed in this species (i.e., species is monotypic).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G4 State Rank: S2?

Natural Heritage Ranking Summary

A very poorly known and presumed rare species, known in Utah from two localities in Tooele County. Its seeming rarity may be an artifact of the difficulty of detecting this species. Thought to have affinity for wetland habitats, which, in Utah, are threatened by a variety of anthropogenic disturbances.

Estimated Number of Populations (Occurrences)

Two known occurrences in Utah.

Abundance

Three individuals known from one Utah locality (Tomasi and Hoffmann 1984), and one individual from another (Pritchett and Pederson 1993).

Range in Utah

Known in Utah from two localities: Timpie Springs Waterfowl Management Area, Tooele County (Tomasi and Hoffmann 1984), which has been considered "[t]he southernmost record" for the species (Cornely, Carraway, and Verts 1992); and

Horseshoe Springs, base of the Stansbury Mountains, Tooele County (Pritchett and Pederson 1993).

<u>County</u>	<u>Status</u>
Tooele	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Tomasi and Hoffmann (1984) described the only published Utah locality for this species: "... at an elevation of 1,284 m; the soil is wet and alkaline. Dominant vegetation is salt grass (*Distichlis*), grading into a narrow band of pickleweed (*Salicornia*) and iodine bush (*Allenrolfea*), and then into a salt-desert scrub community dominated by greasewood (*Sarcobatus*)." They noted that "[e]xcept for its high salinity, this habitat is similar to habitats described for most other capture localities of *S. preblei*."

Pritchett and Pederson (1993) captured this species in Utah at an elevation of 4,250 ft (1,295 m); they characterized the habitat as "desert saltgrass/peat soil--semi moist", and the major plant species at the site were desert saltgrass, water smartweed, rabbitfoot grass, foxtail barley, and Nuttall alkaligrass.

Trends

Little is known about this species, not only in Utah but throughout its range; population trends are unknown.

Threats

Some authors have suggested that this species prefers areas "around springs, bogs, marshes, and along streams" (Larrison and Johnson 1981). The Utah locality, Timpie Springs, seems to fit this generalization. Since wetland habitats in Utah are threatened by a wide variety of disturbances (e.g., dewatering, trampling by livestock, pollution from agricultural runoff, mosquito abatement programs, inundation resulting from damming), the habitat of this species in Utah must be considered threatened since its habitat is the focus of considerable anthropogenic modification. In addition, fluctuations in the level of the Great Salt Lake could pose a threat to the Timpie Springs population.

Inventory Needs

This is one of the most poorly known of all vertebrate species in Utah, and inventory is much needed. Cornely et al. (1992) commented: "The geographic distribution of *S. preblei* ... appears as several disjunct populations, but this likely is as much a result of unequal sampling effort as a lack of continuity of occupiable habitats."

MERRIAM'S SHREW

Sorex merriami

State Taxonomic Comments

Osgood (1909) described and named *Sorex leucogenys* from southern Utah. Benson (1935) referred to this species in southern Utah as *Sorex leucogenys*, the white-cheeked shrew, as it was still known at that time, but his text reveals that he was aware that that *Sorex leucogenys* and *Sorex merriami* were closely related and that differences between them were slight. The taxon *leucogenys* is now considered to be a race of *Sorex merriami*.

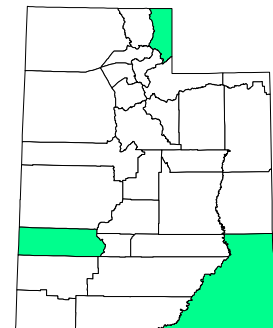
State Subspecies

Both of the two recognized races of this species have been identified from Utah. The race *Sorex merriami leucogenys*, which was described by Osgood (1909) as a full species based on a single specimen, the holotype, from "[m]outh of the canyon of Beaver River, about 3 miles east of Beaver, Beaver County, Utah" has been mapped by Hall (1981) as occurring throughout most of the southern three-quarters or more state, and, in addition to the Beaver County specimen, all seven of the San Juan County specimens have been assigned to this taxon.

The type or nominate race, *Sorex merriami merriami*, has been reported from Rich County by Jensen (1965), based on one specimen, which he "assigned to *S. m. merriami* because it came from the range assigned to *S. m. merriami* by Hall and Kelson (1959: 47)." Jensen (1965) mentioned that "[t]he skull is similar to those of two specimens from Utah referred to *S. m. leucogenys* by Duarrant and Lee (1955:56)" and that "it is difficult to assign this specimen to either *S. m. merriami* or *S. m. leucogenys*." Probably this specimen (skull only, sex unknown, number 20352 in the University of Utah collection) should be re-examined and compared with a larger series of specimens representing both races before its subspecific assignment is considered certain. Hall (1981) hypothetically mapped the occurrence of *Sorex merriami merriami*, without Utah specimens, as including northern Utah, primarily the Wasatch, Uinta, and Raft River mountains, as well as associated areas (e.g., all of the area north of the Great Salt Lake).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S2?

Natural Heritage Ranking Summary

Though presumed to be of statewide occurrence in Utah, only nine individuals from only four localities in Beaver, San Juan, and Rich counties have been reported.

Estimated Number of Populations (Occurrences)

Four localities (representing four occurrences) have been reported for this species in Utah (Osgood 1909, Benson 1935, Durrant and Lee 1955, Jensen 1965).

Abundance

Only nine specimens of this species have been reported from Utah (Osgood 1909, Benson 1935, Duurrant and Lee 1955, Jensen 1965).

Range in Utah

Of the the four reported localities for this species in Utah, three are in the southern quarter of the state (Beaver and San Juan counties) and one is in extreme north-central Utah (Rich County). However, it is hypothesized that the species occurs throughout the state (see map in Hall 1981), which hypothesis is supported by the fact that the species is known from every state that adjoins Utah (see Diersing and Hoffmeister 1977).

Strangely, Junge and Hoffmann (1981) erroneously mapped the range of this species as including all of Utah except the extreme southern and southeastern portion, the very area that includes two of the three well-known, published Utah localities (i.e., Benson 1935, Durrant and Lee 1955). These two localities that fall within the area that Junge and Hoffmann (1981) excluded from the range of this species had, at the time of Junge and Hoffmann's publication, even been repeated in secondary sources (e.g., Armstrong and Jones 1971, Diersing and Hoffmeister 1977), and one of these secondary sources--Diersing and Hoffmeister (1977), which names and maps both of the San Juan County localities--was even cited by Junge and Hoffmann in their work.

County

Status

Beaver

Native and natural, presence confident

San Juan	Native and natural, presence confident
Rich	Native and natural, presence confident

Ecoregion

Status

Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Wasatch & Uinta mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Benson (1935) reported that five Utah specimens "were all caught in *Microtus* [vole] runways in mats of *Ceanothus* and *Symphoricarpus*, on dry ground away from water" and added that "[t]his agrees with what has been previously known concerning the preferences of this shrew for dry situations."

Durrant and Lee (1955), reporting two Utah specimens that were collected at 8,560 ft elevation, wrote: "Both were taken in a relatively dry meadow, in runways of long-tailed meadow mice [i.e., long-tailed voles] (*Microtus longicaudus*). These runways were well defined in the grasses and sedges, and radiated out in an interconnecting network from bushes of *Potentilla fruticosa*. Other plants in the habitat were *Carex* sp., *Descampsia caespitosa*, *Festuca montana*, *Poa pratensis* and *Poa alpina*. Other mammals taken in the same habitat were long-tailed meadow mice (*Microtus longicaudus*), deer mouse (*Peromyscus maniculatus*), least chipmunks (*Eutamias minimus*) and vagrant shrews (*Sorex vagrans*)."

Jensen (1965) reported a specimen found at 6,800 ft elevation "in an area covered by sagebrush and wheat fields." It is noteworthy that, though varied habitats have been reported for this species throughout its range, dry habitats and especially sagebrush associations are considered typical of this species (see Armstrong and Jones 1991).

Trends

Population trend of this species, which is rather poorly known anywhere, is not known in Utah.

Threats

Threats to this species in Utah are not known. In their report on this species in Utah, Durrant and Lee (1955), however, made the interesting comment: "Perhaps the rarity of Merriam shrews might be the result of extensive overgrazing of western range lands. This is somewhat indicated by the fact that our two

specimens were from a protected non-grazed locality."

Inventory Needs

Inventory needed to clarify the distribution and abundance of this species in Utah. Since this species has been reported in the state from only southern and extreme north-central Utah but is presumed to occur throughout the state, surveys for the species are particularly appropriate in much of the central and northern areas. Likewise, its seeming scarcity at most of the localities from which it has been reported in Utah makes further survey work, even in areas from which it is known in Utah, worthwhile.

Other Considerations

More work is needed to provide understanding of all aspects of the biology of this species in Utah and its conservational needs.

DWARF SHREW

Sorex nanus

State Subspecies

No subspecies are recognized in this species (i.e, the species is monotypic).

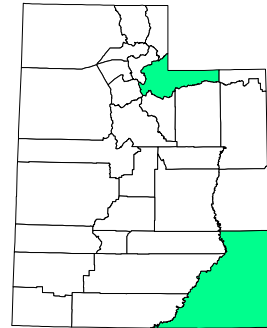
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive: not known to occur on BLM property in Utah.

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G4

State Rank: S2?

Natural Heritage Ranking Summary

Seemingly a very rare, typically high-elevation species that prefers alpine or subalpine rockslides, known in Utah from only four localities (one in the Abajo Mountains, three in the Uinta Mountains) and only four individuals. Additional survey work needed to determine status of this species in Utah.

Estimated Number of Populations (Occurrences)

Three known occurrences.

Abundance

Seemingly exceedingly rare in Utah--four individuals known from the state (see Durrant and Lee 1955, Kirkland 1981, Pritchett et al. 1990).

Hoffmann and Owen (1980) summarized: "Mammalogists have long considered the dwarf shrews [*S. nanus* and *S. tenellus*, which are questionably distinct] to be rare species. From 1865, the year of capture of the holotype, until 1966, *S. nanus* was known from reports of only 18 specimens However, this rarity may be more apparent than real."

Range in Utah

Known in Utah only from the Abajo Mountains (Durrant and Lee 1955) and the Uinta Mountains (Kirkland 1981, Pritchett et al. 1990, Rickart 1995).

<u>County</u>	<u>Status</u>
San Juan	Native and natural, presence confident
Summit	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Durrant and Lee (1955), reporting the first specimen of this species from Utah, which was captured at 8,560 ft elevation, wrote: "This specimen was taken in a moderately damp and shaded forested area on [a] northeast facing hillside adjacent to [a] meadow The exact locality of capture was on a rocky ledge under a large, overhanging boulder. ... The predominant plants in the habitat were *Populus tremuloides*, *Quercus gambeli*, *Symphoricarpos vaccinoides*, and *Poa* sp."

Kirkland (1981) reported the capture of a specimen of this species in Utah at 3,110 m; it "was caught in a talus slope at the transition zone between the boreal coniferous forest and alpine tundra."

Pritchett et al. (1990) captured two individuals of this species in Utah at different localities. One site was a talus slope, "some areas dry and grassy", at 10,740 ft (3,275 m) elevation, with the "[m]ajor plant species" being Perry clover, Whipple penstemon, thick groundsel, spike trisetum, thalaspi, dwarf huckleberry, grouseberry, and Engelmann spruce. The second location, at 10,600 ft (3,230 m) elevation, was characterized as a "[s]tream side/willows, sedges, and grass", "[m]ajor plant species" being willows (*Salix* spp.), sedges ("*Carix*" [sic] spp.), mountain pussytoes, slender cinquefoil, wedge-leaf cinquefoil, American bistort, and scarlet paintbrush.

Trends

Population trend in Utah not known.

Threats

Since "*Sorex nanus* has been most often reported from rocky habitats in the alpine tundra and subalpine coniferous forest", usually subalpine rockslides, (Hoffmann and Owen 1980), the inaccessibility of its habitat and unsuitability of its habitat for human uses may afford the species some degree of protection, at least from anthropogenic threats.

Inventory Needs

One of the most poorly known of vertebrate species in Utah--inventory much needed.

DESERT SHREW

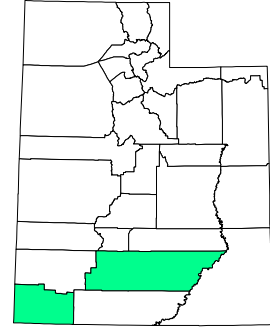
Notiosorex crawfordi

State Subspecies

The type race, *Notiosorex crawfordi crawfordi*, occurs in Utah.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2?

Natural Heritage Ranking Summary

A rare species of arid lands, reaching the northern limit of its range in extreme southern Utah, where it is known from Washington and Garfield counties. Additional survey work needed: may be more widely distributed and more common than records suggest.

Estimated Number of Populations (Occurrences)

Only three known occurrences in Utah (Wauer 1965, Turkowski and Brown 1969, Hoddenbach 1978).

Abundance

Seemingly very rare in Utah: only three individuals are known to have been found in this state. However, this is a secretive species that is difficult to sample and often escapes detection; it may be more common in Utah than records have thus far indicated.

Range in Utah

Known in Utah from two localities in Washington County--Oak Creek Canyon, Zion National Park, Washington County (Wauer 1965) and an unknown locality "within 10 miles of St. George" but apparently within Utah (Turkowski and Brown 1969)--and one locality in Garfield County 3.4 km northeast of The Post, Capitol Reef National Park (Hoddenbach 1978). These localities are at the northern limit of the range for this species (see map in Armstrong and Jones 1972); in fact, the Garfield County record represents a northward extension of the known range (Hoddenbach 1978).

The species is presumed to occur across extreme southern Utah (southern Washington, Kane, and San Juan counties) (see map in Hall 1981), though it has not yet been documented from either Kane or San Juan counties. Based on temperature and climate, Hoddenbach (1978) reasoned that "*N. crawfordi* might range as far north as the Green River, Emery Co., Utah." If this speculation is correct, the species would, of course, be expected to occur in Wayne County.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Garfield	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Wauer (1965) reported the habitat of the first individual of this species found in Utah, which was found dead on the lawn of a residence. The elevation was 4,100 ft. Wauer (1965) wrote: "The immediate border of the lawn is scrub oak (*Quercus undulatus*). Forty feet away there is a relatively dry hillside where big sage (*Artemesia* [sic] *tridentata*) is dominant. Other plants here are *Stanleya pinnata*, *Amelanchier alnifolia*, *Opuntia engelmannii* and *Chrysothamnus pulchellus*."

Turkowski and Brown (1969), reporting the second specimen of this species from Utah, provided no information regarding the individual or its habitat, and barely even a locality: only that it was "within 10 miles of St. George", which could be in either Arizona or Utah, and that it represents the "second Utah record" of this species, thus apparently placing the locality somewhere on the Utah side of the state boundary. Although it is unfortunate that only one

sentence was offered as documentation of this important record, the locality, despite its extreme vagueness, does reveal that the specimen must have been taken in the Mojave Desert portion of Utah and at one of the lowest elevations in the state.

Hoddenbach (1978) reported the third specimen and locality of this species in Utah. It was captured "at an elevation of 1,520 m" and "[t]he capture site, about 3 m above a flood plain, is in a semi-arid, *Atriplex* (shadscale)-dominated community"

Trends

Population trend in Utah not known, perhaps stable.

Threats

Threats in Utah are not known.

Inventory Needs

Hoddenbach's (1978) speculation that this species may occur as far north as Emery County suggests that inventory for this species should be conducted in Emery as well as Wayne counties. Hall's (1981) hypothetical mapped range for the species indicates the need for surveys for this species in Kane and San Juan counties. If the species were to be discovered as far north as Emery County (as Hoddenbach [1978] speculated it might be), then it might also be reasonable to look for it in Grand and perhaps Iron, Beaver, and Millard counties. Two techniques useful for the detection of this species should be mentioned: Pitfall can traps have been demonstrated to be useful in capturing this species (the Garfield County specimen was obtained using this method), and the analysis of owl pellets is perhaps an even more effective method of revealing the presence of this species.

FRINGED MYOTIS

Myotis thysanodes

State Taxonomic Comments

Durrant (1952), discussing the absence of specimens from Utah (at that time), called this species the fringe-tailed myotis. Hasenyager (1980) called this species the fringed bat.

State Subspecies

The type race, *Myotis thysanodes thysanodes*, occurs in Utah.

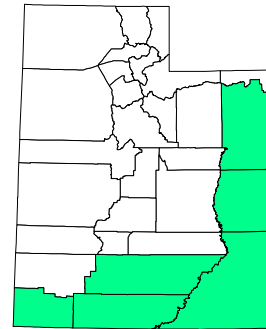
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: No Status

Utah Division of Wildlife Resources: No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S2B,SZN?

Natural Heritage Ranking Summary

Though widely distributed in Utah, seemingly rare in this state.

Estimated Number of Populations (Occurrences)

Hasenyager (1980) listed 10 localities in Utah for this species.

Abundance

Apparently rare in Utah. Hasenyager (1980) found records of only 21 individuals in Utah.

Range in Utah

O'Farrell and Studier (1980) mapped the range of this species as including all

of Utah, though just barely, with the edge of the hypothetical range passing just north and east of the northeast corners of Rich and Daggett counties. Hall (1981), however, mapped the distribution of this species to include approximately the southern and western two-thirds of Utah, the area south of a line running from the northwestern corner of the state (Box Elder County) to the middle of the Utah-Colorado border (Grand County). Hasenyager (1980) summarized the known occurrences in Utah as 10 localities in the following 6 counties: Washington, Garfield, Kane, San Juan, Uintah, and Grand.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Garfield	Native and natural, presence confident
Kane	Native and natural, presence confident
San Juan	Native and natural, presence confident
Uintah	Native and natural, presence confident
Grand	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Hasenyager (1980) wrote: "In Utah, the fringed bat inhabits caves, mines, rock crevices and buildings in the pine-oak, pinyon-juniper and desert shrub habitats between the elevations of 1,217 and 2,438 m."

Foster et al. (1996) described two localities where they captured this species in Utah. One was in montane grassland at 7,900 ft elevation, "... a cool season grass/sage meadow surrounded by ponderosa pine. The dominant vegetation is grass (80%) and sagebrush (10%)." A meandering creek flows through the site, and there is "dense ground cover", little exposed rock, no cliffs. The second locality, at 8,310 ft elevation, was in an area of "mixed conifer and aspen forest", the dominant vegetation being "ponderosa pine (45%), quaking aspen (10%) and grass (15%)", though elsewhere in the same document "[c]haracteristic species" were stated as "*Pseudotsuga menziesii* [Douglas fir]/*Populus tremuloides* [quaking aspen]". A small creek runs through the area, and rocky cliffs and crags are within 500 m.

Trends

Population trend in Utah unknown, but, since most species of bats are believed to be decreasing in numbers everywhere, it is quite possible that this species may be declining in Utah.

Threats

Human disturbance of roosts (caves, mines, and buildings [O'Farrell and Studier 1980]), especially maternity colonies, is probably one of the most serious threats to the species in Utah. Water sources and riparian areas are important for this and many other bat species in Utah, and disturbance or destruction of these habitat elements probably negatively impacts this species.

Inventory Needs

Inventory, particularly information on migration in Utah, needed.

Other Considerations

Known to migrate, but information on migration lacking for Utah. Hasenyager (1980) found records for this species in Utah only "from mid-May until the second week in September."

WESTERN SMALL-FOOTED MYOTIS

Myotis ciliolabrum

State Taxonomic Comments

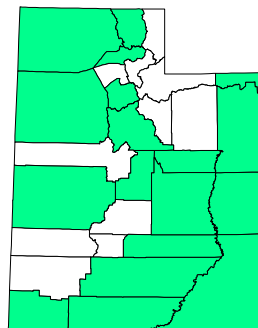
This species was formerly known as *Myotis subulatus*, which name was used for Utah specimens by many authors (e.g., Hardy 1941, Durrant 1952, Shuster 1957, Hall 1981). Other authors have called this species, in Utah, *Myotis leibii* (e.g., Barbour and Davis 1969, Bogan 1974, Hasenyager 1980); the species has been split, the name *Myotis leibii* now being applied to populations in eastern North America, the eastern small-footed myotis.

State Subspecies

Two races of this species may occur in Utah: *Myotis ciliolabrum melanorhinus* definitely occurs throughout most of the state. *Myotis ciliolabrum subulatus* may occur in north-central Utah; Hardy (1941) considered two specimens from Carbon County to be of this race, and this has been followed by others (e.g., Durrant 1952, Hall 1981). Shuster (1957), however, expressed doubt as to whether the race *subulatus* actually occurs in Utah, although she tentatively accepted it as part of the Utah fauna.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5

State Rank: S2

Natural Heritage Ranking Summary

Statewide in distribution, known from at least 44 localities in 18 counties, but thought to be rare throughout its range.

Estimated Number of Populations (Occurrences)

At least 44 Utah localities are known: Hasenyager (1980) listed 36 Utah localities, at least 1 other locality was previously reported by Hardy (1941), and Foster et al. (1996) reported at least 7 other localities.

Abundance

Hasenyager (1980) considered there to be at least 45 individuals (mostly specimens) known from Utah. Foster et al. (1996) reported the capture of at least 25 individuals; 13 of these were at a single locality--Bryce Creek, Bryce Canyon National Park, Garfield County. Hallows (1982) said that this species is very common in Bryce Canyon National Park and stated: "Along with the Long-legged Myotis, *M. volans*, it is the most common bat of the [Bryce Canyon National] Park. ... Easterla caught many, and lists it as being common." No estimates of the Utah population of this species are available.

Range in Utah

Evidently occurs statewide: there are records for four of the "corner" counties--Box Elder, Daggett, San Juan, and Washington--as well as 14 other counties: Cache, Weber, Tooele, Salt Lake, Utah, Uintah, Millard, San Pete, Carbon, Emery, Grand, Wayne, Garfield, and Kane (Hardy 1941, Durrant et al. 1955, Hasenyager 1980, Foster et al. 1996).

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Weber	Native and natural, presence confident
Tooele	Native and natural, presence confident
Daggett	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Box Elder	Native and natural, presence confident
Cache	Native and natural, presence confident
Millard	Native and natural, presence confident
Sanpete	Native and natural, presence confident
Uintah	Native and natural, presence confident
Garfield	Native and natural, presence confident
San Juan	Native and natural, presence confident
Utah	Native and natural, presence confident
Wayne	Native and natural, presence confident
Grand	Native and natural, presence confident
Emery	Native and natural, presence confident
Kane	Native and natural, presence confident
Carbon	Native and natural, presence confident

Ecoregion**Status**

Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Locality data indicate that this species occurs in Utah in a wide variety of habitats and elevations.

Foster et al. (1996) captured this species at (at least) seven localities in south-central Utah; elevations ranged from 6,830 to 8,320 ft, and they described four of the sites as "montane forest and woodland", which included such plant species as Douglas fir, quaking aspen, pinyon pine, Rocky Mountain juniper, Gambel's oak, and black sagebrush, two sites as "montane grassland", which included grasses, black sagebrush, quaking aspen, and ponderosa pine, and one site as "montane low shrubland", which included black sagebrush and white fir.

Trends

Population trend unknown in Utah.

Threats

Threats in Utah not known; presumably pesticide use, believed to be negatively affecting nearly all North American bats, is a threat to this species.

Inventory Needs

Inventory needed to determine abundance of the species in Utah.

Other Considerations

Consideration should be given to down-ranking this species to S3, pending more information regarding its status in Utah and consideration of trends and threats.

WESTERN RED BAT

Lasiurus blossevillii

State Taxonomic Comments

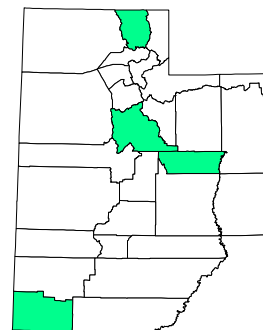
Still regarded by some as conspecific with *Lasiurus borealis*, in which it was formerly placed. Hasenyager (1980) discussed it under that name, as had Hardy (1941), who listed it as the race, *Lasiurus borealis teliotis*. Hall and Kelson (1959) and Hall (1981) placed it (and all other *Lasiurus*) in the genus *Nycteris*, which has priority (but the ICZN in 1913 curiously suspended the rules in this case), and called this taxon, as it occurs in Utah, *Nycteris borealis teliotis*.

State Subspecies

Assuming that *Lasiurus blossevillii* is specifically distinct from *Lasiurus borealis*, *Lasiurus blossevillii* in Utah would be either the race *Lasiurus blossevillii teliotis* or, if *teliotis* is not subspecifically distinct from *frantzii*, the race *Lasiurus blossevillii frantzii*, since the name *frantzii* has priority over the name *teliotis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: State Rank: S1

Natural Heritage Ranking Summary

The rarest bat in Utah: known from published reports of only fourteen (or fewer) individuals from only four locations, all having been found in Washington County except for one occurrence in Carbon County. Although these published records are from the 1930s, 1940s, and 1950s, there are verbal reports of captures of this species in north-central Utah (Cache and perhaps Utah counties) in the 1990s.

Estimated Number of Populations (Occurrences)

At least four (possibly six) known occurrences. ["St. George", "near St. George", and "St. George...near the Virgin River" are considered here as one occurrence.]

Abundance

Summarizing knowledge of this species in Utah (under the *Lasiurus borealis*, with which it was formerly considered to be conspecific), Hasenyager (1980) indicated that only eight individuals had been found in Utah; this may be an approximation, since one of the reports (Kenilworth Mine) he listed as "several" individuals but counted as three--the same record was reported by Hardy (1941) as two individuals. Another of the records (LaVerkin Cave) was given by Hasenyager as one individual but by Hardy as seven. Although both Hardy and Hasenyager indicated the existence of two specimens from St. George, Hardy mentioned a St. George specimen seemingly overlooked by Hasenyager, since the date is different. Reconsidering Hasenyager's count in light of Hardy's suggests that at least 14 individuals have been found in Utah and reported in the literature. [Verbal reports of the capture of two additional individuals have been received.]

Range in Utah

Although Hall (1981) mapped the hypothetical occurrence of this bat (under the name *Nycteris borealis teliotis*) throughout most of the southeastern half of Utah, as have others, all of the published Utah records are from Washington County (six), except for one report from Carbon County in 1937. [Verbal reports of the capture of this species in Cache County (and perhaps Utah County) seemingly extend the distribution of this species in Utah to include north-central Utah in addition to the southwestern (Washington County) and central (Carbon County) parts of the state.]

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Carbon	Native and natural, presence confident
Cache	Native and natural, presence confident
Utah	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident

Wasatch & Uinta Mtns. Native and natural, presence confident

Habitats Utilized in Utah

Hasenyager (1980) wrote of this species: "In Utah, they have been captured in the Lower Sonoran, Upper Sonoran and Traditional [sic: Transition] life zones."

Trends

There are so few records of this species from Utah that it is difficult to assess whether there is a population trend in this state. The species has been found in Utah on seven occasions: in the years 1936, 1937, "prior to 1938", 1940, 1948, 1957, and 1958 (Hardy 1941, Hasenyager 1980). [No published reports of the species in Utah are known since 1958; however, there are at least two verbal reports of captures of this species in Utah in recent years (1990s).]

Threats

Since two of the four published occurrences (and nine of the fourteen individuals) in Utah were in a cave and a mine, and since caves and mines are subject to varying, but often considerable, human disturbance, the threat to this species in Utah may be great. This species prefers riparian areas, where habitat alteration and destruction in Utah, particularly in Washington County, represent an important threat. Additionally, all bats in Utah may be negatively affected by the use of pesticides.

Inventory Needs

Inventory is needed to ascertain the current status of this species in Utah, including its current distribution and abundance. Although the vast majority of records of the species in Utah are from Washington County, no Washington County records are known since 1958.

Other Considerations

Both the paucity of records and the geographical distribution of those records of this species in Utah are puzzling. Equally difficult to explain is the fact that most records of this species in Utah--in fact, all literature records for the state--are from 1958 or earlier, which is remarkable, for it has been since 1958 that the use of mist nets for the capture of bats has come into prominence, vastly expanding knowledge of almost all bats almost everywhere. In illustration of this point, it could be noted that Durrant's great work on the mammals of Utah (1952) remains, for most mammalian groups, almost as useful nearly half a century later as it was at the time of publication, bats and one other group of

mammals (namely, the shrews) being notable exceptions; two species of bats now well known in Utah were not known to occur in the state at the time of Durrant's work, and one bat species included by Durrant in the Utah fauna can now be excluded. Unless this species has suffered a grave decline in Utah, the absence of records between the 1950s and the 1990s and the scarcity of records in the 1990s (possibly only two), despite the widespread use of mist nets and "bat detectors" in Utah, are practically inexplicable.

TOWNSEND'S BIG-EARED BAT

Corynorhinus townsendii

State Taxonomic Comments

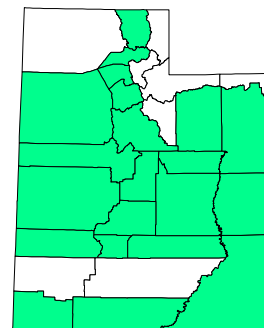
Formerly known as *Plecotus townsendii* (see, for example, Hasenyager 1980, Hall 1981, Kunz and Martin 1982, Bogan 1994). Even earlier it was known in Utah as *Corynorhinus rafinesquii* (see, for example, Durrant 1952), a name now applied to a related species that occurs only in eastern North America.

State Subspecies

The race that occurs in Utah is *Corynorhinus townsendii pallescens*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	Sensitive
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G4 State Rank: S2

Natural Heritage Ranking Summary

Of statewide occurrence in Utah, and moderately common; however, this species is especially vulnerable to human disturbance, particularly at maternity colonies and hibernacula, and closures of abandoned mines in some cases eliminate suitable roosts for this species.

Estimated Number of Populations (Occurrences)

Hasenyager (1980) listed 38 localities for this species in Utah; the actual number of occurrences in the state may be close to 100.

Abundance

This species is relatively common in Utah. Hasenyager (1980) gave the number (presumably specimens) known to him in the state as 90 (the actual sum was 85 plus three occurrences of unknown number).

Range in Utah

Durrant (1952) considered this species to occur in the "[s]outhern two-thirds of the state." Except for Barbour and Davis (1969), who indicated its absence from the extreme northwest corner of Utah, all other authors (e.g., Shuster 1957, Hall 1981, Kunz and Martin 1982, and Zeveloff 1988) have considered this species to occur statewide. Hasenyager (1980) had records from 19 counties: Juab, Salt Lake, Cache, Millard, Sevier, Washington, Wayne, Uintah, Tooele, Weber, Sanpete, San Juan, Kane, Beaver, Utah, Duchesne, Grand, Davis, and Carbon.

<u>County</u>	<u>Status</u>
Beaver	Native and natural, presence confident
Cache	Native and natural, presence confident
Carbon	Native and natural, presence confident
Davis	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Emery	Unknown
Grand	Native and natural, presence confident
Juab	Native and natural, presence confident
Kane	Native and natural, presence confident
Millard	Native and natural, presence confident
Piute	Unknown
Salt Lake	Native and natural, presence confident
San Juan	Native and natural, presence confident
Sanpete	Native and natural, presence confident
Sevier	Native and natural, presence confident
Tooele	Native and natural, presence confident
Uintah	Native and natural, presence confident
Utah	Native and natural, presence confident
Washington	Native and natural, presence confident
Wayne	Native and natural, presence confident
Weber	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident

Uinta Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident
Great Basin	Native and natural, presence confident

Habitats Utilized in Utah

Locality records for Utah indicate that this species occurs in a wide variety of habitats at a great range of elevations. Hasenyager (1980) commented: "Caves serve as shelter for this species in Utah."

Trends

Thought to be declining.

Threats

This species is considered to be particularly sensitive to human disturbances, which can be especially critical at maternity colonies and hibernacula, affecting survival. Closures of abandoned mines, which are proceeding rapidly in Utah, in some cases negatively affect this species by eliminating suitable roosts, including maternity sites and hibernacula.

Other Considerations

It is with reluctance that the Utah Natural Heritage Program ranks this species S2; were it not for the sensitivity of this species to human disturbance and the belief that its population in Utah is declining, it would be ranked S4.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

ALLEN'S BIG-EARED BAT

Idionycteris phyllotis

State Taxonomic Comments

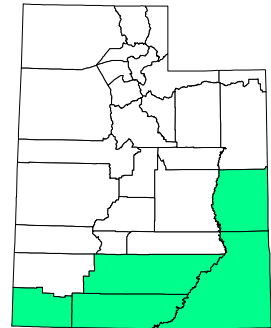
Most authors writing of this species in Utah (e.g., Black 1970, Armstrong 1974, Poche 1975, Hasenyager 1980, Hall 1981) have referred to it by the name *Plecotus phyllotis*.

State Subspecies

No subspecies have been proposed (i.e., this species is monotypic).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

One of the two rarest bats in Utah, first discovered in this state in 1969 and thus far known from only about eight occurrences comprising about eleven individuals. Known from four counties in the southern one-third (or less) of the state: Washington, Garfield, Grand, and San Juan.

Estimated Number of Populations (Occurrences)

Eight known occurrences in Utah.

Abundance

At least eleven individuals have been captured in Utah.

Range in Utah

Occurs in the southern one-third (or less) of the state, where it is known from four counties: San Juan (Black 1970, Armstrong 1974), Grand (Toone 1993), Washington (Poche 1975, Pritchett n.d.), and Garfield (Foster et al. 1996).

<u>County</u>	<u>Status</u>
Grand	Native and natural, presence confident
San Juan	Native and natural, presence confident
Washington	Native and natural, presence confident
Garfield	Native and natural, presence confident
Kane	Origin data uncertain, presence possible

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Black (1970), reporting the first specimen of this species taken in Utah, described the collection site as "an artificial reservoir in a pinyon-juniper woodland" at an elevation of 6,000 ft.

Armstrong (1974), documenting the second report of this species in Utah (the second and third specimens), wrote of the locality: "Squaw Spring is a perennial seep in the bed of Squaw Canyon, a generally sandy wash which carries an ephemeral affluent The vegetation about Squaw Spring is a well-established mesic-adapted assemblage including horsetail (*Equisetum*), cattail (*Typha*), bulrushes (*Scirpus*), rabbitfoot grass (*Polypogon*) and little bluestem (*Andropogon scoparius*), sweetclover (*Melilotis*) and willows (*Salix*). This vegetation presents a marked contrast to that of immediately adjacent uplands, where open, silty flats are sparsely covered with ricegrass (*Oryzopsis*) and snakeweed (*Gutierrezia*) and rocky areas support an open woodland of pinyon pine (*Pinus edulis*) and juniper (*Juniperus osteosperma*). Well-developed woodland occurs within a mile of the spring."

Poche (1975) published the third report of this species in Utah and described the locality: "Vegetation in the wash includes *Tamarix* and *Salix*, and that on the adjacent upland is comprised [sic] primarily of blackbrush (*Coleogyne ramosissima*), and infrequent pinyon pine (*Pinus edulis*) and juniper (*Juniperus osteosperma*). Grass cover is predominantly *Bromus* and *Hilaria*. Average elevation for the area is 1,250 m with annual precipitation of less than 200 mm. The Hurricane Cliffs are located 5 km west of the collection area and descend over

500 m to Warner Valley, which is covered with creosotebush (*Larrea tridentata*), blackbrush, and snakeweed (*Gutierrezia microcephala*). The surrounding region consists of numerous steep rises and mesas, canyons, and cliffs."

Foster et al. (1996) captured this species at two Utah localities and reported the habitat of one of them. The capture site was at 6,500 ft elevation, in "submontane tall shrubland" characterized by *Tamarix ramosissima*, *Salix* sp., and *Pinus edulis*. "Tantalus Creek runs down the length of a long narrow canyon roughly 27m deep. The floor of the canyon is nearly flat, yielding a very shallow, slow stream. Stream dimensions are typically .5mX.2m. ... The stream bed is very sandy The dominant vegetation in the canyon is willow (25%) and grass (35%). However there is some tamarisk (2%) and cottonwood (1%). The hillside is covered in sage (30%) and rabbitbrush (25%). ... Cliffs, embankments, trees, and shrubs are all common and within 10 meters of the stream and its pools."

Trends

Population trend unknown in Utah. One of the most poorly known of American bats--not discovered in the United States until 1955 (Cockrum 1956), and not discovered in Utah until 1969 (Black 1970).

Threats

Threats in Utah unknown but presumed to include habitat loss and pesticide use.

Inventory Needs

Inventory needed throughout southern Utah to clarify abundance and distribution. Kane County in particular should be surveyed for this species, since it occurs in all surrounding counties in Utah as well as Arizona.

BRAZILIAN FREE-TAILED BAT

Tadarida brasiliensis

State Taxonomic Comments

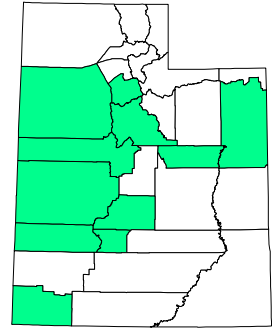
This species was formerly known as *Tadarid mexicana*, the Mexican free-tailed bat (see, for example, Hardy 1941, Durrant 1952).

State Subspecies

The race that occurs in Utah is *Tadarida brasiliensis mexicana*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5

State Rank: S4B

Natural Heritage Ranking Summary

This species occurs in much of Utah, at least as far north as Salt Lake City and perhaps throughout the state, and seemingly is common. There is evidence for both migration and overwintering in Utah.

Estimated Number of Populations (Occurrences)

Hasenyager (1980) assembled 25 locality records of this species in Utah.

Abundance

Hasenyager (1980) knew of over 100 individuals (specimens?) from Utah; more than half of these were from Millard County.

Range in Utah

Durrant (1952) said that this species is "[p]ractically state-wide in distribution" but mapped its hypothetical range as including roughly the southern two-thirds to three-quarters of Utah. Shuster (1957) likewise stated: "Probably state-wide, no specimens known from the extreme northern part of the state, however." Others (e.g., Hall 1981, Zeveloff 1988) have mapped the distribution of this species in Utah in a similar fashion. However, despite the fact that so many authors have considered this species to be so widely distributed in Utah, locality records seem to be generally lacking from the southeastern one-third of the state as well as most of the West Desert, or west-central part of the state. The northernmost locality record in Utah is Salt Lake City.

Hasenyager (1980) listed 11 counties (Beaver, Washington, Uintah, Piute, Millard, Tooele, Salt Lake, Utah, Carbon, Juab, and Sevier) from which this species is known in Utah. Of all the Utah localities for this species compiled by Hasenyager (1980), 36% were in Washington County.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Beaver	Native and natural, presence confident
Uintah	Native and natural, presence confident
Piute	Native and natural, presence confident
Millard	Native and natural, presence confident
Tooele	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Utah	Native and natural, presence confident
Carbon	Native and natural, presence confident
Juab	Native and natural, presence confident
Sevier	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident

Habitats Utilized in Utah

Seemingly almost nothing has been published regarding the habitat of this

species in Utah. Hasenyager (1980), summarizing literature concerning this species throughout its range, said: "Although they are considered primarily a lowland species, they do sometimes range into the highlands" Most Utah localities, however, are at rather low elevations. It is noteworthy that Foster et al. (1996), who successfully mist-netted bats at more than 22 localities, all at moderate to high elevations (5,500 to 9,800 ft), in 10 southern Utah counties, and captured more than 250 bats of 14 species, did not capture this species, despite the fact that it is one of the easiest species of North American bats to mist-net; very likely its absence in their study is the result of sampling in habitats not utilized in Utah by this species, almost the habitats that they sampled being at elevations higher than those normally occupied by this species, at least at the latitudes at which Utah is situated. In general this is a species of warm, low, rather open (unobstructed) habitats, including urban areas.

Trends

Population trend in Utah unknown.

Threats

Threats in Utah not known; however, pesticide use may be one of the greatest threats.

Inventory Needs

Inventory needed to determine northern extent of range in Utah.

Other Considerations

Unlike other states where this species forms astoundingly large maternity colonies (up to 20 million) in caves, in Utah this species is not known to form such large aggregations, and the largest colonies found in Utah, typically no more than a few hundred individuals, usually are in buildings.

Wilkins (1989) stated that the population of this species in southwestern Utah "migrates westward and southwestward into southern California and Baja California. Those in southeastern Utah ... migrate into Jalisco, Sinaloa, and Sonora along the western side of the Sierra Madre Occidental." However, Ruffner et al. (1979) captured this species in southwestern Utah in January and February. Thus, it appears that some members of this species in Utah migrate, while others overwinter, presumably facultatively hibernating and emerging with variations in winter temperatures.

BIG FREE-TAILED BAT

Nyctinomops macrotis

State Taxonomic Comments

This species was formerly placed in the genus *Tadarida* and was known as *Tadarida molossa* (e.g., Durrant 1952, Shuster 1957) and as *Tadarida macrotis* (e.g., Hardy 1941, Barbour and Davis 1969, Hasenyager 1980, Hall 1981).

State Subspecies

Monotypic: no subspecies are recognized.

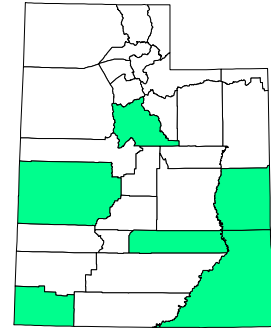
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5

State Rank: S2B

Natural Heritage Ranking Summary

Known from at least eleven locations in five Utah counties, all but one being in the southern third of the state. Presumably breeds in Utah in the summer and migrates south out of the state for winter.

Estimated Number of Populations (Occurrences)

At least eleven known Utah occurrences (Woodbury 1937, Durrant and Behle 1938, Hasenyager 1980, Pritchett n.d., Bogan 1994, Foster et al. 1996).

Abundance

Known in Utah from at least 34 individuals.

Range in Utah

Although seven of the eleven known localities are from the southwest (Washington County) and southeast (San Juan County) corners of the state, the species has also been found in the south-central area of both the eastern (southern Grand County) and western (southern Millard County) parts of the state, as well as in north-central Utah (American Fork, Utah County). Thus, it appears that the species occurs in at least the southern half of Utah. This is a migratory species and is well known to stray to unexpected locations far from its normal range.

<u>County</u>	<u>Status</u>
Millard	Native and natural, presence confident
San Juan	Native and natural, presence confident
Utah	Native and natural, presence confident
Washington	Native and natural, presence confident
Wayne	Unknown
Grand	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Locality records for this species in Utah suggest that it utilizes a rather wide variety of habitats and elevations in this state.

Pritchett (n.d.) captured nine individuals of this species at a locality at about 900 m (about 2,952 or 2,953 ft) elevation over a "spring or stream" in a wash in "warm desert shrub" habitat. Poche (unpublished) had earlier captured large numbers (and collected twelve specimens) of this species at the same locality and a nearby locality. He described the habitat as creosote bush (*Larrea tridentata*), blackbrush (*Coleogyne ramosissima*), sandsage (*Artemisia filifolia*), and snakeweed (*Gutierrezia* sp.). He also captured this species in riparian habitat consisting of salt cedar (*Tamarix pentandra*), water willow (*Baccharis glutinosa*), rabbitbrush (*Chrysothamnus* sp.), and mesquite (*Prosopis* sp.).

Foster et al. (1996) captured two individuals (an adult female and an adult male) at 9,200 ft elevation in "montane forest and woodland" characterized by grasses, Engelmann spruce (*Picea engelmannii*), and quaking aspen (*Populus*

tremuloides). They described the locality, a beaver pond below a lake: "The pond is in a grassy meadow with shrubs near an aspen forest. There is a stream nearby as well as two sizable reservoirs. ... Granite is the predominant rock type in the area, though no outcrops are local. ... [T]he soil is poor quality sand. ... The dominant vegetation includes grass (50%), rose (10%), willow (3%) and aspen (50%)."

Trends

Population trend in Utah unknown.

Threats

Threats in Utah are not known but probably include pesticide use and perhaps scientific collecting.

Inventory Needs

Inventory needed, particularly in central Utah. Information on reproduction, especially maternity colonies, in Utah also needed.

AMERICAN PIKA

Ochotona princeps

State Subspecies

Eight nominal subspecies have been reported from Utah, and a ninth subspecies has been speculated to occur in the state. Although 36 races of this species currently are tentatively recognized (Hall 1981, Smith and Weston 1990), Hafner and Sullivan (1995) examined allozymic complements from populations representing all of the 36 nominal races and found that genetically these populations formed only four groups. Three of these four genetically distinct groups are represented in Utah: the northern Rocky Mountains, the Sierra Nevada, and the southern Rocky Mountains genetic groups. D. Hafner is currently examining morphometric data for this species, and, when the morphological data are evaluated together with the genetic (allozymic) data, the races within this species will be revised, probably resulting in radical infraspecific taxonomic changes: the number of justifiable races likely dropping from 36 to not many more than four. After such revision, there will probably be only three (or possibly a very few more) races in Utah.

The eight nominal, but dubiously valid, races of this species that have been reported from Utah are: *uinta*, *wasatchensis*, *moorei*, *barnesi*, *cinnamomea*, *utahensis*, *fuscipes*, and *lasalensis* (this last race having earlier been referred to *saxatilis*). The type localities of all eight of these named races are in Utah; all eight are known only from Utah (i.e., are endemic), and two are said (Hall 1981) to be known only from their type localities. A ninth nominal race, *clamosa*, has been mapped (Hall 1981, Smith and Weston 1990) as hypothetically occurring in the northern Wasatch Mountains in extreme north-central Utah (to the Idaho border) but has not been collected or observed in Utah, although Jensen (1965) reported finding pika sign in Rich County and stated his belief: "When specimens do become available, they will probably be referable to *O. p. clamosa* which occurs on the same range of mountains at locations within five miles of the study area [Rich County, Utah]."

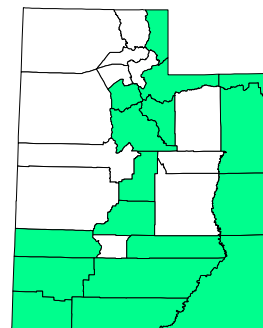
After revision of this species, populations in northern Utah will probably be referred to the type race, *Ochotona princeps princeps* (the northern Rocky Mountains form), populations in south-central and southwestern Utah will probably be called *Ochotona princeps schisticeps* (the Sierra Nevada form), and populations in the La Sal Mountains will likely be assigned to *Ochotona princeps saxatilis* (the southern Rocky Mountains form). It is, however, possible that one or more highly isolated nominal races in Utah, while not markedly distinct allozymically, may prove to be morphologically distinct enough to justify continued recognition as races.

Despite their currently questionable taxonomic validity, the five races *Ochotona princeps barnesi*, *O. p. cinnamomea*, *O. p. lasalensis*, *O. p. moorei*, and *O. p. wasatchensis* formerly were federally designated as Category 2 Candidates (to be

considered for listing as endangered or threatened under the Endangered Species Act) before Category 2 was eliminated in 1996. Also, the nominal race *O. p. clamosa*, speculated to occur in Utah, had been a federal candidate species but was downlisted to 3C status (found to be more abundant and secure than previously believed and thus no longer justifiable as a candidate).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S3

Natural Heritage Ranking Summary

Widely but discontinuously distributed in Utah in the mountains of the central Utah High Plateaus and the Wasatch, Uinta, and La Sal mountains. Availability of suitable talus habitat is a limiting factor for this species, restricting its numbers in Utah.

Estimated Number of Populations (Occurrences)

Approximately 30 occurrences (see Durrant 1952, Hall 1981).

Abundance

Although this species is moderately widespread in Utah, because of its habitat specificity and thus the patchiness of its distribution, the total population in the state is low.

Range in Utah

Discontinuously distributed through the mountains of the central Utah High Plateaus, the Wasatch Mountains, the Uinta Mountains, and the La Sal Mountains in the

following 16 counties: Washington, Kane, Iron, Garfield, Beaver, Wayne, Sevier, Sanpete, Utah, Salt Lake, Wasatch, Summit, Daggett, Uintah, and Grand, and San Juan. (Jensen [1965] reported sign of this species in Rich County as well, but, so far as known, the species has not yet been observed or collected in Rich County.)

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident
Kane	Native and natural, presence confident
Iron	Native and natural, presence confident
Garfield	Native and natural, presence confident
Beaver	Native and natural, presence confident
Wayne	Native and natural, presence confident
Sevier	Native and natural, presence confident
Sanpete	Native and natural, presence confident
Utah	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Wasatch	Native and natural, presence confident
Summit	Native and natural, presence confident
Daggett	Native and natural, presence confident
Uintah	Native and natural, presence confident
Grand	Native and natural, presence confident
San Juan	Native and natural, presence confident
Rich	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

The only aspect of the habitat of this species in Utah that Durrant (1952) mentioned was "high elevations"; indeed, the species is known as an inhabitant of high elevations, and all of the elevations of collection localities for this species in Utah presented by Durrant (1952) were within the elevational range of 8,000 to 11,315 ft, most of the elevations being 9,000 or 10,000 ft. This species typically inhabits talus or boulder-strewn slopes, frequently above timberline.

Trends

Population trend in Utah not known but probably stable.

Threats

There are seemingly few threats to this species in Utah. Destruction of habitat may be the greatest threat; however, it should be noted that anthropogenic alterations of montane habitats occasionally favor this species.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

YELLOW-PINE CHIPMUNK

Tamias amoenus

State Taxonomic Comments

Formerly was called *Eutamias amoenus* (Durrant 1952).

State Subspecies

The race that occurs in Utah is *Tamias amoenus amoenus*.

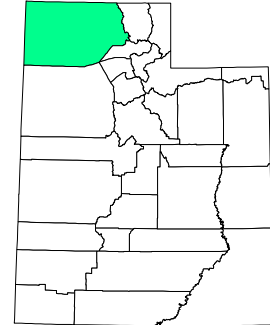
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S2S3

Natural Heritage Ranking Summary

Known in Utah only from the higher elevations in the Raft River Mountains, Box Elder County, where it has been reported based on only eleven specimens from three locations. However, recent unpublished reports suggest that this species is not uncommon within its limited range in Utah. Logging or clearing in the Raft River Mountains would be a threat to this species in Utah.

Estimated Number of Populations (Occurrences)

Reported from only three localities in Utah (Durrant 1952).

Abundance

Only 15 Utah specimens have been documented: Hall (1931) reported the first ten specimens from Utah, and Durrant (1952) knew of an additional five specimens.

Range in Utah

Known to occur in Utah only at higher elevations in the Raft River Mountains, Box Elder County (Durrant 1952). Kirkland (1981) mentioned: "The yellow-pine chipmunk (*Eutamias amoenus*) ... recently has been collected on the northwest slope of the Uintas in Summit County, Utah (R. S. Hoffman, pers. comm.)." Pritchett (1990) noted this as well, apparently quoting from Kirkland though he did not cite Kirkland: "[Robert S.] Hoffmann (personal communication) collected a Yellow-pine chipmunk, *Tamias amoenus*, 'on the northwest slope of the Uintas in Summit County.' I have not yet been able to get an exact location where this chipmunk was collected, nor have I been able to examine it. The yellow-pine chipmunk is also a small chipmunk, very similar to the least chipmunk, thus an error may have been made in identification of the specimen in question." If this hearsay report is accurate, it represents a significant extension of the known range of this species, especially its range in Utah.

County

Status

Box Elder

Native and natural, presence confident

Ecoregion

Status

Columbia Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Durrant (1952) noted that in the Raft River Mountains of extreme northwestern Utah "there are two full species of small chipmunks, *Eutamias minimus* ... [the least chipmunk] and *Eutamias amoenus*... [the yellow-pine chipmunk]; [the least chipmunk] inhabits the foothills and valley floor, and [the yellow-pine chipmunk] is restricted to the higher elevations of these mountains." Durrant (1952) listed three localities for this species in Utah, which were at elevations of 6,500, 6,600, and 7,000 ft. (Two other, larger species chipmunks also occur in the Raft River Mountains.)

Trends

Population trend in Utah unknown.

Threats

Logging or clearing in the Raft River Mountains would be a threat to this species.

Inventory Needs

An inventory of current populations and distribution in the Raft River Mountains is needed, as are prospective searches in the Goose Creek Mountains and the Grouse Creek Mountains. The hearsay report of this species in the Uinta Mountains, Summit County, should be investigated as well.

BELDING'S GROUND SQUIRREL

Spermophilus beldingi

State Taxonomic Comments

This species was formerly called *Citellus beldingi* (see, for example, Durrant 1952 and Durrant et al. 1955).

State Subspecies

The race that occurs in Utah is *Spermophilus beldingi creber*.

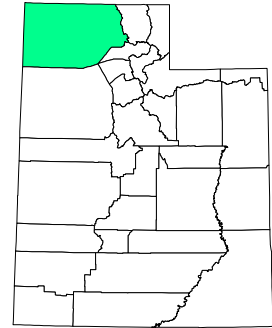
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in Utah only in the extreme northwestern corner of Box Elder County, where it has been reported from six localities in the Raft River, Grouse Creek, and Goose Creek mountains, though recent unpublished reports suggest that it is more common in its limited Utah range than published sources indicate.

Estimated Number of Populations (Occurrences)

Six known occurrences (see Durrant 1952, Durrant et al. 1955)

Abundance

Abundance in Utah not known--only estimated as uncommon from knowledge of related species and the distribution of this species as extended by Durrant et al. (1955).

Range in Utah

Occurs in Utah only in extreme northwestern Box Elder County (see Durrant et al. 1955).

County

Status

Box Elder

Native and natural, presence confident

Ecoregion

Status

Columbia Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Durrant (1952) knew of only two specimens from one Utah locality, 5 ft within the boundary of the state; although no habitat data were offered, the elevation was stated as "6,000 ft", and presumably was on the lower slopes of the Raft River Mountains. Durrant et al. (1955) reported five more localities in extreme northwestern Box Elder County; although again no habitat data were provided (not even elevations), these authors did state that in Utah this species "is now known to inhabit all the major drainages of the Raft River, Goose Creek, and Grouse Creek Mountains."

Trends

Population trend in Utah not known.

Threats

Threats in Utah unknown; however, ground squirrels generally seem to be persecuted to some degree as "varmints".

Inventory Needs

Inventory needed regarding populations and distribution in northwestern Box Elder County.

THIRTEEN-LINED GROUND SQUIRREL

Spermophilus tridecemlineatus

State Taxonomic Comments

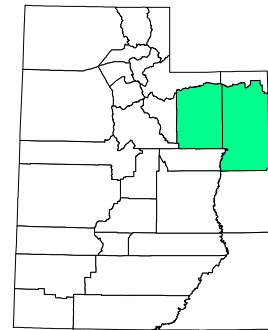
Formerly known as *Citellus tridecemlineatus* (see, for example, Durrant 1952).

State Subspecies

The race that occurs in Utah is *Spermophilus tridecemlineatus parvus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in Utah only in the Uinta Basin, where it is known from Uintah and Duchesne counties. Few individuals have been found in this state.

Estimated Number of Populations (Occurrences)

Durrant (1952) knew of only four localities of occurrence of this species in Utah.

Abundance

Durrant (1952) examined nine specimens from Utah and said: "[S]o far as I am aware there are only 13 specimens known from the state."

Range in Utah

Occurs in Utah in the Uinta Basin, where it is known from Uintah and Duchesne counties.

County

Status

Uintah

Native and natural, presence confident

Duchesne

Native and natural, presence confident

Ecoregion

Status

Uinta Basin

Native and natural, presence confident

Habitats Utilized in Utah

No one seems to have documented the habitat of this species in Utah. It is a plains or grassland species that also utilizes disturbed sites or artificial "grasslands" such as pastures, roadsides, golf courses, and cemeteries.

Trends

Durrant (1952) commented: "I have tried several times to collect some [specimens of this species] and the late W. S. Long made a special trip to the Uinta Basin to collect some, but neither of us found any. In conversation with long-time residents, Long learned that they had not seen any of these animals ... for several years. Long was of the opinion that they were almost if not wholly extinct in the Uinta Basin." Whether this species has been extirpated in Utah is not known.

Threats

This species is generally favored by human activities, particularly by habitat alterations such as clearing of brushlands and woodlands, road construction, and even urban residential development, all of which create artificial grasslands. Even fire would be expected to favor this species. Since this species is sometimes considered a pest, direct forms of persecution such as poisoning, trapping, and shooting do affect it, but usually it is persecuted only where it is abundant enough to be regarded as a nuisance. Thus it would be expected that there would be few threats to this species in Utah.

Inventory Needs

Inventory needed to determine limits of distribution and current status of populations in Utah.

SPOTTED GROUND SQUIRREL

Spermophilus spilosoma

State Taxonomic Comments

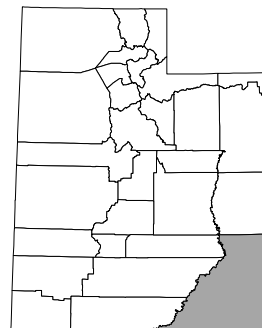
Formerly known as *Citellus spilosoma* (see, for example, Durrant 1952).

State Subspecies

Although Streubel and Fitzgerald (1978) mapped the occurrence of two races of this species, *Spermophilus spilosoma pratensis* and *Spermophilus spilosoma cryptospilotus*, in Utah, these distributions seemingly were speculative, for no localities were indicated. Other authors (e.g., Durrant 1952, Hall 1981) have considered this species to be represented in Utah by only one race, *Spermophilus spilosoma cryptospilotus*. Hall (1981) did, however, map the hypothetical distribution of *pratensis* as reaching the Arizona-Utah boundary (near or just west of its mid-point), but not entering Utah.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: SH

Natural Heritage Ranking Summary

Known in Utah from only three localities in San Juan County, and no reports from this state are known since 1952.

Estimated Number of Populations (Occurrences)

Durrant (1952) knew of only three localities in Utah.

Abundance

Seemingly rare in Utah; Durrant (1952) examined only one specimen from Utah.

Range in Utah

Known in Utah from only three localities, all being in San Juan County--two in extreme east-central and one in extreme southwestern San Juan County.

<u>County</u>	<u>Status</u>
San Juan	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

No habitat data or comments for this species in Utah evidently have been published. This is a species of arid, grassy habitats, usually occurring on red, sandy substrates.

Trends

Population trend in Utah unknown.

Threats

Although this species is not threatened by human activities in most parts of its range, threats in Utah are not known.

Inventory Needs

Inventory needed to determine whether this species is extant in Utah and, if so, to determine current distribution and abundance in the state.

Other Considerations

No reports of this species in Utah are known since the work of Durrant (1952).

WYOMING GROUND SQUIRREL

Spermophilus elegans

State Taxonomic Comments

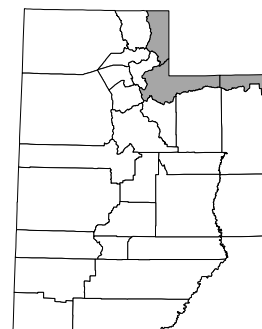
The generic name formerly used was *Citellus*, and this species was formerly included in the species *richardsonii*. In Utah this species has been called "*Citellus richardsoni*" (Durrant 1952, Hansen 1953, Jensen 1965) and "*Citellus richardsonii*" (Durrant et al. 1955), the "Richardson ground squirrel".

State Subspecies

The subspecies that is known to occur in Utah is the type (or nominate) race, *Spermophilus elegans elegans*. If this species were to be discovered in northwestern Box Elder County, the race represented there would almost certainly be *Spermophilus elegans nevadensis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2S3

Natural Heritage Ranking Summary

Known in Utah only along the Wyoming border in Rich, Summit, and Daggett counties.

Estimated Number of Populations (Occurrences)

At least six localities have been reported in Utah (Hansen 1953, Durrant et al. 1955, Jensen 1965).

Abundance

Seemingly uncommon in Utah, probably due to limited distribution and limited suitable habitat.

Range in Utah

Known in Utah only from areas very near the Wyoming border in Rich, Summit, and Daggett counties. Durrant et al. (1955) opined: "The occurrence of these ground squirrels in Rich, Summit and Daggett counties suggests that they occur along the entire northern piedmont of the Uinta Mountains."

Hall (1981) mapped the hypothetical occurrence of this species in extreme eastern Uintah County, based on the known occurrence of the species at a nearby locality in extreme western Colorado. Other authors (Zegers 1984, Zeveloff 1988) have followed Hall's (1981) mapped distribution for this species and have indicated its presence in eastern Uintah County. So far as is known, however, there has been no substantiation of the occurrence of this species in Uintah County, and, though not unlikely, such occurrence is believed to be entirely speculative.

<u>County</u>	<u>Status</u>
Rich	Native and natural, presence confident
Summit	Native and natural, presence confident
Daggett	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Wyoming Basins	Native and natural, presence confident
Columbia Plateau	Native and natural, presence possible

Habitats Utilized in Utah

Hansen (1953), in the first unequivocal report of this species in Utah, described the habitats where the Utah specimens were collected: "These animals from Rich and Summit counties live in greasewood and sagebrush areas, in open areas along roadsides, and along the margins of irrigated farmland and meadows. It is noteworthy that, when Richardson ground squirrels [i.e., Wyoming ground squirrels, *Spermophilus elegans*] and Uinta ground squirrels (*Citellus armatus* [= *Spermophilus armatus*]) occurred together in the same general area, the Uinta ground squirrels occupied the wetter, more grassy habitats, while the Richardson ground squirrels occupied the drier and better drained soils, which were generally characterized by greasewood and sagebrush."

Jensen (1965), writing of this species in Rich County, commented: "Richardson's [i.e., Wyoming] ground squirrels occur in the suitable localities in the Bear River Valley and on the drier soils to the east."

Trends

Population trend in Utah not known but likely is stable.

Threats

Probably not very threatened in Utah, but threats to this species in Utah are not known.

Inventory Needs

Inventory needed to determine current status along the Wyoming boundary. Prospective searches should be made in northwestern Box Elder County and in eastern Uintah County, where the species has not yet been detected but could be present.

Other Considerations

Durrant (1952), noting that this species is known from central Elko County, Nevada, commented: "Since no fundamental changes in terrain and vegetation exist between the known localities of occurrence in Nevada and extreme northwestern Utah, I think that these animals may be expected in the Goose Creek and Grouse Creek areas in northwestern Boxelder County, Utah."

UTAH PRAIRIE DOG

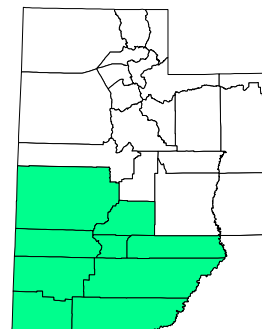
Cynomys parvidens

State Subspecies

No subspecies have been proposed (i.e., the species is monotypic).

Agency Status

US Fish and Wildlife Service:	Threatened
US Forest Service Region 4:	Threatened
US Bureau of Land Management:	Threatened
Utah Division of Wildlife Resources:	State Threatened



Natural Heritage Ranking

Global Rank: G1 State Rank: S1

Natural Heritage Ranking Summary

Endemic to Utah, where it occurs in parts of eight (formerly nine) counties in the southwestern part of the state. Inhabited acreage declined by as much as 95% between 1920 and 1971. There are currently about 72 complexes of colonies on approximately 7,000 acres. Populations have declined and seemingly continue to do so, in 1996 being at the lowest level since 1980. Habitat loss and "control" and persecution are the main threats.

Estimated Number of Populations (Occurrences)

Approximately 72 occurrences (complexes of colonies).

Abundance

McDonald (1996) counted 3,533 individuals, rangewide, in 1995 (the actual population may be somewhat higher), and the area occupied, rangewide, by the species in 1995 was 6,977 acres.

Range in Utah

This species is endemic to southwestern Utah; in fact, it is the only tetrapod (i.e., non-fish) vertebrate species endemic to the state. It is known from parts of eight counties: Sevier, Piute, Wayne, Garfield, Iron, and Beaver, and barely into Washington and Kane (McDonald 1996). Collier and Spillett (1975) indicated that it formerly occurred in part of Millard County as well.

<u>County</u>	<u>Status</u>
Beaver	Native and natural, presence confident
Garfield	Native and natural, presence confident
Iron	Native and natural, presence confident
Kane	Native and natural, presence confident
Piute	Native and natural, presence confident
Sevier	Native and natural, presence confident
Wayne	Native and natural, presence confident
Washington	Native and natural, presence probable
Millard	Native and natural, presumed extirpated

<u>Ecoregion</u>	<u>Status</u>
Utah High Plateaus	Native and natural, presence confident
Great Basin	Native and natural, presumed extirpated

Habitats Utilized in Utah

Collier (1975) found that several habitat factors were important for this species: elevation below 9,000 ft, the availability of water in addition to precipitation, heterogeneity of plant community, less than 10% of the vegetative cover composed of "tall" (12 in. or 31 cm) vegetation, and non-alkaline soils.

Discussing this species, Crocker-Bedford and Spillett (n.d.) stated that historically "[p]rime habitat would have been below 2,200 m in elevation and would have had much cool season palatable forage. ... [M]ost Utah prairie dogs now inhabit either densely populated colonies which have alfalfa, or sparsely populated colonies on Utah High Plateaus. Permanent Utah prairie dog colonies always are associated with areas that provide moist vegetation throughout the summer. ... The nutritious, succulent plants found in such areas are crucial for Utah prairie dogs: colonies without such vegetation are decimated by drought, and higher moisture content in the vegetation allows greater population density ..."

Durrant (1952) mentioned elevations for only three localities at which this species has been collected, the range being 4,875 to 7,200 ft, which may be typical.

Trends

McDonald (1996) found that rangewide counts in 1995 (3,533) had declined from those in 1994 (3,674) and were "at their lowest level since 1980". Earlier, Collier and Spillett (1972) also reported declines. Collier and Spillett (1975) pointed out that the acreage inhabited had been reduced by as much as 95%, from approximately 92,000 acres to 2,400 acres, between 1920 and 1971.

Threats

All species of prairie dogs (*Cynomys*) are persecuted, and this species is not an exception, even though it is legally protected. Illegal killing of this species almost certainly occurs, and landowners are able to obtain permits to kill nuisance prairie dogs of this species.

Collier and Spillett (1975) considered human activity to be "responsible for much of the decline in range of the Utah prairie dog". Specifically, "[p]oisoning ... appears to have reduced acreages utilized by the species by as much as 95 percent" between 1920 and 1971 (Collier and Spillett 1975). Thus, persecution and "control" measures are serious threats, as are loss of habitat due to agricultural, residential, commercial, and industrial development.

Plague is a natural threat; however, the greatest natural threat is loss of habitat resulting from the recent drying trend, the decrease in grasses, and the invasion of shrubby vegetation (Collier and Spillett 1975).

Inventory Needs

Continued monitoring of populations necessary to ensure that serious population declines are detected in time for recovery measures to be applied.

Other Considerations

The species has declined since its federal status was changed--having been "down-listed" from "endangered" to "threatened" (fide K. McDonald), and recovery efforts seem not to be effective.

ABERT'S SQUIRREL

Sciurus aberti

State Subspecies

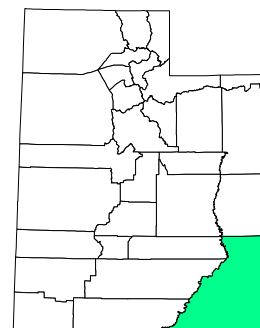
The Utah populations of this species were described as a distinct, disjunct race, *Sciurus aberti navajo*, endemic to San Juan County, Utah, by Durrant and Kelson (1947); however, Hoffmeister and Diersing (1978) considered *Sciurus aberti navajo* to be a synonym of the type race, *Sciurus aberti aberti*. Lamb et al. (1997), too, have demonstrated, based on mtDNA analyses, that the race *navajo* is not distinct from *Sciurus aberti aberti*.

The nominal race *Sciurus aberti mimus* may also occur in Utah in extreme eastern San Juan County, but this race as well was considered by Hoffmeister and Diersing (1978) and by Lamb et al. (1997), based on mtDNA data, to be a synonym of *Sciurus aberti aberti*.

Thus, all of the very few populations of this species that exist or may exist in Utah are now considered to be referable to the type or nominate race, *Sciurus aberti aberti*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2

Natural Heritage Ranking Summary

Limited in Utah to approximately three disjunct occurrences in San Juan County, mainly in the Abajo Mountains. Dependent upon virgin or mature stands of ponderosa pine and thus vulnerable to the threat of logging, especially

clear-cutting, in its habitat, as well as forest fires. Seemingly dependent upon hypogeous fungi, its principal food source.

Estimated Number of Populations (Occurrences)

Probably at least three occurrences in Utah.

Abundance

Abundance in Utah not known but presumably low due to restricted distribution. Boschen (1986) estimated a population of 1,939 individuals in the areas of San Juan County that he surveyed, and the next year (Boschen 1987) he suggested that the population had increased since the 1986 study.

Range in Utah

Occurs in Utah in only about three areas in San Juan County, principally in the Abajo Mountains. Boschen (1986) surveyed 38,760 acres inhabited by this species in San Juan County. Pederson et al. (1976) estimated: "Due to its habitat requirement of ponderosa pine, this subspecies [*Sciurus abert navajo*] is limited to roughly 100,000 acres of this vegetative type on the Monticello Ranger District [in San Juan County]."

County

Status

San Juan

Native and natural, presence confident

Ecoregion

Status

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Durrant (1952) wrote of this species on Utah: "These animals live on a broad flat-topped table land abutting on the west slope of the Abajo Mountains The Abert squirrel ... is closely associated with the one species of plant, yellow pine [= ponderosa pine]. The squirrel seems to be entirely dependent upon the yellow pine which is the source of food; the animal is not known to occur in any locality where this kind of tree is lacking. Hence, the squirrels in this region consist of isolated populations living in the small discontinuous stands of yellow pine."

Pederson et al. (1976) studied this species in Utah and stated that "[t]he apparent dependence [of this species] on ponderosa pine is well documented ..." but noted two reports of the use of other trees in studies in other states. Pederson et al. (1976) reported: "Ponderosa pine is found on the Blue Mountains and Elk Ridge [their study area] at an elevation of 7,500 feet (2,275 m) to 9,500 feet (2,881.6 m). This tree species prevails on the bench lands surrounding the higher rocky slopes. Aspen (*Populus tremuloides*), spruce (*Picea* spp.), and the fir (*Abies* spp.) complex are found in the north slopes of this area."

Trends

Overall population trend in Utah unknown. Boschen (1987) thought that the population in the Abajo Mountains that he studied had increased since the previous year (Boschen 1986).

Threats

Logging, especially clear-cutting, of the ponderosa pine habitat of this species is the principal threat in Utah. Pederson et al. (1987) found that clear-cutting negatively affected the population of this species on study areas in San Juan County; they recommended: "To minimize long-term [negative] effects on [Abert's] squirrels timber should be harvested in small, selective blocks (<20 acres) rather than in large-scale areas (>50 acres) by clear-cut methods commonly employed by management agencies."

Inventory Needs

Inventory of this species--population and distribution--in San Juan County should continue.

Other Considerations

This species is ecologically dependent upon mature stands of ponderosa pine; a very important food source, perhaps of critical importance to this species, is ectomycorrhizal (hypogeous) fungi (Stephenson 1975), which, in turn, are dependent upon healthy ponderosa pine forests (Pederson et al. 1987).

NORTHERN FLYING SQUIRREL

Glaucomys sabrinus

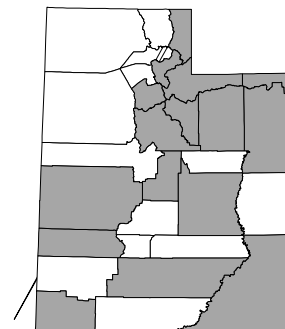
State Subspecies

Two races of this species are known to occur in Utah. *Glaucomys sabrinus lucifugus* is widespread in this state. *Glaucomys sabrinus murinauralis* is known only from extreme eastern Beaver County and at least one locality in extreme eastern Millard County. Both races are, so far as is known, endemic to Utah (see especially map in Wells-Gosling and Heaney 1984). The type locality of *lucifugus*, which was described by E. R. Hall in 1934, is "12 miles east of Kansas [sic; Kamas], Summit County, Utah" (Hall 1934). The race *murinauralis* was described by G. G. Musser in 1961, the type locality being "Timid Springs (SE1/4 NE1/4 Sec. 7, T. 29S., R. 4W.), 10,300 feet, one mile north of Big Flat Guard Station, Tushar Mountains, Beaver County, Utah" (Musser 1961).

Hall (1981) mapped the hypothetical occurrence of a third race, *Glaucomys sabrinus bangsi*, in Rich County (and perhaps Cache County); Hall was likely following Durrant (1952), who wrote: "No material is available from the northern Wasatch Mountains in Cache and Rich counties. Probably material from this region, when available, will show intergradation to exist between *G. s. lucifugus* and *G. s. bangsi*. This intergradational tendency is reflected in one specimen from Wolf Creek Summit [Wasatch County]" However, since the time of Durrant's (1952) work, two specimens, assigned to the race *lucifugus*, have been reported from Rich County (Jensen 1965). Moreover, Wells-Gosling and Heaney (1984) mapped the distribution of this species as much more fragmented and discontinuous than have others (e.g., Durrant 1952, Hall 1981) and did not indicate the presence of the race *bangsi* in Utah.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S3

Natural Heritage Ranking Summary

Widespread in the mountains of the central Utah High Plateaus, the Wasatch Mountains, and the Uinta Mountains; fairly common in some areas.

Estimated Number of Populations (Occurrences)

At least 22 localities have been reported in Utah (Durrant 1952, Hall 1981).

Abundance

Durrant (1952) commented: "Flying squirrels ... are fairly common in the Wasatch Mountains"

Range in Utah

Occurs from southwestern to northeastern Utah in the mountains of the central Utah High Plateaus, the Wasatch Mountains, and the Uinta Mountains; known from Washington, Garfield, Beaver, Millard, Sanpete, Utah, Wasatch, Salt Lake, Morgan, Rich, Summit, Duchesne, Daggett, and Uintah counties (Durrant 1952, Jensen 1965, Hall 1981).

Durrant (1952) noted that there had been a report of observations of this species in Emery County (Howell 1918) and mentioned: "Also I have reports of what seem to be flying squirrels in the Abajo Mountains [San Juan County]."

County

Status

Washington	Native and natural, presence confident
Garfield	Native and natural, presence confident
Beaver	Native and natural, presence confident
Millard	Native and natural, presence confident
Sanpete	Native and natural, presence confident
Utah	Native and natural, presence confident
Salt Lake	Native and natural, presence confident
Morgan	Native and natural, presence confident
Rich	Native and natural, presence confident
Summit	Native and natural, presence confident
Wasatch	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Uintah	Native and natural, presence confident
Daggett	Native and natural, presence confident
Emery	Native and natural, presence possible

San Juan Native and natural, presence possible

Ecoregion

Status

Utah High Plateaus	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Although Durrant (1952) did not discuss the habitat of this species in Utah, he did provide the elevations of six Utah localities at which this species has been collected, the range being 7,900 to 11,000 ft.

Musser (1961), describing in detail the habitat of his new race, *Glaucomys sabrinus murinauralis*, from Utah, wrote: "On the Tushar Mountains flying squirrels were taken in Engelmann spruce (*Picea engelmanni* [Parry] Engelm.) from elevations of 7,875 feet to 10,300 feet. Those from the Pavant Range were trapped in stream-bottom stands of white fir (*Abies concolor* [Gordon and Glendinning] Hoopes) interspersed with narrowleaf cottonwood (*Populus angustifolia* James) at an elevation of 6,800 feet. On both the Tushar and Pavant Range, trapping in stands containing only cottonwoods or aspen (*Populus tremuloides* Michx.) proved unsuccessful. ... On the Pavant Range where white fir and narrowleaf cottonwoods were found in association, the former tended to be concentrated higher on the canyon slopes, the latter below and along the stream banks. Here, flying squirrels were taken in the white fir, although one individual was seen ascending a cottonwood. The largest single population of these animals observed was in Engelmann spruce at 10,300 feet on the Tushar Mountains. These data suggest that flying squirrels on these two highlands prefer a habitat in which conifers are the dominant trees. It is suspected that the source of food coupled with the rough texture of the bark on conifers are probably important factors in the selection of this habitat." Musser (1961) continued with the interesting additional observations: "On both the Tushar Mountains and the Pavant Range, flying squirrels appear to show a decided affinity for camp grounds and picnic areas when such areas are located in suitable habitat. ... Although suitable habitat was trapped in locations far removed from camping and picnic areas, flying squirrels were taken only at these latter areas. ... In observing the nocturnal activity of flying squirrels (using artificial light), several were seen foraging in garbage pits, around garbage cans, and on picnic tables."

Hallows (1982) mentioned "a specimen [of this species] taken ...in the dense spruce-fir ..." in Bryce Canyon National Park.

Trends

Population trend in Utah not known, probably stable.

Threats

Threats in Utah not known but probably include logging and forest fires.

Inventory Needs

Inventory needed to determine whether this species may occur in Emery County or in San Juan County (Abajo Mountains).

IDAHO POCKET GOPHER

Thomomys idahoensis

State Taxonomic Comments

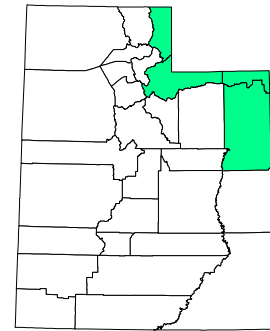
Formerly referred to as a race of *Thomomys talpoides* in Utah (see, for example, Durrant 1952, Hall and Kelson 1959, Hall 1981).

State Subspecies

The race that occurs in Utah is *Thomomys idahoensis pygmaeus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5Q State Rank: S2?

Natural Heritage Ranking Summary

A species with a very restricted range in Idaho, Wyoming, and Utah; limited in Utah to about eleven occurrences in Rich and Daggett counties (and perhaps Summit and possibly Uintah counties).

Estimated Number of Populations (Occurrences)

Eleven reported Utah occurrences (see summary in Thaeler 1972).

Abundance

Abundance unknown in Utah, but, based on few occurrences, presumed to be low.

Range in Utah

Known from eleven Utah localities: two in Rich County and nine in Daggett County (see Thaeler 1972, Kirkland 1981). Kirkland (1981) noted that this species “has not been reported from the south slope [of the Uinta Mountains]” and reported that though he collected this species on the north slope of the Uinta Mountains in Daggett County,

“no evidence of this species was found on the south slope in adjacent Uintah County.”

<u>County</u>	<u>Status</u>
Rich	Native and natural, presence confident
Daggett	Native and natural, presence confident
Summit	Native and natural, presence possible
Uintah	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Wasatch & Uinta Mtns.	Native and natural, presence confident

Habitats Utilized in Utah

Jensen (1965), discussing this species as *Thomomys talpoides pygmaeus* as it was known at the time, stated: "These small, pale gophers are usually found in shallow, rocky soils within the study area [Rich County, Utah]. The specimen from near Little Creek Reservoir on the west side of the Bear river, however, was taken in deep soil near a stream." Thaeler (1972), in the publication in which he elevated *idahoensis* (including the race *pygmaeus*) back to specific status, as it was originally named by Merriam in 1901, summarized known Utah localities and presented elevations for three of these, which ranged from 8,000 to 9,000 ft.

Trends

Population trend in Utah not known.

Threats

Threats in Utah unknown, but, in view of the persecution of pocket gophers in general, this species may be threatened.

Inventory Needs

Inventory needed to elucidate the distribution and abundance of this species in Utah, particularly whether it occurs in Summit and perhaps even Uintah counties.

OLIVE-BACKED POCKET MOUSE

Perognathus fasciatus

State Taxonomic Comments

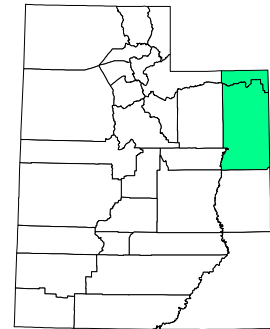
Durrant (1952) referred to this species as *Perognathus callistus* and hypothesized that it could occur in Utah; *callistus* has, since then, been arranged as a race of *Perognathus fasciatus*.

State Subspecies

The race that occurs in Utah is *Perognathus fasciatus callistus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S2?

Natural Heritage Ranking Summary

A northern Great Plains species that barely enters the extreme northeast corner of Utah, where it has been found at two localities--one in northeastern Uintah County and another in extreme eastern Daggett County. Further study needed to assess accurately the status of Utah populations.

Estimated Number of Populations (Occurrences)

Only two occurrences in Utah have been reported (Hayward and Killpack 1956, Hall 1981).

Abundance

Abundance in Utah unknown--presumed low, since there are only two known occurrences.

Range in Utah

Known in Utah only from the extreme northeast corner: one locality in extreme (north)eastern Uintah County (15 mi. N of Bonanza) and another in extreme eastern Daggett County (Bridgeport [across the Green River from Parson's Unit of Brown's Park Waterfowl Management Area]).

County

Status

Daggett
Uintah

Native and natural, presence confident
Native and natural, presence confident

Ecoregion

Status

Wyoming Basins

Native and natural, presence confident

Habitats Utilized in Utah

Habitat data have been reported for this species in Utah by Hayward and Killpack (1956), who trapped it "on sandy soil or sand mixed with fine gravel where the predominant vegetation was sagebrush (*Artemisia tridentata*), shadscale (*Atriplex*) and *Tetrademia* [horsebrush]."

Trends

Population trend in Utah unknown.

Threats

Threats in Utah not known.

Inventory Needs

Inventory needed to determine the distribution and abundance in Daggett and Uintah counties.

SILKY POCKET MOUSE

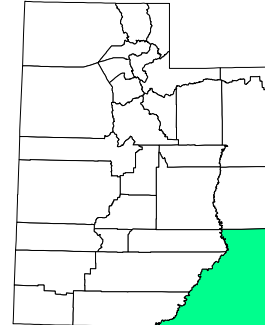
Perognathus flavus

State Subspecies

The race in Utah is *Perognathus flavus hopiensis*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S2?

Natural Heritage Ranking Summary

Enters Utah only in the southeastern corner, extreme southern San Juan County, where it is known from only about three locations. Survey work needed to ascertain current status.

Estimated Number of Populations (Occurrences)

Five reported Utah localities representing about three occurrences.

Abundance

Abundance in Utah not known--estimated from number of known occurrences. Durrant (1952) examined a total of 14 specimens from Utah and was aware of two other reports of the species from this state.

Range in Utah

Known in Utah only from the southeast corner of the state in extreme southern San Juan County.

County**Status**

San Juan

Native and natural, presence confident

Ecoregion**Status**

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Durrant (1952) provided elevations of two of the Utah localities: 4,500 and 4,600 ft. Best and Skupski (1994), discussing the habitat of this species in Arizona, commented: "Presence of a grasssy cover may be the most important requisite in habitat selection for these mice."

Trends

Population trend in Utah unknown.

Threats

Threats in Utah not known.

Inventory Needs

Inventory needed to determine distribution and abundance in Utah, particularly north of the San Juan River.

DARK KANGAROO MOUSE

Microdipodops megacephalus

State Taxonomic Comments

Hall (1981) noted the similarity of the race *Microdipodops megacephalus leucotis*, in several morphological characters, to a related species *Microdipodops pallidus* but added that two other morphological characters as well as the "geographic nearness of *leucotis* to *M. m. megacephalus* [endemic to Nevada] influence me to let *leucotis* remain a subspecies of *M. megacephalus*." Hall (1981), however, further commented: "Possibly *leucotis* should be elevated to the rank of species." Hafner and Hafner (1983) have pointed out that "Hall's suggestion (1981:560) that *M. megacephalus leucotis* may warrant specific status is not supported by chromosomal or protein evidence" (Perhaps it was this belief of Hall's [1981], i.e., that *leucotis* is so taxonomically distinct and unique, that led him to map its distribution [his map 340] as disjunct from that of the rest of its species.)

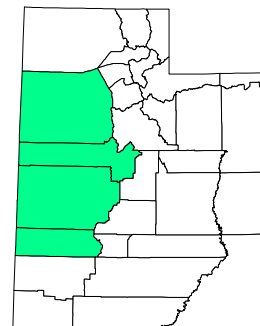
It should be noted that Hall and Johnson (1938) incorrectly reported *Microdipodops pallidus* from Millard County and claimed that this represented "an extension of the known range of [the race] *albiventer* [of the species *Microdipodops pallidus*] of about 60 miles to the northward." These specimens were actually *microdipodops megacephalus paululus*, and *Microdipodops pallidus* does not, so far as is known, occur in Utah nor is that species even predicted to occur in Utah. This misidentification is indicated in the synonymy for *Microdipodops megacephalus paululus* provided by Durrant (1952); however, Hall (1981) concealed the misidentification by conveniently omitting reference to Hall and Johnson (1938) from his synonymy (Hall 1981) for *M. m. paululus*. Interestingly, Hall was the senior author of the descriptions of both *Microdipodops megacephalus paululus* and *Microdipodops pallidus albiventer*, even though his report with Johnson (1938) reveals that he could not always identify these taxa he had named.

State Subspecies

Two races, *Microdipodops megacephalus leucotis* and *Microdipodops megacephalus paululus*, occur in Utah. Both are endemic to Utah, *M. m. leucotis* occurring only in Tooele County, and *M. m. paululus* being limited to Juab, Millard, and Beaver counties. Hall's (1981, map 340) indication that the range of the race *Microdipodops megacephalus leucotis* is disjunct from the ranges of other races of this species and that this species is absent from Juab and northern Millard counties seems to be incorrect or is at least misleading.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S2

Natural Heritage Ranking Summary

This species occurs in Utah only in desert areas of Tooele, Juab, Millard, and Beaver counties, where it has seemingly declined since 1960, apparently as a result of habitat changes resulting from the invasion of exotic grasses and resulting increased frequency of fire. Additionally, the two races that occur in Utah are endemic to this state.

Estimated Number of Populations (Occurrences)

At least eight Utah localities (representing occurrences) have been reported in Utah (see Durrant 1952, Shippee and Egoscue 1958, Hall 1981).

Abundance

Seemingly rare in Utah. Durrant (1952) examined 30 specimens from this state, though more have been reported since then.

Range in Utah

Occurs in Utah only in Tooele, Juab, Millard, and Beaver counties (Durrant 1952, Hall 1981, E. Rickart pers. comm. 1997). Hall (1981, map 340) indicated a hiatus in the range of this species in Utah, the gap being in approximately the area of Juab and northern Millard counties; other authors have indicated no such disjunction of the range of this species in Utah (see, for example, Durrant 1952, Figure 42, and O'Farrell and Blaustein 1974, Figure 3).

County**Status**

Tooele	Native and natural, presence confident
Juab	Native and natural, presence confident
Millard	Native and natural, presence confident
Beaver	Native and natural, presence confident

Ecoregion**Status**

Great Basin	Native and natural, presence confident
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Habitats Utilized in Utah

Little has been written regarding the habitat of this species in Utah. Reported elevations range from 4,400 ft to 5,400 ft (Durrant 1952). O'Farrell and Blaustein (1974), writing of this species throughout its range, stated: "The habitat of *M. megacephalus* lies exclusively in the Upper Sonoran Life-zone The species is restricted to fine, gravelly soils However, near the margins of its range, it may occur in sand dunes."

Trends

Eric Rickart (pers. comm. 1997) stated: "Historical records suggest that the species ... has experienced a decline in abundance (few records since 1960)."

Threats

Eric Rickart (pers. comm. 1997) has noted "drastic habitat changes (invading exotic annual grasses and increased wildfires)" as threats to this species in Utah.

Inventory Needs

Inventory needed to determine current abundance and extent of extant range, as well as to assess the effect of changes in habitat caused by invasive exotic plants.

DESERT KANGAROO RAT

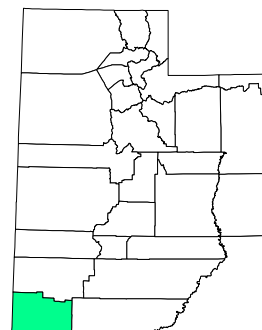
Dipodomys deserti

State Subspecies

The race that occurs in Utah is the nominate or type race, *Dipodomys deserti deserti*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2

Natural Heritage Ranking Summary

A desert species with narrow ecological requirements, this species occurs in Utah only in Beaver Dam Wash, Washington County. Its very limited Utah population is threatened by natural periodic flooding as well as by the unnatural distribution of poison bait used to control pocket gophers in areas of attempted cultivation in Beaver Dam Wash.

Estimated Number of Populations (Occurrences)

Perhaps only one occurrence (several miles long but only a few hundred feet wide).

Abundance

Though limited to only one location in Utah, this species seemingly is not rare in its limited habitat. Pritchett (n.d.) recently reported the capture of 97 individuals along a considerable length (several miles) of the Beaver Dam Wash.

Range in Utah

Occurs in Utah only in Beaver Dam Wash, from the Arizona border to at least 8 miles up the wash, in extreme southwestern Washington County. Durrant (1952) pointed out that the species has "never been taken above the narrows of the Virgin River, where the river traverses the Beaverdam Mountains. This restriction of range was suspected by Durrant [1943] and was substantiated by later trapping above the narrows by Ross Hardy."

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Durrant (1943), reporting the discovery of this species in Utah, discussed its Utah habitat: "In every instance, these animals were taken in loose, shifting sand at the base of shrubs, in the bottom of the wash. While other species of the genus *Dipodomys* were taken on the benchlands, no *deserti* were captured. The limiting factor as far as this form is concerned appears to be one of soil. While the soil of the benchlands is largely sandy, with a few small scattered stones, little or no loose, shifting sand was observed. This loose, shifting sand seems to be limited to the bottom of the wash." Durrant (1943) went on to discuss the periodic flooding of this habitat and its probable recolonization by this species afterward.

Trends

Pritchett (n.d.) reported the finding of the species "still inhabiting the lower portion of its original habitat. The population in Beaver Dam Wash has decreased in its northern distribution by a little over one kilometer, about 1 mi. This is due to loss of habitat."

Threats

Durrant (1952) stated: "Within their limited range in Utah, these animals are found only in the bottoms of the washes in areas of loose, shifting sand. This restriction of habitat is interesting when one considers the bottom of the wash is sometimes inundated. As observed on May 5, 1941, the wash was inundated from

bank to bank. During such periods the habitat would be completely devoid of animals. Undoubtedly many of these kangaroo rats perish, while some escape to higher ground during these floods. The flooding, at least annually, probably accounts for the paucity of these kangaroo rats in the Beaverdam Wash." The fluctuation of the Utah population due to flooding of Beaver Dam Wash has been discussed by others as well (Stock 1965, Pritchett n.d.).

Stock (1965) warned: "Unfortunately, the areas utilized by these kangaroo rats are also used by man. Efforts to rid the few pitifully small areas of cultivation in the wash of pocket gophers had [sic] led to distribution of poison bait which may ultimately [sic] exterminate the desert kangaroo rat from its only area of occurrence in Utah."

Other Considerations

Stock (1965) mentioned: "*Dipodomys deserti* is a highly specialized rodent, with narrow ecological limits. It is restricted to deep, somewhat stable sands in xeric situations, and the rocky composition of the soil of Beaverdam Slope and the Beaverdam Mountains abruptly restrict these animals to the bottom of Beaverdam Wash." Discussing, as had Durrant (1952), the flooding that periodically reduces their Utah population, Stock pointed out: "There is one area of deep sand at the edge of the wash, about 5 miles north of the Utah-Arizona Border, that is seldom flooded. In this region, there exists the only stable populations of these animals within [Washington County]."

Inventory Needs

Inventory for this species in Utah is relatively complete.

MERRIAM'S KANGAROO RAT

Dipodomys merriami

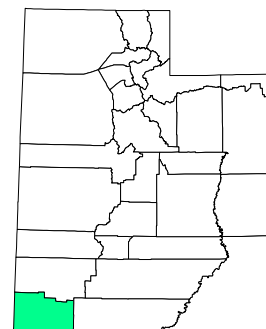
State Subspecies

Two races of this species occur in Utah: *Dipodomys merriami frenatus*, which occurs from the vicinity of St. George to eastern Washington County, and the type (or nominate) race, *Dipodomys merriami merriami*, which occurs in the area of the Beaver Dam Wash.

Durrant and Setzer (1945) and Durrant (1952) considered *frenatus* to be a synonym of *Dipodomys merriami vulcani*, but other authors (e.g., Hall 1981) have regarded the two races as distinct, with *vulcani* being restricted to a small area in northwestern Arizona. The race *frenatus* itself occupies a very small range, mostly in Washington County, Utah, with a few localities in adjacent Arizona. The type locality of *frenatus*, described by Bole (1936), is Toquerville, Washington County, Utah.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S3

Natural Heritage Ranking Summary

Occurs in this state only in southern Washington County; however, within its very limited Utah range it is probably the most abundant mammal species.

Estimated Number of Populations (Occurrences)

Durrant (1952) listed 12 localities in Utah; Hall (1981) cited at least three

other Utah localities. There are probably more than 20 occurrences.

Abundance

Although this species occurs in Utah only in the southern part of Washington County, it is exceedingly abundant in this limited area. Pritchett (n.d.), in his "Washington County mammal study", reported: "Merriam's kangaroo rat was the most common mammal collected in this study." "Merriam's kangaroo rat (*Dipodomys merriami*), was the mammal caught in greatest numbers (849) [sic: the actual number collected was 894] They represent 36 percent of all mammals trapped or mist-netted ...", which was 2,488 individuals representing 28 species, including bats, carnivores, etc. Thus, this species was more than 10 times as abundant as would have been expected had all species of mammals collected been of equal abundance.

Range in Utah

In Utah only in southern Washington County.

<u>County</u>	<u>Status</u>
Washington	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Mojave Desert	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Most the trapping localities where Pritchett (n.d.) captured this species were in "warm desert shrub", usually in association with creosote bush, which is a typical element of the habitat of this species, and usually on sandy substrates, which is of interest since this species elsewhere typically occurs on gravelly or hard-packed substrates and not sand.

Trends

Population trend in Utah not known; probably stable.

Threats

Probably not very threatened in Utah.

Inventory Needs

Although inventory for this species in Utah has been fairly extensive, further inventory is warranted, and data (in agency files, etc.) needs to be assimilated.

ROCK POCKET MOUSE

Chaetodipus intermedius

State Taxonomic Comments

The few published works that have referred to this species in Utah (Benson 1935, Durrant 1952, Hall and Kelson 1959, Hall 1981) have used the name formerly accepted, *Perognathus intermedius*.

State Subspecies

The race that occurs in Utah is *Chaetodipus intermedius crinitus*.

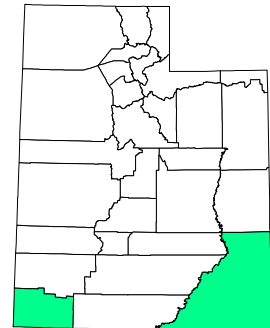
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S2?

Natural Heritage Ranking Summary

Known in Utah from only two or three locations near the Arizona border in the extreme southern part of the state--San Juan County and possibly Washington County; seemingly only three or four individuals of this species have been identified from Utah. Further study is needed in order to assess the status of this species in Utah.

Estimated Number of Populations (Occurrences)

Only two or three Utah occurrences known.

Abundance

Utah abundance not known but believed to be low based both on known number of occurrences and numbers of reported captures. Benson (1935) reported three

specimens collected in Utah, and these were the only specimens from Utah known to Durrant (1952). Pritchett (n.d.) reported another individual, but failed to comment on the importance of such a find: both the rarity of this species in Utah and the significance of this new geographic location in Utah (Washington County). Pritchett's (n.d.) one capture of this species represented 4/100ths of 1 per cent of the mammals captured during his Washington County mammal study (i.e., 1 out of 2,488).

Range in Utah

Known only from two or three localities very near the southern boundary of Utah: two in extreme southern San Juan County (Rainbow Bridge and Navajo Mountain Trading Post, Benson 1935, Durrant 1952) and one (that is perhaps questionable) in extreme southern Washington County (Fort Pearce Wash, Pritchett n.d.).

<u>County</u>	<u>Status</u>
San Juan	Native and natural, presence confident
Washington	Native and natural, presence probable

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident
Mojave Desert	Native and natural, presence probable

Habitats Utilized in Utah

Benson (1935) reported "[t]wo [individuals of this species] trapped at Rainbow Bridge and one on a rocky ledge at Navajo Mountain Trading Post." Pritchett (n.d.) reported the capture of one individual of this species in southwestern Utah at 2,953 ft (900 m) elevation, in an area of "[w]arm desert shrub, clay substrate, some desert pavement", the "major plant species" being blackbrush, creosote bush, Russian thistle, and bur-sage.

Trends

Population trend in Utah not known.

Threats

Threats not known in Utah.

Inventory Needs

Inventory needed regarding distribution and abundance in Utah: in areas of previous known occurrence (San Juan County); in the area of reported, but questionable, occurrence (Washington County); and in areas of potential occurrence (Kane County).

DESERT POCKET MOUSE

Chaetodipus penicillatus

State Taxonomic Comments

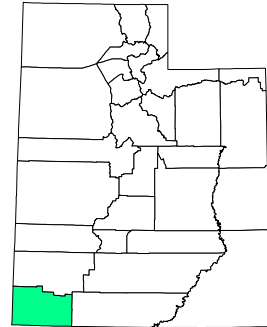
Durrant (1952), predicting the occurrence of this species in Utah long before its discovery, used the name *Perognathus penicillatus*, as it was then called. Stock (1965) repeated the same prediction and used the same name.

State Subspecies

The race that occurs in Utah is *Chaetodipus penicillatus sobrinus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	No Status
Utah Division of Wildlife Resources:	No Status



Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

A southwestern desert species that reaches the northern limit of its range in extreme southwestern Utah, where it is known from two places in extreme southern Washington County near the Arizona border (lower Beaver Dam Wash and Fort Pearce Wash); only four individuals of this species have been captured in Utah.

Estimated Number of Populations (Occurrences)

Known only from three localities (equalling two occurrences) in Utah.

Abundance

Seemingly very rare in Utah--only four individuals have been captured in this

state. Of 2,488 mammals captured in Pritchett's (n.d.) Washington County mammal study, only two individuals were of this species, representing 8/100ths of one per cent of the total captured.

Range in Utah

Only three localities (two occurrences) known in Utah, all in extreme southern Washington County near the Arizona border. First reported in the state based on two specimens collected at Terry's Ranch in lower Beaver Dam Wash (Stock 1970). Recently (1991?) two more specimens, tentatively identified as this species, were collected in Washington County--one in the lower portion of Beaver Dam Wash between Iverson's Ranch and the Arizona border and another in Fort Pearce Wash near Fort Pearce (Pritchett n.d.). (Pritchett [n.d.] added the note: "The two specimens we collected have been sent off for verification." Presumably positive identification has, by now, been made, but this should be ascertained.)

County

Status

Washington

Native and natural, presence confident

Ecoregion

Status

Mojave Desert

Native and natural, presence confident

Habitats Utilized in Utah

Pritchett (n.d.) captured this species at two localities in Washington County. One was in an area of "[d]ry wash, shallow sand, warm desert shrub" at 2,560 ft (780 m) elevation, "[m]ajor plant species" being creosote bush, Emery seepwillow, Mojave rabbitbrush, and bottlestopper; "[v]egetation is sparse in the wash". The other individual was captured at a site described as an "[o]pen desert stream, very little vegetation", at 2,953 ft (900 m), with salt cedar, desert salt grass, desert willow, rush, and coyote willow.

Trends

Population trend in Utah not known.

Threats

Threats unknown in Utah.

Inventory Needs

Inventory needed to determine abundance in the limited area in Utah inhabited by this species.

Other Considerations

Durrant (1952) predicted the occurrence of this species in Utah; Stock repeated (1965) and ultimately fulfilled (1970) the prediction.

CACTUS MOUSE

Peromyscus eremicus

State Subspecies

The subspecies that occurs in Utah is the type (or nominate) race, *Peromyscus eremicus eremicus*.

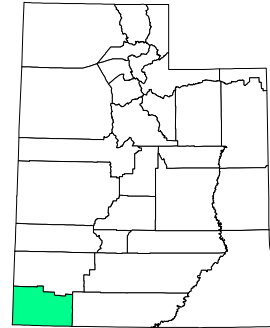
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S3

Natural Heritage Ranking Summary

Although this species occurs in Utah only in the southwestern corner of Washington County, it is abundant in a variety of habitats within this very limited area of occurrence.

Estimated Number of Populations (Occurrences)

Durrant (1952) knew of five localities in Utah. Probably there are more than six occurrences.

Abundance

Durrant (1952) examined only 16 specimens from Utah. However, Pritchett (n.d.), in his "Washington County mammal study", stated: "The cactus mouse [*Peromyscus eremicus*], even though it has a limited distribution in Utah, was the second most abundant mammal collected during this study." Of 2,488 mammals representing 28 species (including bats, carnivores, etc.) that Pritchett's workers collected in Washington County, 430, or more than one-sixth (17.3%) were *Peromyscus*

eremicus; this is almost five times the number that would be expected had all mammals collected in Pritchett's study been equally abundant.

Range in Utah

In Utah only in the southwestern corner of Washington County, at least as far north as Santa Clara and as far east as St. George (see Durrant 1952). Veal and Caire (1979) indicated more extensive (both north and east) distribution of this species in Utah. Hall (1981) also indicated a larger hypothetical range of this species in Utah, mainly to the east, including southwestern Kane County. However, these greater hypothetical distributions apparently are not supported by the results of sampling in Utah and are not believed to be accurate.

<u>County</u>	<u>Status</u>
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Washington	Native and natural, presence confident
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<u>Ecoregion</u>	<u>Status</u>
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Mojave Desert	Native and natural, presence confident
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Habitats Utilized in Utah

Durrant (1952) commented regarding this species in Utah: "These animals are limited to extreme southwestern Utah, and occur mostly in the Lower Sonoran Life-Zone, where they seem to be more or less restricted to the cactus vegetation." In Pritchett's (n.d.) "Washington County mammal study" 27 trap lines were set in a variety of desert habitats; this species was captured at 22 of the trapping locations.

Trends

Population trend in Utah not known but believed to be stable.

Threats

Thought not to be threatened in Utah.

Inventory Needs

Inventory needed in southwestern Kane County to determine whether Hall's (1981) speculated distribution of this species in Utah may actually be correct.

NORTHERN ROCK MOUSE

Peromyscus nasutus

State Taxonomic Comments

Hall (1981) and Zeveloff (1988) referred to this species as *Peromyscus difficilis*, in which species it was submerged for a time.

State Subspecies

The race in Utah is the type or nominate race, *Peromyscus nasutus nasutus*.

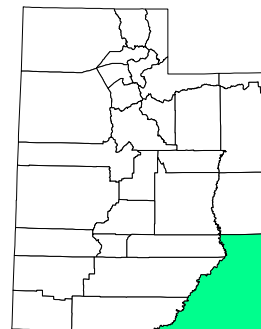
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5

State Rank: SH

Natural Heritage Ranking Summary

Known in Utah from a single individual taken in the 1930s at Rainbow Bridge, San Juan County.

Estimated Number of Populations (Occurrences)

One Utah occurrence.

Abundance

Seemingly only one individual of this species has ever been reported in Utah (Benson 1935, Durrant 1952, Hall 1981). However, Benson's (1935) original account is equivocal on this point. The first sentence in his account of this species states: "Two caught ... at

Rainbow Bridge." The last sentence in the account of this species, refers to "[t]he single specimen from Rainbow Bridge"

Range in Utah

Known in Utah only from Rainbow Bridge, San Juan County.

County

Status

San Juan

Native and natural, presence confident

Ecoregion

Status

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Benson (1935) reported the habitat where this species was captured in Utah as "a rocky gulley at Rainbow Bridge."

Trends

Population trend unknown in Utah.

Threats

Threats to this species in Utah are not known.

Inventory Needs

Inventory at Rainbow Bridge needed to ascertain whether this species still occurs in Utah, and inventory elsewhere in southeastern Utah needed to determine extent of range and population.

Other Considerations

The only individual of this species known to have been taken in Utah was captured in the 1930s; whether it still occurs in the state is unknown.

SOUTHERN GRASSHOPPER MOUSE

Onychomys torridus

State Subspecies

The race that occurs in Utah is *Onychomys torridus longicaudus*, the type locality of this race being St. George, Washington County, Utah. Merriam described *longicaudus* in 1899 as a species, *Onychomys longicaudus*, but in 1904 he submerged it in *Onychomys torridus* as a race of that species.

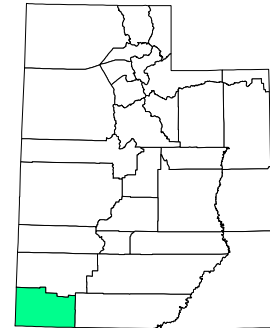
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive

Utah Division of Wildlife Resources: Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5

State Rank: S2S3

Natural Heritage Ranking Summary

Occurs in Utah only in Washington County, seemingly only in the southwestern part of the county, south and west from Hurricane (e.g., Hurricane, St. George, Snow Canyon, Santa Clara Creek, Beaver Dam Wash, Beaver Dam Mountains), although there is an old record from the eastern part of the county. It is uncommon in the limited area that it inhabits in Utah.

Estimated Number of Populations (Occurrences)

Perhaps as many as twelve occurrences in Utah.

Abundance

Abundance in Utah not well known, but seemingly low due to very limited occurrence. Stock (1965) examined 48 specimens from southwestern Washington County. Pritchett (n.d.) found it to be uncommon along many miles of Beaver Dam Wash, where he captured only eleven individuals.

Range in Utah

Except for an old record from the southern boundary of Zion National Park in southeastern Washington County (Presnall 1938), all Utah localities for this species are from southwestern Washington County, from Hurricane south and west--Hurricane, St. George, Snow Canyon, and especially Beaver Dam Wash, Santa Clara Creek, and the Beaver Dam Mountains (Durrant 1952, Stock 1965, Pritchett n.d.).

<u>County</u>	<u>Status</u>
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Washington	Native and natural, presence confident
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<u>Ecoregion</u>	<u>Status</u>
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Mojave Desert	Native and natural, presence confident
Colorado Plateau	Origin data uncertain, presence possible

Habitats Utilized in Utah

Specific habitat information for this species in Utah seems to be lacking. Pritchett (n.d.) reported the capture of this species in his "Washington County mammal study" and provided some habitat data; however, his results are undecipherable because in his presentation of his data he has conflated all individuals of the related species *Onychomys leucogaster*, the northern grasshopper mouse, with those of *Onychomys torridus*, thus obscuring the habitat differences between them. Elsewhere, this species, *Onychomys torridus*, usually occurs in desert situations on gravelly substrates, while the more widespread *Onychomys leucogaster* typically occurs on sandy substrates of both deserts and plains.

Trends

Population trend not known in Utah; believed to be stable.

Threats

Perhaps moderately threatened due to agricultural and ranching activities in southwestern Washington County.

Inventory Needs

Inventory needed to determine whether the species still occurs in eastern Washington County, in or south of Zion National Park.

STEPHENS' WOODRAT

Neotoma stephensi

State Taxonomic Comments

The common name is frequently misspelled as Stephen's [sic] woodrat.

State Subspecies

The race that occurs in Utah is *Neotoma stephensi relictus*.

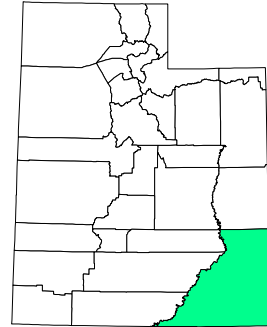
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status

US Bureau of Land Management: Sensitive: not known to occur on BLM property in Utah.

Utah Division of Wildlife Resources: Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5

State Rank: S2?

Natural Heritage Ranking Summary

Barely enters extreme south-central Utah, near the Arizona border, in the vicinity of Navajo Mountain, extreme southwestern San Juan County, where it is known from only a few individuals. A report of this species from the La Sal Mountains, in northern San Juan County, is questionable. Further study of this species in Utah is needed in order to assess its current status.

Estimated Number of Populations (Occurrences)

Three known occurrences; a fourth reported occurrence is questionable.

Abundance

Abundance in Utah estimated to be low based on only three known occurrences and

only six individuals taken in the state; an additional reported specimen was only tentatively identified as this species.

Range in Utah

Known in extreme south-central Utah, near the Arizona border, from only three localities in the vicinity of Navajo Mountain in extreme southwestern San Juan County--Rainbow Bridge; Navajo Mountain Trading Post; and War God Spring, Navajo Mountain (Benson 1935, Durrant 1952, Hoffmeister and de la Torre 1960, Hall 1981).

Pritchett et al. (1989) tentatively identified a specimen that they collected in the La Sal Mountains in extreme northern San Juan County (near the boundary with Grand County) as this species. They wrote: "We only collected one specimen There is a chance this animal could be an abnormal bushy tailed woodrat, *Neotoma cinerea*, we need to collect a few more to make positive identification. If this specimen is in reality Stephens' woodrat, it will have extended the range of this species about 130 mi. (215 km) northeast, which seems questionable. In Utah *T.* [sic; *N.*] *stephensi* is only known from the environs of Navajo Mt., east of the Colorado river and south of the San Juan river."

It should be noted that, in addition to the geographical location, regarded as questionable even by its authors, both the habitat ("mixed conifer forest"--white fir and Engelmann spruce) that Pritchett et al. (1989) reported for this specimen and the elevation of the locality (9,900 ft) seem very improbable for *Neotoma stephensi*, which almost invariably occurs in the juniper or juniper-pinyon zone at lower elevations (typically 4,000 to 7,000 ft, the extremes being 3,500 and 8,500 ft [see Hoffmeister and de la Torre 1960], though it has occasionally been captured in yellow or ponderosa pine (see Hoffmeister and de la Torre 1960, Jones and Hildreth 1989); the geographical location as well as the habitat and elevation reported by Pritchett et al. (1989) would, however, be typical of *Neotoma cinerea*, the bushy-tailed woodrat.

County

Status

San Juan

Native and natural, presence confident

Ecoregion

Status

Colorado Plateau

Native and natural, presence confident

Habitats Utilized in Utah

Benson (1935), in the first report of this species in Utah, stated: "All were taken among rocks in situations similar to those in which white-throated wood

rats were taken." Hoffmeister and de la Torre (1960) gave the elevations of two Utah localities: 4,000 and 8,500 ft; the latter elevation, on Navajo Mountain, apparently is the highest elevation ever reported for this species. They also commented: "... *N. stephensi* is found in rocky situations, usually where the rocks are in piles, and usually where there are pinons and junipers. *Neotoma stephensi* is not a cliff dweller, although it may be found in the general vicinity of cliffs, but is found where the rocks have rolled down and become stacked. However, even though suitable rocks may be present, *N. stephensi* most likely will not be found if pinons and junipers are absent."

Pritchett et al. (1989) tentatively identified as *Neotoma stephensi* a specimen from outside and considerably north of the known range of this species. They captured the questionably identified specimen at 9,900 ft elevation, 1,400 ft. higher than the highest elevation ever documented for this species, "in a rocky region of a mixed conifer community" composed of white fir (*Abies concolor*), Engelmann spruce (*Picea engelmannii*), secund wintergreen (*Pyrola secunda*), sweet-cicely (*Osmorhiza depauperata*), mountain huckleberry (*Vaccinium membranaceum*), and blue violet (*Viola adunca*). Nothing about the locality or the habitat suggests that the specimen was *Neotoma stephensi*, which is a habitat specialist normally found in juniper or juniper-pinyon habitats at lower elevations, rarely occurring higher in ponderosa or yellow pine (*Pinus ponderosa*) situations (see, for example, Hoffmeister and de la Torre 1960, Jones and Hildreth 1989).

Trends

Population trend in Utah not known.

Threats

Threats in Utah unknown.

Inventory Needs

Inventory needed in the Navajo Mountain area to determine current status (abundance and distribution) as well as in other areas in extreme southern Utah.

MEXICAN VOLE

Microtus mexicanus

State Taxonomic Comments

Frey and LaRue (1993) and Frey and Yates (1995) considered *Microtus mexicanus* as formerly understood to represent two species, *Microtus mexicanus*, the Mexican vole, which occurs in Mexico, and *Microtus mogollonensis*, the Mogollon vole, which occurs in the United States; they based this conclusion on their allozymic and mtDNA analyses as well as morphological and chromosomal findings of others. Under their arrangement, the vole population on Navajo Mountain in Utah is thus assigned to the species *Microtus mogollonensis*, the Mogollon vole. Since the results of the study by Frey and Yates (1995) have not been published, it is perhaps appropriate tentatively to retain the name *Microtus mexicanus*, the Mexican vole, for the Utah population, pending critical examination of their work and independent confirmation of their results by others.

State Subspecies

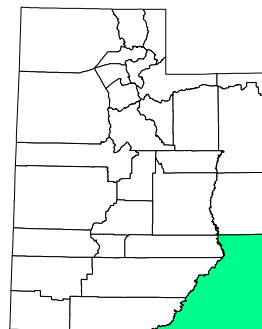
The race that occurs in Utah is *Microtus mexicanus navaho*, which is nearly endemic to Utah. The type locality of this race is Soldier Spring, east slope of Navajo Mountain, San Juan County, Utah; it was described by Benson in 1934.

Frey and LaRue (1993) considered *Microtus mexicanus* as formerly understood to represent two species, with those populations north of Mexico being a distinct species *Microtus mogollonensis*. Frey and Yates (1995) reaffirmed this elevation of *mogollonensis* to specific status based on allozyme, mitochondrial DNA, chromosomal, and morphological distinctiveness of the two taxa. They questioned the validity of the race *navaho* but reported: "Although no no clear genetic separation was found between the population from Navajo Mountain (type locality for *M. m. navajo* [sic]) [and] the Mogollon Rim (type locality for *M. m. mogollonensis*), morphologic studies support the retention of these two taxa." Thus, these workers would retain the race *navaho*; however, they arrange it as a race of *Microtus mogollonensis* rather than as a race of *Microtus mexicanus*.

Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: No Status



US Bureau of Land Management:	Sensitive: not known to occur on BLM property in Utah
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range

Natural Heritage Ranking

Global Rank: G5 State Rank: S1

Natural Heritage Ranking Summary

Occurs in Utah only on one mountain in extreme southwestern San Juan County, near the Arizona border. In Utah known only from the vicinity of three springs (Soldier, War God, and Endische) and two other locations, all on Navajo Mountain, where the continued heavy grazing of sheep is a threat to the limited habitat of this species.

Estimated Number of Populations (Occurrences)

About five occurrences in Utah (see Spicer 1987, Table 2).

Abundance

Spicer (1987, Table 2) listed known museum specimens as well as his own trapping data and indicated the existence of at least 37 specimens and 2 other individuals (captured and released) from Utah. It is unclear, however, whether the 10 specimens examined by Durrant (1952) were the same as some of the 29 specimens, with the same locality data, collected by Benson (1935); if, as Spicer assumed, they were not the same, they add another 10 specimens to the Utah total. Spicer noted that these 10 specimens, which he assumed were in the University of Utah collection, could not be found; however, it is clear from Durrant's (1952) text that at least some of the specimens that he examined were in the Museum of Vertebrate Zoology and thus very likely were some of Benson's specimens.

It is also unclear whether the 7 specimens (6 in the U. S. National Museum, 1 in the University of Arizona collection) bearing only the locality "Navajo Mountain" in Spicer's (1987) table were from Utah or from Arizona and whether they may have been some of Benson's 29 specimens (reportedly in the Museum of Vertebrate Zoology)--6 of the specimens were collected 16 June 1933 (while Benson was collecting on Navajo Mountain) and 1 was collected in "1933"; Benson's (1935) 29 specimens were collected 13-20 June 1933. If these were not

part of Benson's collection of 29 specimens (which, however, seems unlikely) and if they were from Utah, they add another 7 specimens to the total from Utah.

Thus, from Spicer's Table 2 (1987), it appears that between 39 and 56 individuals of this species have been captured in Utah, although Spicer (1987) reported "Navajo Mountain (total specimens = 55)", one of these being from Arizona and two others being released individuals rather than "specimens". The actual total from Navajo Mountain in Spicer's Table 2, including the Arizona specimen and the two released individuals, is 56 individuals, not 55 as he stated.

Spicer also reported 2 "runway complexes" (presumably active) and 4 "inactive runway complexes" of this species in Utah.

Range in Utah

Only 5 distinct localities are known in Utah, all on Navajo Mountain, extreme southwestern San Juan County; three of these localities are at springs--Soldier Spring, War God Spring, and "Endischee" [sic; Endische] Spring (Benson 1934, Benson 1935, Durrant 1952, Hall 1981, Spicer 1987). Spicer (1987) stated: "... Mexican voles on Navajo Mountain are currently known from the gentle southeastern slopes from about 2652 m (8700 ft) to 2740 m (9000 ft) [all of these areas being in Utah]."

<u>County</u>	<u>Status</u>
San Juan	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence confident

Habitats Utilized in Utah

Benson (1935) reported, regarding this species on Navajo Mountain: "The voles were found inhabiting thickets of prostate *Ceanothus*, *Symphoricarpos*, *Arctostaphylos*, and *Rosa*. They preferred *Ceanothus* thickets which offered a dense cover overhead. From these dense patches their well-defined runways ran to adjoining thickets, or vanished among scanty grass. The runways sometimes came from burrows which ran into the ground under rocks or logs. ... It is noteworthy that few were caught in wet ground, most of them evidently preferring the thick mats of brush even when these were some distance from water."

Spicer (1987) corroborated virtually all aspects of Benson's (1935) description of habitat of this species on Navajo Mountain, including the scarcity of this species on

wet ground, and added: "Habitats occupied by *Microtus mexicanus navaho* on Navajo Mountain are characterized by thickets of *Ceanothus* or *Symphoricarpos* or both. These thickets, located in openings in ponderosa pine forest and containing few grasses or forbs, are often associated with very open stands of aspen (*Populus tremuloides*), mostly less than 15 cm (6 in) in diameter. Other species commonly associated with the thickets occupied are *Rosa*, *Rubus*, and occasionally *Arctostaphylos*. However, I never found voles or vole sign in thickets dominated by *Rosa*, *Arctostaphylos* or *Juniperus communis*. On Navajo Mountain, at the two sites where voles were trapped, grasses and forbs totaled 2.0%, and litter and bare ground totaled 97.0%"

Trends

Spicer (1987) commented: "Mexican vole abundance on Navajo Mountain [the only place where this species occurs in Utah] appears to be lower now than during the 1930's." He attributed this apparent decline to habitat degradation and loss, stating that in 1985 and 1986: "Only one wet area [on Navajo Mountain] supported even a few grasses or forbs. The others, unlike when Benson was there [in 1933], were bare except for a few non-riparian shrubs. All water I saw appeared to be heavily used by herded sheep during the summer grazing season, and by free-ranging horses, mules, and burros during snow-free periods of the year."

Threats

The grazing of sheep on Navajo Mountain as well as the threat of forest fires are probably the greatest threats. This agrees with Spicer's (1987) conclusion that grazing and trampling by livestock, as well as periodic droughts, are the greatest threats to this species on Navajo Mountain.

Spicer (1987) wrote: "On Navajo Mountain, livestock grazing is a current and continuing threat to vole habitat. Grazing has been severe during the last 100 years or so. Periodic droughts and a shallow and erodable soil have also contributed to preventing the establishment of grasses and forbs, except occasionally in shrub patches. ... [C]ontinued heavy browsing and trampling ... can eliminate shrub patches. Such effects are obvious around currently used summer sheep camps and water sources. Another potential threat is complete boxing of water sources for livestock use, thus preventing seepage and its accompanying ground vegetation."

Inventory Needs

Further inventory needed to ascertain current distribution and abundance on Navajo Mountain.

VIRGIN RIVER MONTANE VOLE

Microtus montanus rivularis

State Taxonomic Comments

This race, although doubtfully distinct (see Anderson 1959, Stock 1970), is known only from Utah. The holotype, an adult male, no. 186497 in the collection of the U. S. National Museum, was collected by Vernon Bailey, 6 January 1889, at St. George, Washington County.

There has been considerable discussion, and difference of opinion, regarding the subspecific assignment of specimens of *Microtus montanus* from southwestern Utah, especially from areas not far from the type locality of *rivularis*. Presnall (1938) assigned specimens from Cedar Breaks National Monument and from Blue Springs, [near] Zion National Park, to the race *Microtus montanus micropus*, but Durrant (1952) re-examined these specimens and concluded that they are intergrades between *Microtus montanus rivularis* and *Microtus montanus nexus* (= *Microtus montanus nanus* as now arranged) and referred the specimen from Cedar Breaks to *nexus* (= *nanus*) and those from Zion to *rivularis*. Durrant (1952) also tentatively assigned an incomplete specimen from Duck Creek, Kane County, to *Microtus montanus rivularis*. Anderson (1959), in the most thorough review of of this species and its races that has been published, again re-examined the specimens from Blue Springs, [near] Zion National Park, and concluded "on morphological grounds" that they "are more nearly like *nanus* than *rivularis* and are referred to *nanus*." Anderson (1959) also, "on geographic grounds", assigned the incomplete specimen from Duck Creek, Kane County, to *nanus* rather than to *rivularis*. Anderson (1959) further noted that *rivularis* "is closely related to [the race] *amosus*", from which it may not be distinct. Stock (1970) examined many specimens (including new ones) from Blue Springs and found that they were not like *nanus* from northern Utah and that they were not significantly different from either topotypes of *rivularis* or specimens of *Microtus montanus amosus* from Garfield County. More importantly, when Stock (1970) compared topotypes of *rivularis* with specimens of *amosus* from Garfield County, he found no differences that he considered to be of importance and opined that these two races would be found to be synonyms.

Thus, Utah specimens of *Microtus montanus* that have been have been assigned to referred, in published sources, variously to the races *micropus*, *nexus*, *nanus*, and *amosus*. Evidently the only specimens that have not been assigned to races other than *rivularis* are those from the type locality, St. George. However, since the distinction of the races *rivularis* and *amosus* has itself been seriously questioned by the two most recent and thorough reviewers (Anderson 1959, Stock 1970) of this group, even specimens from the type locality of *rivularis* may not represent a "narrowly endemic" race of conservational concern

but a race that is widespread and probably secure.

State Subspecies

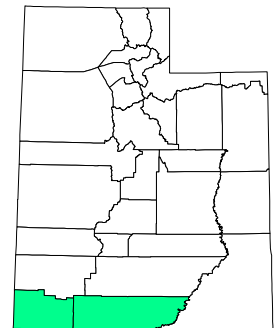
The race *rivularis* is only weakly defined and poorly distinguished from other races of *Microtus montanus* in Utah, especially *M. m. amosus*. Durrant (1952) noted: "Among subspecies of *Microtus montanus* known to occur in Utah, *M. m. rivularis* shows greatest resemblance to *Microtus montanus amosus*" Anderson (1959), who conducted the most detailed study of infraspecific variation in this species, was uncertain whether *rivularis* is distinct from the race *amosus*, stating: "*M. m. rivularis* is closely related to *amosus*, and until better comparative material of *rivularis* is available, some uncertainty will remain concerning whether *amosus* is separable from *rivularis*."

Stock (1970) compared specimens from Kolob Terrace (north of Zion National Park in Washington County), referred by him originally to *amosus* (Stock 1965) and later to *rivularis* (Stock 1970), with specimens of the race *amosus* from Garfield County and found "[n]o significant differences". He further compared topotypes of *rivularis* with specimens of *amosus* from Garfield County and reported: "No differences were observed in size, color, or in the width of the nasals [characters said by Durrant (1952) to distinguish these two races]. The bullae did average slightly larger in *rivularis* [this, interestingly, is the opposite of Durrant's (1952) statement that *rivularis* differs from *amosus* in having smaller auditory bullae], but I expect that a larger series might show this to be insignificant. [Comparison of size of auditory bullae in *rivularis* and *amosus* by Anderson (1959) was so complex that the reader is referred to that source for discussion.] Moreover, I suspect *amosus* will be found to be a synonym of *amosus*." This last statement by Stock (1970), however, represents a complete reversal of the opinion that he expressed earlier (Stock 1965).

Thus, there is considerable doubt whether *rivularis* is distinct from other races of *Microtus montanus*, particularly the more widespread *amosus*, which occurs from southern Utah (Kane County) to northeastern Utah (Uintah County). If these two races are placed in synonymy, the name *rivularis* will be retained and applied to both, since it has priority over the name *amosus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5T1Q

State Rank: S1?

Natural Heritage Ranking Summary

This race, as currently understood, is endemic to southwestern Utah, where it has been variously considered to occur only at St. George, Washington County, or to occur throughout almost all of Washington County and the much of western Kane County. However, two studies have questioned the distinctiveness of this from another race to which it is clearly very closely related; if the two are the same, both would fall under the name currently used for the St. George population and the combined race would have a range extending across Utah from the southwest (Washington County) to the northeast (Uintah County) corner of the state.

Estimated Number of Populations (Occurrences)

Depending on one's definition of this race, there may be only one occurrence (globally) (see, for example, Anderson 1959, Hall 1981) or as many as five occurrences (see Durrant 1952, Stock 1970). Moreover, if *rivularis* is not subspecifically distinct from the race *amosus* as has been suggested (Anderson 1959, Stock 1970), then *amosus* is submerged under the name *rivularis*, which has priority, and the number of occurrences in Utah is probably well over 20.

Abundance

Durrant (1952) knew of 10 specimens that he assigned to this race, although only 2 of these were considered by Anderson (1959) to be *rivularis*. Anderson (1959), however, did have a total of 10 specimens that he identified as *rivularis*. Stock (1970) examined 44 specimens tentatively assignable to this race but expressed strong doubt (as had Anderson 1959) that *rivularis* is subspecifically distinct from the race *amosus*; in fact, earlier Stock (1965) had assigned the same 44 specimens to the race *amosus*. If *rivularis* is distinct from *amosus* and if one restricts its range narrowly, as have Anderson (1959) and Hall (1981), to the vicinity of the type locality, it is, according to Stock (1965), "abundant" at and near the type locality.

Range in Utah

Durrant (1952, Figure 61) considered the range of this race hypothetically to

include about 9/10ths of Washington County and about 1/3rd of Kane County, though Stock (1965) mentioned that "[d]espite extensive collecting for montane voles at Pine Valley [within Durrant's (1952) mapped hypothetical range of the race], none were taken there." Other authors (Anderson 1959, Hall 1981) have stated that it is "[k]nown only from type locality" (i.e., St. George, Washington County). However, if the race *amosus* is a synonym of *rivularis* as has been suggested (Anderson 1959 and especially Stock 1970), then the range of *rivularis* extends from southwestern Utah (Washington County) to northeastern Utah (Uintah County).

<u>County</u>	<u>Status</u>
Kane	Native and natural, presence possible
Washington	Native and natural, presence confident

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence possible
Mojave Desert	Native and natural, presence confident

Habitats Utilized in Utah

Durrant (1952) mentioned that this race "is restricted to the drainage of the Virgin River and environs" but did not mention specific habitats. Stock (1965) said that the race occurs "along the Virgin River and [in] the fields south of St. George".

The habitat occupied by this race is somewhat unusual for its species, which more typically occurs in "high mountain meadows and grassy valleys" but in some places, such as Timpie Springs in Tooele County, occurs "in marshes, an atypical place for [the species]" (Zeweloff 1988).

Trends

Population trend of this race is not known. Stock (1965) found it to be "abundant" at and near the type locality in 1958, but added that "[s]ince that date their numbers have been much lower." Many microtine rodents (i.e., voles and lemmings) are known to experience extreme variations in populations through time ("cycles"), at some times being so rare that they are virtually undetectable and at other times being so abundant that they represent a plague. It is not known whether *rivularis* may exhibit extreme population fluctuations as a part of its normal population dynamics or, if so, whether 1958 may have been a "peak" or "explosion" year in such a cycle.

Zeveloff (1988), summarizing the work of others concerning the species to which this race belongs, wrote: "Throughout their mountainous habitats, montane voles exhibit population cycles. Cycle lengths, measured from one peak to the next, are three or four years." Negus et al. (1986) studied this species (but not the race *rivularis*) at Timpie Springs, Tooele County, in a lower elevation marsh habitat unusual for the species and found that the population did not fluctuate markedly or exhibit cycles; they considered this to be related to the stability or predictability of this particular habitat relative to the species' more typical occurrence mountainous terrain. Since "the fields south of St. George" (Stock 1965) also represent a very atypical habitat and elevation for this primarily montane species, perhaps the race *rivularis*, like the Timpie Springs population, is not cyclic, although the Stock's (1965) observations, mentioned earlier, suggest otherwise.

Threats

Both the proximity of the only known population of "pure" *rivularis* to the community of St. George and the Virgin River and the habitat utilized by this race ("fields", Stock 1965), suggest that *rivularis* is especially vulnerable to the threats of rapid, on-going urban expansion of St. George, alterations of the riparian corridor of the Virgin River and de-watering of this stream, and agricultural practices and habitat modifications.

Inventory Needs

Inventory needed to determine abundance in the vicinity of St. George and whether the population experiences long-term cycles or fluctuations in abundance.

Other Considerations

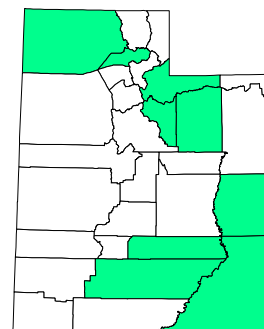
If the race *amosus* is synonymized with and submerged under the name *rivularis*, as has been intimated (Anderson 1959, Stock 1970), the state rank of *rivularis* would necessarily change to S3 or S4.

GRAY WOLF

Canis lupus

State Subspecies

The race that occurred in Utah, *Canis lupus youngi*, is now extinct. Its type locality was Hart's Draw, north slope of the Blue Mountains [Abajo Mountains], 20 miles northwest of Monticello, San Juan County, Utah; it was described by Goldman in 1937. Hall (1981) mapped the race *youngi* as occurring throughout Utah except for the extreme northern edge of the state (Idaho border), which he mapped hypothetically, without substantiating specimens, as part of the range of the race *irremotus*. All specimens from Utah that have been assigned to race have been considered to be *youngi*. The race *Canis lupus irremotus*, however, is known from Cokeville, Lincoln County, Wyoming (Long 1965)--about 8 miles from the northeast corner of Rich County, Utah, a distance that a wolf or a pack of wolves can easily travel in a few hours--thus lending support to the idea that *irremotus* may have occurred in Utah. The specimen locality of this species in Utah that is nearest to Cokeville, Wyoming, is South Eden, Weber County, and that specimen has been assigned to the race *youngi* (Young and Goldman 1944).



Agency Status

US Fish and Wildlife Service:	Listed Endangered in Utah
US Forest Service Region 4:	Endangered: not known to occur on USFS property in Utah.
US Bureau of Land Management:	Extirpated
Utah Division of Wildlife Resources:	Extirpated

Natural Heritage Ranking

Global Rank: G4 State Rank: SX

Natural Heritage Ranking Summary

Formerly occurred throughout Utah except for barren areas of the West Desert; now considered to be extirpated from the state. (The race that occurred in Utah, *Canis lupus youngi*, is now considered to be extinct.) Recent unverified reports of this species in Utah bear further investigation.

Estimated Number of Populations (Occurrences)

It is thought that there are no extant occurrences in Utah. There have been, however, several recent unverified reports of this species in Utah, raising the interesting question of the possibilities that the species either actually survived undetected or has recolonized--or is in the process of recolonizing--the state from other states, Wyoming being the most likely source of individuals potentially dispersing into Utah.

Abundance

Believed to be extirpated in Utah. (Young and Goldman [1944] had eight specimens from Utah.)

Range in Utah

Durrant (1952) stated: "Formerly state-wide, except west desert region; now thought to be extinct." (The Utah race, *Canis lupus youngi* is indeed considered to be globally extinct.) Young and Goldman (1944) had specimens from five localities in Utah: Hart's Draw, north slope of the Blue [= Abajo] Mountains, 20 miles northwest of Monticello, San Juan County (the type locality of *youngi*); Greasewood Valley, 10 miles southeast of La Sal, San Juan County; Duchesne, Duchesne County; South Eden, Weber County; and Grouse Creek, Box Elder County.

Recent reports of this species are from San Juan, Grand or Uintah, Wasatch, Duchesne, and Summit counties, the most convincing of these reports being from the Uinta Mountains.

County

Status

Box Elder	Native and natural, presumed extirpated
Duchesne	Native and natural, presumed extirpated
Garfield	Unknown
Grand	Unknown
San Juan	Native and natural, presumed extirpated
Summit	Unknown

Wasatch	Unknown
Wayne	Unknown
Weber	Native and natural, presumed extirpated

Ecoregion**Status**

Colorado Plateau	Native and natural, presumed extirpated
Wasatch & Uinta Mtns.	Native and natural, presumed extirpated
Columbia Plateau	Native and natural, presumed extirpated
Uinta Basin	Native and natural, presumed extirpated

Habitats Utilized in Utah

This species is believed formerly to have occurred throughout Utah in all habitats except for barren areas of the Bonneville Basin (Young and Goldman 1944, Hall 1981). Most recent reports of this species, some of which likely are accurate, are from montane forested areas in the Uinta Range.

Trends

No extant population has been verified to be present in Utah.

Threats

Human persecution of this species was its greatest threat in Utah, where the species was deliberately exterminated.

Inventory Needs

Since there have been recent reports of this species in Utah, these should be carefully evaluated.

Other Considerations

Although this species is considered to be extirpated from Utah and the race that inhabited Utah is believed to be extinct, there have been recent unverified reports of the species in the state. Some of these reports may well be accurate; if so, they imply either that this species is recolonizing Utah, probably from Wyoming, or that the native race, *youngi*, is not extinct, but has somehow managed to survive in Utah. That *youngi* is not extinct is much less likely than the possibility that the species is dispersing into Utah from elsewhere; however, reports of the species from San Juan County are suggestive of the possible continued existence of *youngi*.

BROWN (GRIZZLY) BEAR

Ursus arctos

State Taxonomic Comments

Merriam (1914) described the species *Ursus utahensis* from Utah. Hall and Kelson (1959) and Hall (1981) also used the name *Ursus utahensis*, Hall's treatment of the brown-grizzly bear group being without question the most incomprehensible aspect of those works: Hall (1981) listed, tentatively, 77 full species of brown and grizzly bears in North America!

Durrant (1952) placed *utahensis* as a race in the species *Ursus horribilis*, the grizzly bear. Durrant (1952) insightfully noted: "I recognize that many of the kinds of bears named as full species are, on the basis of intergradation, only subspecies."

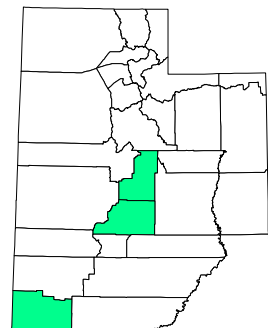
Currently accepted taxonomy arranges all of the brown bears--the Old World brown bear, the New World or big brown bear, the Kodiak bear, the grizzly bear, etc.--as one holarctic species, *Ursus arctos*, although there have been recent suggestions that the grizzly bear (*horribilis*) may, after all, warrant specific status.

State Subspecies

The race that occurred in Utah was *Ursus arctos utahensis*, the type locality for this taxon being "North Fork [of] Salina Creek, 10 or 12 miles southeast of Mayfield", Sanpete County (Merriam 1914); the holotype, an old male, no. 180193 in the U. S. National Museum, was collected 22 May 1911. It is possible that another race or races may have occurred in some part of the state, but, if so, this may never be known unless, perhaps, skeletal remains may be recovered.

Agency Status

US Fish and Wildlife Service:	Listed Threatened in U.S.A., conterminous states
US Forest Service Region 4:	Threatened: not known to occur on USFS property in Utah.
US Bureau of Land Management:	Extirpated
Utah Division of Wildlife Resources:	Extirpated



Natural Heritage Ranking

Global Rank: G4

State Rank: SX

Natural Heritage Ranking Summary

Formerly was probably found throughout Utah except for barren areas such as parts of the West Desert. Now extirpated from the state.

Estimated Number of Populations (Occurrences)

No extant occurrences in Utah. (There are, however, recent rumors and unsubstantiated reports of this species in the San Juan Mountains of southwestern Colorado, which suggests the very remote possibility that this species could reappear in southeastern Utah.)

Abundance

Extirpated in Utah. (Merriam [1918] discussed four specimens from Utah, although he provided collection numbers for only three: 167390, 180193, and 180207 in the U. S. National Museum.)

Range in Utah

Probably was formerly of statewide occurrence, except for barren areas such as the West Desert. Merriam (1918) mentioned at least three Utah localities: "North Fork Salina Creek, 10 or 12 miles southeast of Mayfield" (Sanpete County), "Pine Valley Mountain[s], southwest Utah" (Washington County), and "northeast corner of Sevier National Forest", now called Fishlake National Forest (probably either northeastern Sevier County or extreme west-central Emery County).

County

Status

Washington
Sanpete
Sevier

Native and natural, presumed extirpated
Native and natural, presumed extirpated
Native and natural, presumed extirpated

Ecoregion

Status

Utah High Plateaus

Native and natural, presumed extirpated

Habitats Utilized in Utah

It is likely that this species formerly utilized almost all habitats in Utah except for barren areas of the West Desert. Merriam's (1918) three Utah localities for this species all appear to have been in montane forests.

Trends

No population currently exists in Utah.

Threats

The principal, perhaps only, threat to this species in Utah was human persecution.

Inventory Needs

If a population of this species were demonstrated to be extant in the San Juan Mountains of southwestern Colorado, there might be reason to consider the possibility, albeit remote, that the species could be present in the La Sal Mountains or the Abajo Mountains of San Juan County or perhaps even elsewhere in Utah. Based on current knowledge, however, there seems to be no reasonable expectation that the species could still exist in Utah.

RINGTAIL

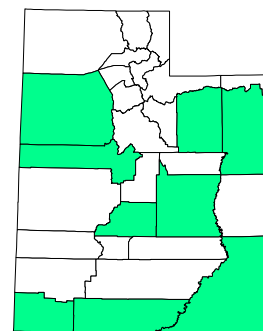
Bassariscus astutus

State Subspecies

Two races of this species occur in Utah: *Bassariscus astutus arizonensis* in "[e]astern Utah, generally east of the Green and Colorado rivers" (Durrant 1952), and *Bassariscus astutus nevadensis* in parts of the state "[g]enerally west of the Colorado and Green rivers" (Durrant 1952, and see Hall 1981).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat



Natural Heritage Ranking

Global Rank: G5 State Rank: S3

Natural Heritage Ranking Summary

Widespread in Utah, though perhaps absent from some areas, particularly northwestern Utah. Seemingly rare in Utah, though less so in the extreme southern part of the state.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences. Durrant (1952) was aware of 12 localities for this species in Utah.

Abundance

Durrant (1952) commented: "The status of the ring-tailed cats in Utah is little known. Specimens are few and from widely separated places. They are, apparently, more numerous in the extreme southern part of the state than elsewhere" Durrant (1952) examined only five specimens from Utah but knew of seven

additional localities, presumably represented by (at least) seven specimens.

It should perhaps be noted that this is an elusive species: in some parts of its range it is known to be much more abundant than specimens or incidental observations would suggest; special effort must be made in order successfully to trap this species, it is seldom hit by automobiles even in areas where it is very abundant, and usually it is wary and secretive, though not always so.

Despite the fragmentary nature of knowledge of the species in this state, its distribution and abundance in Utah are far better understood than in the northeastern part of the species' range (e.g., Kansas, Oklahoma, and elsewhere; compare, for example, the range maps in Hall and Kelson 1959 and Hall 1981, and note especially the number of "marginal records" that define its range limits in the northeastern areas of its occurrence relative to other parts of its range, including Utah).

Range in Utah

Durrant (1952) mapped this species as occurring throughout Utah but lacked localities for the northwestern quarter of the state--in fact, except for a skull from the Deep Creek Mountains (near the Nevada border) and one (or more?) "report" (which he did not map) from Weber Canyon, Weber County, localities were lacking for the northwestern half of the state in Durrant's work; Durrant also lacked localities for most of southeastern Utah.

However, Hall (1981) (followed by Poglayen-Neuwall and Toweill 1988) mapped the species as absent from central, north-central, and extreme northwestern Utah, evidently not accepting, even hypothetically, Durrant's (1952) statement that the species is "reported from ... Weber Canyon, Weber County"

Although Zeveloff (1988), in mapping this species' distribution, largely seems to have followed Hall (1981), he did modify Hall's mapped distribution of this species in Utah in several ways, such as mapping its presence in central Utah, and apparently did accept the reported occurrence of this species in Weber County.

Records compiled by Durrant (1952) were from Washington, Kane, San Juan, Sevier, Emery, Juab, Uintah, and Duchesne counties. This species has also recently been documented from Tooele County.

County

Status

Washington
Kane

Native and natural, presence confident
Native and natural, presence confident

San Juan	Native and natural, presence confident
Sevier	Native and natural, presence confident
Emery	Native and natural, presence confident
Juab	Native and natural, presence confident
Uintah	Native and natural, presence confident
Duchesne	Native and natural, presence confident
Tooele	Native and natural, presence confident

Ecoregion

Status

Colorado Plateau	Native and natural, presence confident
Great Basin	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident
Mojave Desert	Native and natural, presence confident
Uinta Basin	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence probable

Habitats Utilized in Utah

Durrant (1952), who knew of very few specimens of this species from Utah, listed only one elevation, 6,000 ft, which is a rather high elevation for this species. Trapp (1978) studied this species in the canyons of Zion National Park, where it occupied the pinyon, juniper, blackbrush (*Coleogyne ramosissima*) community as well as riparian habitat. This species typically occurs in rocky country with cliffs and outcrops.

Trends

Population trend in Utah completely unknown.

Threats

Threats in Utah not known but probably include predator control activities, trapping, and shooting.

Inventory Needs

Inventory needed in central, north-central, and extreme northwestern parts of the state to resolve the question of whether this species is present in those areas.

AMERICAN MARTEN

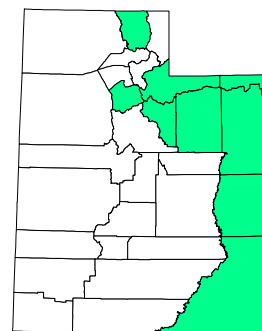
Martes americana

State Taxonomic Comments

Durrant (1952) discussed this species using the name *Martes caurina* "in keeping with the current usage" but expressed "doubt that *M. caurina* is distinct from *M. americana*."

State Subspecies

The race that occurs in Utah is *Martes americana origenes*; however, Hall (1981) hypothetically (without specimens) mapped the race *Martes americana vulpina* as entering the extreme northeast corner of Rich County, the nearest known locality for *vulpina* being La Barge Creek, Wyoming (Long 1965), about 35 miles northeast of the northeast corner of Rich County, Utah, and a distance that an individual of this species could easily move.



Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive: not known to occur on BLM property in Utah.
Utah Division of Wildlife Resources:	Sensitive--restricted or specialized habitat

Natural Heritage Ranking

Global Rank: G4G5 State Rank: S2

Natural Heritage Ranking Summary

Occurs in Utah in the Wasatch Mountains, the Uinta Mountains, and possibly in the La Sal Mountains. Thought to be of limited distribution and abundance in the state. Logging may be the greatest threat, along with human disturbances (road-building, alteration of habitat). Forest fires are a natural threat.

Estimated Number of Populations (Occurrences)

Probably more than 20 occurrences in Utah. Ten localities are known (Durrant 1952, Hargis 1991), and the species historically was reported (Barnes 1927) from four counties (other than those containing the ten localities) without details such as localities.

Abundance

Abundance in Utah not known--thought to be somewhat low. Hargis (1991) captured 19 individuals; this represented a trapping success rate of 1.47%.

Range in Utah

Known in Utah, based on specimens, from the Wasatch Mountains and the Uinta Mountains, and reported, seemingly, from the La Sal Mountains (see Durrant 1952, Fig. 75). Durrant (1952) listed specimens from "1 1/2 mi. W Lost Lake", Wasatch County, and "Paradise Park", Uintah County, and mentioned his observation of one at "Henry's Fork, N slope of Uinta Mountains", Summit County. Barnes (1927) had records for Cache, Salt Lake, Summit, Wasatch, Grand, and San Juan counties but did not provide localities. Hargis (1991) trapped this species in the Uinta Mountains at seven localities in four counties: Daggett, Summit, Duchesne, and Uintah.

Durrant (1952) mapped the hypothetical distribution in the state south from the Wasatch Mountains to southeastern Sanpete County and northeastern Emery County, mentioning that the species occurs "probably in the central part of the state", and Hall (1981) mapped the species, hypothetically, south from the Wasatch Mountains to about Piute County.

County

Status

Wasatch	Native and natural, presence confident
Uintah	Native and natural, presence confident
Cache	Origin data uncertain, presence possible
Salt Lake	Origin data uncertain, presence possible
Summit	Native and natural, presence confident
Grand	Origin data uncertain, presence possible
San Juan	Origin data uncertain, presence possible
Daggett	Native and natural, presence confident
Duchesne	Native and natural, presence confident

Ecoregion**Status**

Wasatch & Uinta Mtns.
Colorado Plateau

Native and natural, presence confident
Origin data uncertain, presence possible

Habitats Utilized in Utah

Durrant (1952) wrote of this species: "In Utah, insofar as I am aware, martens are found only in the high parts that support coniferous forests (Canadian and Hudsonian life-zones)." Hargis (1991) captured this species at seven localities in the Uinta Mountains that "were between 2800 and 3100 m elevation and were dominated by mature forests of mixed lodgepole pine (*Pinus contorta*), Engelmann spruce (*Picea engelmannii*), and subalpine fir (*Abies lasiocarpa*). Although the sites were fairly similar in terms of forest structure and vegetative composition, the degree of fragmentation varied from unfragmented (Spirit Lake) to highly fragmented (Long Park Reservoir)."

Trends

Population trend in Utah unknown; presumed to be declining as in other western states.

Threats

Threats in Utah probably include forest fires, logging, and alteration of habitat.

Inventory Needs

Inventory of distribution and abundance needed. Especially needed is clarification of whether the species occurs in the La Sal Mountains, San Juan and Grand counties.

FISHER

Martes pennanti

State Subspecies

If this species formerly occurred in Utah, which is uncertain, the race represented in this state would have been *Martes pennanti columbiana*.

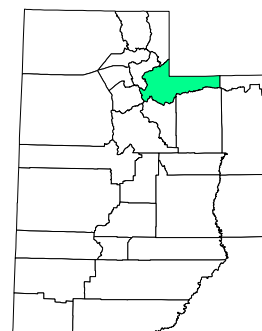
Agency Status

US Fish and Wildlife Service: No Status

US Forest Service Region 4: Sensitive

US Bureau of Land Management: Extirpated: not known to occur on BLM property in Utah.

Utah Division of Wildlife Resources: Extirpated



Natural Heritage Ranking

Global Rank: G4G5 State Rank: SR

Natural Heritage Ranking Summary

This species has been reported, historically, to have occurred in Utah: tracks, putatively of this species, were photographed in Summit County in 1938. It is highly unlikely that this species currently occurs in Utah and questionable whether it was present in the state historically, though very likely it did inhabit the region prehistorically.

Estimated Number of Populations (Occurrences)

Except for one historical (1938) report of this species in Utah that is far from an indisputable record, there are no known occurrences, current or historical, in this state. The species probably did occur prehistorically in what is now Utah.

Abundance

This species probably does not occur in Utah.

Range in Utah

Durrant (1952) accepted a report, supported by photographs of tracks, from Trial Lake, Summit County; he did not map the distribution of this species but did state: "Range.--Known [in Utah] only from the Uinta Mountains." Hall (1981) followed Durrant in accepting this locality record, which he mapped; Hall, in fact, went farther than Durrant, mapping the hypothetical occurrence of this species in Utah as including not only the Uinta Mountains but also the entirety of the Wasatch Mountains, and Zeveloff (1988) copied the "intermountain West" portion of Hall's (1981) map exactly. Powell (1981) (or his cited sources), too, apparently accepted this locality record from Durrant, for he mapped, as "range at present", a small, disjunct area of occurrence of this species in north-central Utah.

The historical or current occurrence of this species in Utah, accepted by the four authors mentioned above, is not without reservation accepted here (for discussion, see the section below, Other Considerations).

County

Status

Summit

Native and natural, extirpated

Ecoregion

Status

Wasatch & Uinta Mtns.

Native and natural, extirpated

Habitats Utilized in Utah

Although the one historical report of this species in Utah is questionable, the habitat in the area where the tracks were found, although not specified in the original report or the published account of this report (Durrant 1952), would have been subalpine coniferous forest (primarily Engelmann spruce and subalpine fir) and meadows at an elevation of approximately 10,000 feet.

Trends

If one accepts the "[r]ecord of occurrence" in Utah that Durrant (1952) and others following Durrant accepted, but that here is regarded as only strongly suggestive of former occurrence of the species in Utah, then this species almost

certainly has precipitously declined during the twentieth century in this state and is now almost certainly extirpated from Utah.

Threats

This species, elsewhere, has been threatened by overtrapping and habitat loss, mainly the result of logging. Although it is highly unlikely that the species occurs in Utah, if it were present in this state, habitat loss through timber harvest would be the greatest threat, along with road-building (mostly that associated with logging) and the natural threat of forest fire.

Other Considerations

Durrant's (1952) "[r]ecord of occurrence" of this species in Utah was based on tracks found by William H. Marshall near Trial Lake, Summit County. Marshall observed tracks on several occasions in March 1938 and photographed some on 27 March 1938. On 30 March 1948, he wrote to Durrant about the observation and enclosed two photographs of the tracks. Marshall wrote: "Quite frankly I had never seen Fisher tracks before but I have seen them since that time on the Flathead River in Montana and am sure that these were Fisher tracks we were dealing with. Each foot print was approximately the size of a silver dollar and the animal proceeded through the country in much the same fashion that a Marten would have." Durrant commented: "I have examined the tracks as shown in the photograph and have compared them with figures of tracks of marten from various sources. My findings lead me to concur with Marshall."

It is not the intention, here, to discredit this observation; however, there are several aspects of the observation that should be taken into consideration. First, the observer, at the time of the observation, was not familiar with tracks of the fisher. Second, a decade elapsed before he brought the observation to the attention of a mammalogist. And third, and most importantly, the observation was of tracks: no specimen was collected, no animal was even seen.

Although birds are seldom if ever identified by their tracks, there may be value in comparing the process of acceptance of mammal "records" with that for birds. In "Utah birds: a revised checklist" Behle et al. (1985) have required that the minimum standards of either at least one specimen or at least two indisputable observations, "accompanied by acceptable written detailed documentation", be met before a species would be included in the list of species acknowledged to occur in the state. Species for which there is only one well-documented observation were placed by Behle et al. in their list of "provisional species". Species for which reports were "based on sight records where supporting documentation is inadequate to demonstrate their unquestionable occurrence" but that "should occur in the state in light of the known geographic range or wandering pattern

of the species" were placed in a list of "unverified species". Species for which reports were rejected they placed in a list of "suspected misidentifications". Though, again, it is difficult to find a bird analogy that would be closely comparable to the report of the Trial Lake tracks, it is clear that, if standards equivalent to those that Behle et al. have applied to birds were established for Utah mammal records, existing evidence of the presence of the fisher would place this species not in the indisputable or the provisional categories but in the "unverified species" category, in addition to its being historical.

Inventory Needs

The possibility that this species could be present in the remotest areas of the Uinta Mountains, though extremely unlikely, should not be entirely dismissed. Also, any convincing historical evidence of former occurrence in Utah would be of at least slight interest.

BLACK-FOOTED FERRET

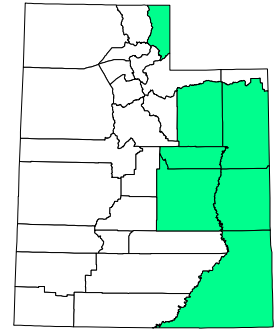
Mustela nigripes

State Subspecies

No races have been proposed in this species (i.e, the species is monotypic).

Agency Status

US Fish and Wildlife Service:	Listed Endangered in Utah
US Forest Service Region 4:	Endangered
US Bureau of Land Management:	Endangered
Utah Division of Wildlife Resources:	State Endangered



Natural Heritage Ranking

Global Rank: G1

State Rank: S1?

Natural Heritage Ranking Summary

Though believed elsewhere to be extinct as a naturally occurring species, there is recent evidence suggestive of the possibility that the black-footed ferret may be extant in Utah. Prairie dog extermination is the principal threat to this species, which is ecologically dependent upon prairie dogs.

Estimated Number of Populations (Occurrences)

Possibly several (three to five?) extant occurrences.

Abundance

Abundance unknown but almost certainly very low.

Range in Utah

Durrant (1952) reported the only known Utah specimen from 2 miles south of Blanding, San Juan County, collected in 1937. Hall (1981) mapped this San Juan County specimen record, indicating the presence of this species in southeastern Utah and, hypothetically, in northeastern Utah as well.

During the period 1966 through 1989, 48 observations of this species or its sign were reported to the Utah Division of Wildlife Resources from at least 45 localities in seven counties: San Juan, Grand, Emery, Carbon, Uintah, Duchesne, and Rich. There have been ten or more reported localities, some with multiple sightings, in each of three counties: Uintah, Emery, and Grand.

Almost all of these 48 reports are judged to be of reasonably high probability of being accurate. The likelihood of the validity of some of the observations, in fact, is considered great. Even if some of the reports were based on incorrect identifications of long-tailed weasels, feral European polecats ("domestic" ferrets), or other species, some of the observations are very difficult to discount as misidentifications. For example, in 1984 in Uintah County a ferret was observed dragging a prairie dog down a hole; in 1988 in Duchesne County a ferret was seen carrying a prairie dog down a hole; and in 1989 in Uintah County a ferret was observed dragging a prairie dog across a borrow pit. The most recent report, in 1996, is supported by photographs of tracks and a trench, characteristic of the black-footed ferret, extending from a prairie dog burrow in a prairie dog colony in Grand County; it was received from a biologist working for the Utah Division of Wildlife Resources. (Some of the above-mentioned 48 reports were also from UDWR biologists.) The evidence of the continued existence of this species in Utah is thus found to be strongly persuasive.

<u>County</u>	<u>Status</u>
Carbon	Native and natural, presence possible
Duchesne	Native and natural, presence possible
Emery	Native and natural, presence possible
Grand	Native and natural, presence possible
Rich	Origin data uncertain, presence possible
San Juan	Native and natural, presence possible
Uintah	Native and natural, presence possible

<u>Ecoregion</u>	<u>Status</u>
Colorado Plateau	Native and natural, presence possible
Uinta Basin	Native and natural, presence possible

Habitats Utilized in Utah

When Durrant (1952) reported the only specimen of this species that has been collected in Utah, he failed to include any mention of habitat. Many of the reports of observations this species in recent years received by the Utah

Division of Wildlife Resources have been in prairie dog colonies, which are invariably in open plains.

Trends

The century-long trend in the decline of this species throughout its range must be assumed to be continuing in Utah.

Threats

Since the black-footed ferret is considered, at least outside of Utah, to be extinct as a naturally occurring species, it must be regarded as highly endangered in Utah if it is extant in this state, as it appears to be. Prairie dog "control" or eradication measures are the greatest threat to this species. Plague, to which this species is susceptible and which decimates prairie dog colonies, is another, albeit natural, threat.

Inventory Needs

Inventory needed to determine whether this species is extant in Utah.

Other Considerations

Reintroductions of this species in Utah are planned.

WOLVERINE

Gulo gulo

State Taxonomic Comments

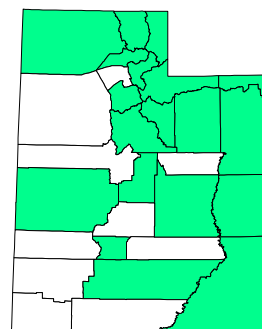
The New World populations of this species were formerly known as *Gulo luscus*, and this name was used for the species in Utah in many earlier works (e.g., Durrant 1952, Hall 1981).

State Subspecies

The race that occurs in Utah is *Gulo gulo luscus*.

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	Sensitive
US Bureau of Land Management:	Threatened: not known to occur on BLM property in Utah.
Utah Division of Wildlife Resources:	State Threatened



Natural Heritage Ranking

Global Rank: G4 State Rank: S1

Natural Heritage Ranking Summary

Possibly extirpated from Utah, but believed, based on recent (1990) sightings that are judged to be reliable, to be extant in the state. Recent evidence suggests that the species is still present in parts of the Wasatch Mountains, the Uinta Mountains, and mountains of the central part of the state (Sanpete County). Human alterations of habitat and development, such as road building, seem to be incompatible with continued presence of this species.

Estimated Number of Populations (Occurrences)

Formerly numerous occurrences, now believed to be a few.

Abundance

Durrant (1952) stated: "The wolverine was never common in Utah." Probably very few now exist in the state.

Range in Utah

Formerly occurred in Utah in the Wasatch Mountains, the Uinta Mountains, and the Utah High Plateaus and mountains of the central part of the state south to Piute and Garfield counties (Barnes 1927, Durrant 1952), and believed to be extant in the higher and remoter parts of these areas.

McKay (1991) reviewed the status of the species in Utah and compiled and assessed recent reports (through 1990). The two most recent sightings (as of 1990) that were considered by her to be probably valid were: one in the Ashley National Forest, Daggett County, 20 July 1990; another in the Manti-La Sal National Forest, Sanpete County, 24 July 1990.

Another sighting of this species was made 4 July 1992 only 1/2 mile from the location of the 1990 sighting in the Manti-La Sal National Forest, Sanpete County.

A male of this species was shot 15 March 1979, supposedly in Utah, and was examined by Utah Division of Wildlife Resources personnel; the locality is not known, and there is some doubt as to whether it was actually killed in Utah rather than in Colorado.

County

Status

Box Elder	Native and natural, presumed extirpated
Cache	Native and natural, presence probable
Daggett	Native and natural, presence probable
Garfield	Native and natural, presumed extirpated
Grand	Native and natural, presence possible
Millard	Native and natural, presumed extirpated
Morgan	Native and natural, presence probable
Piute	Native and natural, presumed extirpated
Salt Lake	Native and natural, presence possible
San Juan	Native and natural, presence possible
Sanpete	Native and natural, presence probable
Summit	Native and natural, presence probable
Utah	Native and natural, presence probable
Wasatch	Native and natural, presence possible
Uintah	Native and natural, presence probable

Duchesne	Native and natural, presence possible
Weber	Native and natural, presence probable
Emery	Native and natural, presence possible
Rich	Native and natural, presence possible

Ecoregion**Status**

Utah High Plateaus	Native and natural, presumed extirpated
Wasatch & Uinta Mtns.	Native and natural, presence probable
Colorado Plateau	Native and natural, presence possible

Habitats Utilized in Utah

No habitat data have been reported for this species in Utah, and Durrant (1952) did not examine any specimens from this state. Although McKay (1991) did not provide any habitat information for the reported sightings of this species in Utah, the locational data suggest that the habitats have all been montane coniferous forest, as would be expected for this species. The report of the most recent sighting that has been received stated: "The wolverine was observed coming out of a clump of subalpine spruce [sic; subalpine fir (*Abies lasiocarpa*)? or spruce (*Picea* sp.)?] and traveled south to the next clump, 50 to 150 meters away." The elevation of this site is 10,200 ft.

Trends

Believed to be much reduced in numbers in Utah and declining, if not extirpated.

Threats

In other states it has been shown that the presence of roads, such as logging roads, is negatively correlated with wolverine presence and populations. Even human presence and activity seem to be incompatible with wolverine populations. Logging, forest fires, and other habitat alterations are clear threats to the species, as is, of course, direct human persecution, trapping, etc.

Inventory Needs

Inventory needed in the mountainous areas of the state, particularly the Wasatch Mountains, the Uinta Mountains, and the mountains of central Utah.

NORTHERN RIVER OTTER

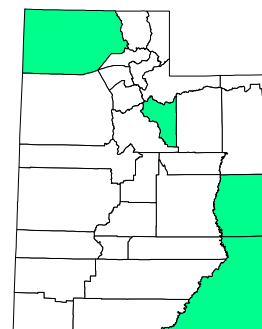
Lutra canadensis

State Subspecies

Although Durrant (1952) used the name *Lutra canadensis nexa* for the race of this species in Utah (he had evidence of the species only in the northern part of the state), Hall (1981) considered *nexa* to be a synonym of the race *pacifica*, which he mapped as occurring in northern Utah. Durrant (1952) speculated that the race *sonora* occurred along the Colorado River in southern Utah, and Hall (1981) also mapped the race *sonora* as occurring in southern Utah. Thus, the two (native) races in Utah are *Lutra canadensis pacifica* and *Lutra canadensis sonora*. It should be remembered, however, that reintroductions of this species have been made using individuals from other areas; these introduced otters may be *pacifica* and/or other races (e.g., *canadensis* or *lataxina*).

Agency Status

US Fish and Wildlife Service:	No Status
US Forest Service Region 4:	No Status
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G5 State Rank: S1S2

Natural Heritage Ranking Summary

Apparently occurs along creeks and rivers throughout much of the state, but natural populations very low. Historical decline was probably the result of trapping. Reintroductions in Utah, as well as the possible spread of reintroduced populations from Colorado into Utah, may result (or may have already resulted) in the genetic swamping of the native populations.

Estimated Number of Populations (Occurrences)

Possibly as many as 18 occurrences in Utah during the period 1978-1988 (Bich

1988), but it is unknown how many of these are extant.

Abundance

Abundance not known, but thought to be very low.

Range in Utah

Durrant (1952) mapped this species as occurring in northern Utah in the Raft River Mountains, the Wasatch Mountains, and the Uinta Mountains; he examined two specimens--one from Box Elder County and another from Wasatch County. He said also: "I have reports that otters occur in the Uinta Mountains, and on October 23, 1949, at the Ute Indian Reservation, at Ouray, Uintah County, I saw an Indian who had strips of otter fur braided into his hair. He reported capturing the animal along the Green River, north of Ouray, during the winter of 1948."

Gregory (1938) reported observing otters along the Colorado River in Glen Canyon, San Juan County, which, seemingly, is the record that Hall (1981) mapped in southern Utah without citation.

Bich (1988) sent questionnaires to trappers and Utah Division of Wildlife Resources (UDWR) personnel, compiled sighting records from UDWR files, and conducted searches for otters and their sign along several rivers in northern Utah; these sources resulted in 58 records of otters between 1978 and 1988 along 18 rivers and creeks in 7 river drainages throughout the state.

Boschen (1989) located two pairs of otters along the Colorado River in Grand County and had two reports of tracks in Canyonlands National Park, two reports of sightings (4 and 3 individuals) along the Colorado River in Grand County, and a report of sign (scat) along the Colorado River in Grand County.

County

Status

Grand	Origin unknown, presence confident
Box Elder	Native and natural, presence confident
Wasatch	Native and natural, presence confident
San Juan	Native and natural, presence confident

Ecoregion

Status

Columbia Plateau	Native and natural, presence confident
Wasatch & Uinta Mtns.	Native and natural, presence confident
Colorado Plateau	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident

Habitats Utilized in Utah

Although descriptions of the habitats utilized by this species in Utah are lacking, the 1978-1988 reports of the species in at least 18 rivers and streams in much of the state (northern, central, and eastern Utah) (Bich 1988) suggest that a variety of riverine or riparian habitats, from montane forests to desert canyons, are used by this species in Utah.

Trends

The natural (native) population of this species is believed to be declining rapidly, which was part of the justification for reintroduction using individuals from other states.

Threats

The threat that led to the historical decline of this species in Utah probably was trapping both for this species and for beavers, since capture of otters incidental to beaver trapping has been significant in the decline of this species elsewhere. Current threats probably include trapping, stream alterations, and dewatering (e.g., diversion, irrigation for agriculture).

Other Considerations

Nonnative otters (from other states), possibly representing subspecies not native to Utah, have been repeatedly released in Utah by the Utah Division of Wildlife Resources, and reintroduced otters are also believed to have entered Utah from Colorado (Boschen 1989).

Inventory Needs

Inventory, together with genetic assessment of subspecific identity, would be of some interest, especially if a relatively "pure" extant population of the race *sonora* could be found in Utah.

LYNX

Lynx lynx

State Taxonomic Comments

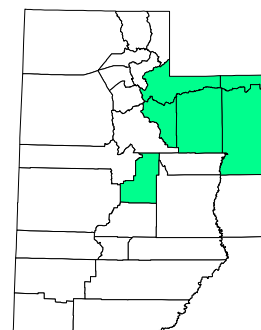
This species has been called, in Utah as in all of North America, *Lynx canadensis* (see, for example, Durrant 1952), *Felis canadensis*, *Felis lynx* (see, for example, Tumlison 1987), and *Lynx lynx*, the questions being whether *Lynx* is distinct at the generic level from *Felis* and whether the lynx of the New World ("*canadensis*") is distinct at the specific level from the lynx of the Old World (*Lynx lynx*).

State Subspecies

The race that occurs in Utah is *Lynx lynx canadensis*.

Agency Status

US Fish and Wildlife Service:	Proposed Threatened
US Forest Service Region 4:	Sensitive
US Bureau of Land Management:	Sensitive
Utah Division of Wildlife Resources:	Sensitive--declining population and limited range



Natural Heritage Ranking

Global Rank: G4G5 State Rank: S1

Natural Heritage Ranking Summary

Formerly occurred in the Uinta Mountains and south at least to the Sanpete-Emery county line, and possibly to northwestern Kane County. Believed to have been present in the Uinta Mountains, in Summit and Uintah counties, at least as recently as 1982. If still present in Utah, very rare and threatened by habitat loss (logging, road construction), human disturbance, trapping, and forest fires.

Estimated Number of Populations (Occurrences)

Few (if any) extant occurrences. The most recent confirmed (i.e., specimen) records were from 1972 (two, one of which was reported as "1972?"). The most recent probably valid records were a sighting in August 1980 and tracks found 30 April 1982.

Abundance

If this species is extant in Utah, its abundance is certainly very low.

Range in Utah

Durrant (1952) knew of only two specimens from Utah (Wasatch and probably Sanpete counties) but mapped the hypothetical range as including the Uinta Mountains, the Wasatch Mountains, and the mountains of the central part of the state south to northwestern Kane County (though in the text he said "probably as far south as Iron County", which may have been a printer's error for Kane County, since the mapped distribution included only the northeastern edge of Iron County and, as mentioned, extended farther south into Kane County). McKay's (1991) two most recent confirmed (specimen) localities were in Summit County (1972?) and the Uinta Mountains (county unknown, 1972); her two most recent probably valid reports were from Uintah County (August 1980) and Summit County (30 April 1982). From these reports it appears that the species, if extant in Utah, most likely is present in the Uinta Mountains in at least Summit and Uintah counties.

County

Status

Summit	Native and natural, presence confident
Daggett	Native and natural, presence confident
Wasatch	Native and natural, presence confident
Uintah	Native and natural, presence probable
Duchesne	Native and natural, presence probable
Sanpete	Native and natural, presence confident

Ecoregion

Status

Wasatch & Uinta Mtns.	Native and natural, presence confident
Utah High Plateaus	Native and natural, presence confident

Habitats Utilized in Utah

Although Durrant (1952) wrote, "Ecologically the lynx is restricted to the Canadian Life-Zone in Utah ...", this statement seems to have been based on general knowledge of the species elsewhere, as well, perhaps, as on the two localities that he knew of in Utah, rather than actual habitat data for this species in the state. McKay's (1991) summary of recent reports (specimens and observations) suggests that the habitat of this species in Utah is montane coniferous forest.

Trends

If extant in Utah, almost certainly declining.

Threats

Alteration of habitat--logging, clearing, road construction--as well as trapping and persecution represent threats to this species, as do forest fires.

Inventory Needs

Inventory needed to ascertain whether the species is indeed extant in Utah as well as extent of current distribution and abundance.

Section V

Inventory of Sensitive Invertebrate Species

INVENTORY OF SENSITIVE INVERTEBRATE SPECIES

Two sensitive species of Utah invertebrates, the Eureka mountainsnail and Gambel's crayfish, have been treated in the section, Detailed Status Reviews for Selected Animal Species. Another important product resulting from the literature review of invertebrate species is a preliminary "tracking list" of 57 terrestrial and aquatic mollusk species considered sensitive in the state (see Table 1). Some of these are more wide-ranging species that are of rare occurrence in Utah, but others are narrow endemics with a rangewide distribution limited to one or a few isolated localities. Several are newly discovered species that are still in the process of being described and named. Over the next two years a statewide distribution map and status summary (similar to the ones appearing in this document for sensitive vertebrates) will be prepared for each sensitive mollusk species.

Mollusks may seem small and insignificant, but they are an important aspect of Utah's biological diversity, especially in the Bonneville Basin where isolated aquatic habitats are occupied by a wealth of locally restricted species. Also, several of Utah's endemic mollusk species are known or thought to have become extinct in recent years. Others, known formerly to have been widespread in Utah, now exist precariously in only a few localities in the state.

In 1994 the definition of "protected wildlife" in the Utah State Code was modified to include aquatic and terrestrial mollusks. This action on the part of the state legislature created an additional management responsibility for the Division of Wildlife Resources and thus a need for better information regarding distribution and abundance of mollusk species. For these reasons, mollusks have been chosen as the first invertebrate group for intensive data development.

The preparation of the "preliminary Utah mollusk tracking list" has been a challenging task that has involved resolution of many confusing taxonomic and nomenclatural problems encountered throughout the literature for this group in Utah. Unlike the situation for mollusks in eastern North America, for which modern treatments are available, useful synonymies of the names of mollusk species in western North America are almost completely lacking. As a result it is often extremely difficult to recognize what species are discussed in the literature for this group, especially in older publications, which are the source of invaluable baseline data against which the current status of mollusks in Utah can be compared.

Chamberlin and Jones' *A Descriptive Catalog of the Mollusca of Utah*, published in 1929, which remains the most important single treatment of this group in Utah, was taken as the starting point for unraveling the tangled nomenclatural threads running back historically as well as forward to contemporary writings concerning the molluscan fauna of Utah. From the late nineteenth century through the 1940s a considerable body of literature exists, in

the form of articles published in scientific journals, dealing with mollusks in Utah. From the 1950s until the 1980s, little in the way of malacological literature pertaining to Utah has been found, but in the 1980s and 1990s some useful references treating molluscan groups throughout North America were published, and during this same period a number of agency reports--the so-called "gray" literature--containing molluscan survey data for Utah appeared. Currently there are works in progress, as well as accepted manuscripts awaiting publication, that concern molluscan groups occurring in Utah. Correspondence with the authors of these as-yet unpublished studies has been valuable for obtaining current understanding of some of the most difficult molluscan groups in Utah.

The "tracking list" presented in Table 1 represents a preliminary synthesis of information regarding distribution and abundance of sensitive mollusk species in Utah from these sources, historical and modern; however, the tracking list will almost certainly change as full assimilation of the data contained in this literature, spanning more than a century, is accomplished.

Table 1. Preliminary Utah mollusk tracking list.

Common Name	Scientific Name	Global Rank	State Rank
California floater	<i>Anodonta californiensis</i>	G4	S1
western pearlshell	<i>Margaritifera falcata</i>	G5	SH
white-lip dagger	<i>Pupoides albilabris</i>	G5	S1?
crestless column	<i>Pupilla hebes</i>	G5	S2
cross vertigo	<i>Vertigo modesta</i>	G5	S2
striate disc	<i>Discus shimekii</i>	G4	S2
Kanab ambersnail	<i>Oxyloma haydeni</i> <i>kanabensis</i>	G1	S1
Texas glyph	<i>Glyphyalinia umbilicata</i>	G5	S1?
southern tightcoil	<i>Ogaridiscus subrupicola</i>	G2G3	SH
black gloss	<i>Zonitoides nitidus</i>	G5	S1S2
Eureka mountainsnail	<i>Oreohelix eurekaensis</i>	G1	S1
lyrate mountainsnail	<i>Oreohelix haydeni</i>	G2G3	S2?
Mill Creek mountainsnail	<i>Oreohelix howardi</i>	G1	S1
Deseret mountainsnail	<i>Oreohelix peripherica</i>	G2	S2
Uinta mountainsnail	<i>Oreohelix uinta</i>	G1	SH
Yavapai mountainsnail	<i>Oreohelix yavapai</i>	G4?	SH
Brian Head mountainsnail	<i>Oreohelix parawanensis</i>	GH	SH
glossy valvata	<i>Valvata humeralis</i>	G5	S1S2
desert valvata	<i>Valvata utahensis</i>	G1	SH
Rocky Mountain dusksnail	<i>Amnicola greggi</i>	G3G4	S1
[no common name]	<i>Fluminicola</i> n. sp. 4	G1G2	S2
[no common name]	<i>Fluminicola coloradensis</i>	G3G4	S1?
Bear Lake springsnail	<i>Pyrgulopsis pilsbryana</i>	G1G2	S1
desert springsnail	<i>Pyrgulopsis deserta</i>	G1G3	S1S2
[no common name]	<i>Pyrgulopsis</i> n. sp. 37	G1	S2
[no common name]	<i>Pyrgulopsis</i> n. sp. 38	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 39	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 40	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 41	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 42	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 43	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 44	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 45	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 46	G1	S1

Table 1 (continued). Preliminary Utah mollusk tracking list.

Common Name	Scientific Name	Global Rank	State Rank
[no common name]	<i>Pyrgulopsis</i> n. sp. 47	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. 48	G1	S1
[no common name]	<i>Pyrgulopsis</i> n. sp. x	G1	S1
desert tryonia	<i>Tryonia protea</i>	G3G4	S2?
rock fossaria	<i>Fossaria modicella</i>	G5	S2?
pygmy fossaria	<i>Fossaria parva</i>	G5	S1S2?
[no common name]	<i>Fossaria rustica</i>	G5	S1S2?
fat-whorled pondsnail	<i>Stagnicola bonnevillensis</i>	G1	S1
mountain marshsnail	<i>Stagnicola montanensis</i>	G3	S2?
Fish Springs marshsnail	<i>Stagnicola pilsbryi</i>	GX	SX
thickshell pondsnail	<i>Stagnicola utahensis</i>	GH	SH
lance apexa	<i>Aplexa elongata</i>	G5	S2?
Fish Lake physa	<i>Physella microstriata</i>	GX	SX
Utah physa	<i>Physella utahensis</i>	G1	S1
protean physa	<i>Physella virgata</i>	G5	S2?
wet-rock physa	<i>Physella zionis</i>	G1G2	S1S2
ash gyro	<i>Gyraulus parvus</i>	G5	S2?
Great Basin rams-horn	<i>Helisoma newberryi</i>	G1?	SX
lamb rams-horn	<i>Planorbella oregonensis</i>	G2	S1S2?
creeping ancyliid	<i>Ferrissia rivularis</i>	G5	S2?

Section VI

Southern Region Data Development Project

SOUTHERN REGION DATA DEVELOPMENT PROJECT

The Division is developing a centralized database that contains information on the distribution and status of sensitive species and other important aspects of Utah's biological diversity. This information system will then be accessible by the Division, other land and resource management agencies, and the public as a planning and decision-making tool. To develop this system, information must be collected from a wide variety of available sources.

As part of the inventory project, Mitigation Commission funds have been made available to the Division's Southern Regional Office (SRO) on a cost-share basis for the purposes of (1) gathering locality data for sensitive bird and mammal species from existing sources in the Southern Region; (2) developing those data in a computerized format; and (3) delivering the completed database for incorporation in the Division's central databases. Through this effort, formal channels of communication can be developed between the Division and agency contacts, and data-sharing relationships can be solidified.

Methods

The SRO data collection project contact, Ken McDonald, Wildlife Biologist, initiated the pilot project by hiring two technicians to glean all available information from agency files. Offices that were visited include the USDI Bureau of Land Management (Cedar City and Richfield Districts), USDA Forest Service (Dixie and Fishlake National Forests), and USDI National Park Service (Zion, Bryce, and Capitol Reef National Parks).

Transcription sheets were completed by hand, and associated tabular and map information was copied from agency files. To avoid repeat visits to agency offices at a later time, data collection efforts were expanded by SRO to include records of any species regardless of its conservational priority. More than 740 data sources were reviewed and cited in this effort. Computer entry of the data into a dBase V database took place at the SRO. Also, considerable time was spent measuring Universal Transverse Mercator (UTM) coordinates for each record so that they could be spatially represented in a Geographic Information System.

Record Statistics

Over 21,000 locality records for bird and mammal species had been transcribed by the SRO (Table 2). Near the end of the project, 3,553 computerized locality records were delivered to the Division's Salt Lake Office (SLO); additionally 357 records of species on the Utah Natural Heritage Program (UTNHP) tracking list were entered directly from transcription sheets into the central databases in SLO. All of the computerized records that were delivered were uploaded into the central databases. These data represent observation records of 130 different species. Approximately 1,000 records, representing 31 different taxa, consisted of observations of species appearing on the UTNHP vertebrate tracking list (Table 3). The remaining records are being entered in both the SLO office and in the SRO.

Table 2. Summary of bird and mammal records collected in the Division's Southern Region.

Agency	Records Collected	Records Completed (UTM's)	Percent Complete
BLM Cedar City District			
Beaver River RA	4,431	3,689	83
Dixie RA	185	183	99
Escalante RA	9	9	100
Kanab RA	733	663	90
BLM Richfield District			
Henry Mountain RA	599	545	91
Sevier River RA	712	712	100
Warm Springs RA	234	150	64
House Range RA	(Data included with Warm Springs RA)		
Dixie National Forest			
Escalante RD	628	606	97
Teasdale RD	214	214	100
Cedar City RD	2,938	2,281	96
Pine Valley RD	(Data included with the Cedar City RD)		
Fishlake NF			
Richfield RD	437	437	100
Loa RD	(Data included with the Richfield RD)		
Beaver RD	0	0	0
Fillmore RD	0	0	0
National Park Service			
Zion National Park	117	117	100
Bryce Canyon NP	1,390	1,390	100
Capitol Reef NP	1,827	1,721	100
UDWR/Other			
Green Cards	2,568	973	38
Raptor Nest Cards	1,411	0	0
COR Reports	917	134	15
Virgin River Avian Survey	1,182	1,182	100
Spotted Owl Reports	921	868	94
Total	21,453	15,874	74

Table 3. Number of sensitive bird and mammal records received from the Division's Southern Region.

Common Name	Number of Records
Abert's towhee	10
Allen's big-eared bat	2
American redstart	2
American white pelican	10
bald eagle	579
Bell's vireo	15
big free-tailed bat	2
black swift	1
crissal thrasher	3
desert iguana	1
evening grosbeak	14
fringed myotis	7
Gila monster	8
grasshopper sparrow	1
gray catbird	2
green heron	7
merlin	8
Mount Ellen chipmunk	2
osprey	37
peregrine falcon	126
phainopepla	8
sidewinder	3
southwestern blackheaded	1
southwestern willow	4
spotted bat	2
spotted owl	81
summer tanager	7
Townsend's big-eared bat	9
Utah prairie dog	30
western small-footed myotis	10
yellow-billed cuckoo	7
Total	999

An important consideration, particularly in relation to records of birds, is whether or not the observation indicates breeding activity. Breeding status is difficult to ascertain from the data collected. Although such information was not systematically recorded in agency files, 1,028 observations are identified as “nest” records. Of these nest records, only 49 are of tracked species.

Evaluation

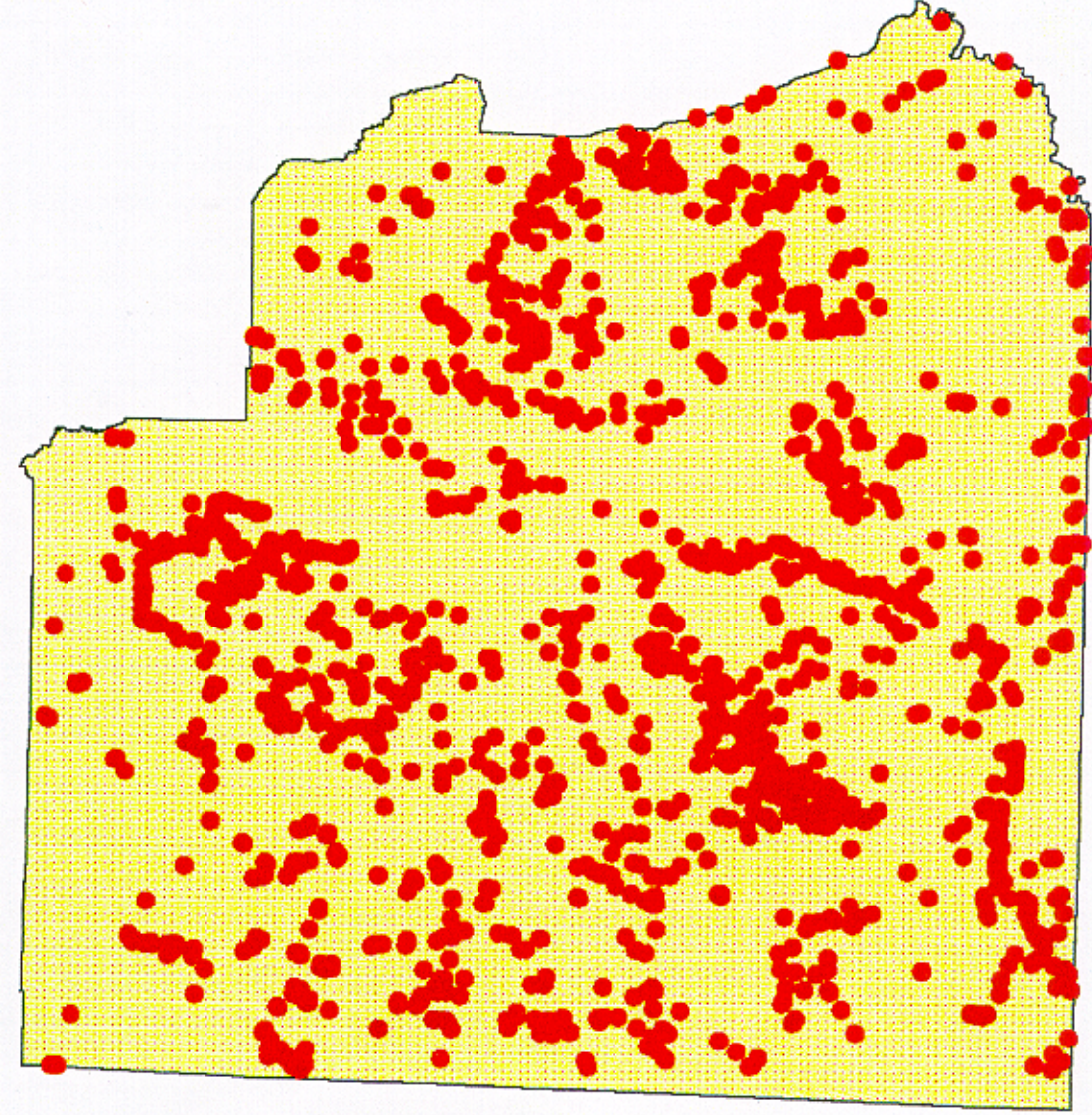
Normally, data procurement by the Natural Heritage Program is focused strictly on tracked species. A very small percentage of the total data gathered through the SRO pilot project included records for sensitive species. Fewer still were breeding records of sensitive species. Prior to incorporating information into the central databases, records undergo a rigorous quality control procedure of checking location details, dates, and completeness of the data. Also, multiple observations of a species within the same area are combined into a single record or appended to an existing record. Figure 7 plots the 3,483 observation records which were received with UTM coordinates. The many points that overlay each other demonstrate how observation records need to be combined to yield a better interpretation of distribution and actual population numbers.

The importance of the project should not be lost. This pilot project begins an ongoing data collection, centralization and dissemination process that the Division would like to continue. Records with currently low priority or low quality can be maintained as a separate data set which would be maintained in electronic format, ready for general site evaluations or for a future time when it is prudent to track more detailed information for a species which may become a conservation concern.

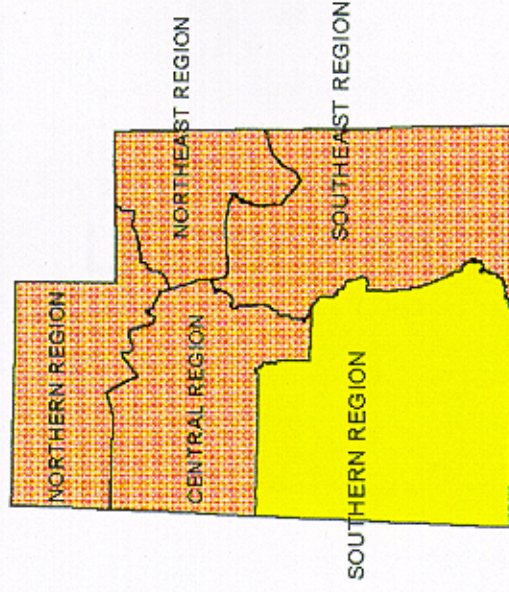
Coordinating data collection efforts through regional offices takes advantage of the superior logistical access regional staff have to cooperators' data. In part, the success of this pilot stemmed from having a contact in the Regional office to champion the project and work with local agency contacts. Continued coordination with other biologists within and out of the DWR will strengthen cooperative data sharing efforts. To streamline data collection efforts, future work of this nature may involve more direct effort by UTNHP staff, who can provide incentive and foster cooperation and support for data collection efforts by reciprocating with data sets, data products, and training to the Regions. For these reasons, cooperative data collection and data sharing activities are important to the success of the inventory project and should be continued.

Figure 7: Distribution of records compiled by UDWR Southern Region.

**Species Point Observations
Received from Southern Regional Office,
Division of Wildlife Resources**



DWR Regions



● Species Observation

3,483 data points



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APPENDICES

APPENDIX A: AGENCY STATUS DEFINITIONS

Utah Division of Wildlife Resources status definitions (Policy No. W2NAT-1: State Sensitive Species):

Extinct	Any wildlife species that has disappeared in the world.
Extirpated	Any wildlife species that has disappeared from Utah.
State Endangered	Any wildlife species or subspecies which is threatened with extirpation from Utah or extinction resulting from very low or declining numbers, alteration and/or reduction of habitat, detrimental environmental changes, or any combination of the above. Continued long-term survival is unlikely without implementation of special measures. A management program is needed for these species if a Recovery Plan has not been developed.
State Threatened	Any wildlife species or subspecies which is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range in Utah or the world. A management program is needed for these species if a Recovery Plan has not been developed.
Special Concern Species	Any wildlife species of subspecies that has a declining population, i.e., has experienced a substantial decrease in population, distribution and/or habitat availability (SP), or has a limited distribution, i.e., occurs in limited areas and/or numbers due to a restricted or specialized habitat (SD), or has both a declining population and a limited range (SP/SD). A management program, including protection or enhancement , is needed for these species.
Conservation Species	Any wildlife species or subspecies, except those species currently listed under the Endangered Species Act as Threatened or Endangered, that meets the criteria of Endangered, Threatened, or of Special Concern, but is currently receiving sufficient special management under a Conservation Agreement developed and/or implemented by the state to preclude its listing above.

USDI Fish & Wildlife Service status definitions (61 FR 7598):

- LE** Listed endangered under the federal Endangered Species Act.
- LT** Listed threatened.
- PE** Proposed endangered, i.e., a formal listing proposal has been published in the *Federal Register*.
- PT** Proposed threatened.
- C** Listing candidate, i.e., species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. Proposed rules have not yet been issued because this action is precluded at present by other listing activity. Development and publication of proposed rules for these taxa are anticipated. The Service encourages State and other Federal agencies as well as other affected parties to give consideration to these species in environmental planning.

USDA Forest Service status definitions (FSM 2670.5):

- Sensitive Species** Those plant and animal species identified by a Regional Forester for which population viability may be a concern due to Forest Service management, as evidenced by:
- a. Significant current or predicted downward trends in population numbers or density.
 - b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

USDI Bureau of Land Management status definitions:

The basic policy for designating sensitive species on BLM lands is set forth in the BLM 6840 Manual, Special Status Species Management:

“State Directors, usually in cooperation with State wildlife agencies, may designate sensitive species. By definition the sensitive species designation includes species that could easily become endangered or extinct in a State. Therefore, if sensitive species are designated by a State Director, the protection provided by the policy for candidate species shall be used as the minimum level of protection.”

According to Instruction Memorandum No. UT 96-69 (Interim Utah BLM Sensitive Species Policy),

“The Native Utah Wildlife Species of Special Concern list issued by the Utah Division of Wildlife Resources ... will be used as the sensitive animal species list.”

USDI National Park Service status definitions (Guideline No. NPS-77, Ch. 2:
Endangered, Threatened, and Rare Species Management):

In addition to Endangered, Threatened, and Candidate species as defined under the provisions of the federal Endangered Species Act (see U.S. Fish & Wildlife Service status definitions, above), the following status definitions may apply in National Parks, National Monuments, and National Historic Sites:

Rare species Any species which is considered restricted and limited throughout all or a significant portion of its range. This designation does not necessarily imply that populations of the species are significantly reduced or threatened with reduction. No legally required federal protection is associated with this designation.

Sensitive species Any species or infraspecies not otherwise designated whose population characteristics warrant special management or more intensive monitoring. Considerations may include:

- local rarity of native species,
- whether or not the species is endemic to the park or local vicinity,
- the importance of the species to the park (as identified in park management objectives),
- whether the species is the subject of political concern or unusual public interest,
- the usefulness of the species as an indicator species,
- the vulnerability of the species to local population declines, and/or
- whether the species or its habitat is subject to human disturbance during critical portions of its life cycle.

APPENDIX B: NATURAL HERITAGE RANK DEFINITIONS

As defined in the Natural Heritage Program Operations Manual, a numeric rank (1 through 5) is assigned to indicate the status of a species at both the Global (rangewide) level and at the State level. These ranks are based primarily on the number of occurrences of the species, along with other factors such as overall abundance, extent of geographic range, population trends, and threats. The range in number of occurrences suggested for each numeric rank below is not an absolute guideline, but only the starting point in the ranking process.

- | | |
|-----------------|---|
| G1 or S1 | Indicates extreme rarity or other factor(s) making the species especially vulnerable to extinction or extirpation (typically 5 or fewer occurrences or very few remaining individuals or acres). |
| G2 or S2 | Indicates rarity or other factor(s) making the species very vulnerable to extinction or extirpation (6 to 20 occurrences or few remaining individuals or acres). |
| G3 or S3 | Indicates a species that is either very rare and local throughout its range or found locally (even abundantly at some of its locations) within a restricted range, or vulnerable to extinction or extirpation because of other factors (21 to 100 occurrences). |
| G4 or S4 | Indicates a species that is widespread, abundant, and apparently secure, though it may be quite rare in parts of its range, especially at the periphery (usually more than 100 occurrences). |
| G5 or S5 | Indicates a species that is demonstrably widespread, abundant, and secure, though it may be quite rare in parts of its range. |

A range spanning two (or even three) of the numeric ranks denotes a range of uncertainty about the exact status of the species (e.g., **S1S2**); ranges cannot skip more than one rank (e.g., **S1S4** is not allowed). Global ranks for infraspecific taxa (races or subspecies in the case of animals) consist of the G-rank for the full species plus a **T** followed by a numerical rank, which is the global rank of the infraspecific taxon. A qualifier of **?** also may be added to a rank to denote the rank as inexact; a qualifier of **Q** indicates that the validity of the taxon is questionable.

As more information is gathered, some species are added to the tracking list and some are dropped from the list. Our increasing understanding allows the ranks to be reevaluated and adjusted periodically.

Additional possible Natural Heritage ranks include:

GH or SH	<u>Historical</u> : Of historical occurrence throughout its range, i.e., formerly part of the established biota, with the expectation that it may be rediscovered (e.g., relict leopard frog).
GX or SX	<u>Extinct</u> (Global) or <u>extirpated</u> (State): Believed to be extinct throughout its range or extirpated in the state with virtually no likelihood that it will be rediscovered.
SE	<u>Exotic</u> in the state.
SA	<u>Accidental</u> in the state.
SZ	<u>Zero</u> occurrences (in most cases this implies that the species is migratory through the state).
SP	<u>Potential</u> occurrence in the state but as yet undocumented.
SR	<u>Reported</u> in the state, but occurrence questionable.
SRF	<u>Reported falsely</u> in the state.

An extension of the above basic ranks may be assigned to denote breeding and non-breeding status (**rank** + **B** for breeding status, **rank** + **N** for non-breeding status, especially useful for many birds, some bats, and other animals that move into or out of the state seasonally).

APPENDIX C: UTAH VERTEBRATE SPECIES LIST

<u>Bony Fishes:</u>	<u>Global Rank</u>	<u>State Rank</u>
threadfin shad (<i>Dorosoma petenense</i>)	G5	SE
sockeye salmon (kokanee) (<i>Oncorhynchus nerka</i>)	G5	SE
cutthroat trout (<i>Oncorhynchus clarki</i>)	G4	S3 S4
Lahontan cutthroat trout (<i>Oncorhynchus clarki henshawi</i>)	G4T2	SE
Bonneville cutthroat trout (<i>Oncorhynchus clarki utah</i>)	G4T2	S2
Colorado River cutthroat trout (<i>Oncorhynchus clarki pleuriticus</i>)	G4T2T3	S2
rainbow trout (<i>Oncorhynchus mykiss</i>)	G5	SE
golden trout (<i>Oncorhynchus mykiss aguabonita</i>)	G5T3	SE
Bear Lake whitefish (<i>Prosopium abyssicola</i>)	G1	S1
Bonneville cisco (<i>Prosopium gemmifer</i>)	G1	S1
Bonneville whitefish (<i>Prosopium spilonotus</i>)	G1	S1
mountain whitefish (<i>Prosopium williamsoni</i>)	G5	S3
brown trout (<i>Salmo trutta</i>)	G5	SE
brook trout (<i>Salvelinus fontinalis</i>)	G5	SE
lake trout (<i>Salvelinus namaycush</i>)	G5	SE
arctic grayling (<i>Thymallus arcticus</i>)	G5	SE
northern pike (<i>Esox lucius</i>)	G5	SE
goldfish (<i>Carassius auratus</i>)	G5	SE
common carp (<i>Cyprinus carpio</i>)	G5	SE

Note: Natural Heritage tracking list species appear in **bold** type.

Bony Fishes (cont):**Global Rank State Rank**

Utah chub (<i>Gila atraria</i>)	G4	S4
leatherside chub (<i>Gila copei</i>)	G3G4	S2S3
humpback chub (<i>Gila cypha</i>)	G1	S1
bonytail (<i>Gila elegans</i>)	G1	S1
roundtail chub (<i>Gila robusta</i>)	G3	S3S4
Virgin River chub (<i>Gila seminuda</i>)	G1	S1
brassy minnow (<i>Hybognathus hankinsoni</i>)	G5	SE
plains minnow (<i>Hybognathus placitus</i>)	G5	SE
least chub (<i>Iotichthys phlegethontis</i>)	G1	S1
Virgin spinedace (<i>Lepidomeda mollispinis</i>)	G1	S1
golden shiner (<i>Notemigonus crysoleucas</i>)	G5	SE
spottail shiner (<i>Notropis hudsonius</i>)	G5	SE
sand shiner (<i>Notropis stramineus</i>)	G5	SE
fathead minnow (<i>Pimephales promelas</i>)	G5	SE
woundfin (<i>Plagopterus argentissimus</i>)	G1	S1
Colorado squawfish (<i>Ptychocheilus lucius</i>)	G1	S1
longnose dace (<i>Rhinichthys cataractae</i>)	G5	S3
speckled dace (<i>Rhinichthys osculus</i>)	G5	S5
redside shiner (<i>Richardsonius balteatus</i>)	G5	S5
creek chub (<i>Semotilus atromaculatus</i>)	G5	SE
red shiner (<i>Cyprinella lutrensis</i>)	G5	SE

Note: Natural Heritage tracking list species appear in **bold** type.

Bony Fishes (cont.):**Global Rank State Rank**

Utah sucker (<i>Catostomus ardens</i>)	G5	S3S4
desert sucker (<i>Catostomus clarki</i>)	G4	S1S2
white sucker (<i>Catostomus commersoni</i>)	G5	SE
bluehead sucker (<i>Catostomus discobolus</i>)	G4	S4
flannelmouth sucker (<i>Catostomus latipinnis</i>)	G3G4	S3S4
mountain sucker (<i>Catostomus platyrhynchus</i>)	G5	S4
June sucker (<i>Chasmistes liorus</i>)	G1	S1
razorback sucker (<i>Xyrauchen texanus</i>)	G1	S1
channel catfish (<i>Ictalurus punctatus</i>)	G5	SE
black bullhead (<i>Ameiurus melas</i>)	G5	SE
yellow bullhead (<i>Ameiurus natalis</i>)	G5	SE
plains topminnow (<i>Fundulus sciadicus</i>)	G4	SE
plains killifish (<i>Fundulus zebrinus</i>)	G5	SE
rainwater killifish (<i>Lucania parva</i>)	G5	SE
western mosquitofish (<i>Gambusia affinis</i>)	G5	SE
white bass (<i>Morone chrysops</i>)	G5	SE
striped bass (<i>Morone saxatilis</i>)	G5	SE
Sacramento perch (<i>Archoplites interruptus</i>)	G3	SE
green sunfish (<i>Lepomis cyanellus</i>)	G5	SE
bluegill (<i>Lepomis macrochirus</i>)	G5	SE
smallmouth bass (<i>Micropterus dolomieu</i>)	G5	SE

Note: Natural Heritage tracking list species appear in **bold** type.

Bony Fishes (cont.):**Global Rank State Rank**

largemouth bass (<i>Micropterus salmoides</i>)	G5	SE
white crappie (<i>Pomoxis annularis</i>)	G5	SE
black crappie (<i>Pomoxis nigromaculatus</i>)	G5	SE
Iowa darter (<i>Etheostoma exile</i>)	G5	SE
Johnny darter (<i>Etheostoma nigrum</i>)	G5	SE
yellow perch (<i>Perca flavescens</i>)	G5	SE
walleye (<i>Stizostedion vitreum</i>)	G5	SE
jaguar guapote (<i>Cichlasoma managuense</i>)	G?	SE
mottled sculpin (<i>Cottus bairdi</i>)	G5	S4
Paiute sculpin (<i>Cottus beldingi</i>)	G5	S1S2
Utah Lake sculpin (<i>Cottus echinatus</i>)	GX	SX
Bear Lake sculpin (<i>Cottus extensus</i>)	G1	S1

Amphibians:

tiger salamander (<i>Ambystoma tigrinum</i>)	G5	S5
western toad (<i>Bufo boreas</i>)	G4	S2
Great Plains toad (<i>Bufo cognatus</i>)	G5	S3
southwestern toad (<i>Bufo microscaphus</i>)	G4	S2
red-spotted toad (<i>Bufo punctatus</i>)	G5	S3
Woodhouse's toad (<i>Bufo woodhousii</i>)	G5	S5
canyon treefrog (<i>Hyla arenicolor</i>)	G5	S3

Note: Natural Heritage tracking list species appear in **bold** type.

Amphibians (cont.):

	<u>Global Rank</u>	<u>State Rank</u>
Pacific chorus frog (<i>Pseudacris regilla</i>)	G5	S1
boreal chorus frog (<i>Pseudacris maculata</i>)	G5	S4
plains spadefoot (<i>Spea bombifrons</i>)	G5	S2S3
Great Basin spadefoot (<i>Spea intermontana</i>)	G5	S4
New Mexico spadefoot (<i>Spea multiplicata</i>)	G5	S3
bullfrog (<i>Rana catesbeiana</i>)	G5	SE
green frog (<i>Rana clamitans</i>)	G5	SE
relict leopard frog (<i>Rana onca</i>)	G1	SH
northern leopard frog (<i>Rana pipiens</i>)	G5	S4S5
Columbia spotted frog (<i>Rana luteiventris</i>)	G3G4	S1
Yavapai leopard frog (<i>Rana yavapaiensis</i>)	G3	SH

Reptiles:

snapping turtle (<i>Chelydra serpentina</i>)	G5	SE
painted turtle (<i>Chrysemys picta</i>)	G5	SE?
desert tortoise (<i>Gopherus agassizii</i>)	G3	S1
spiny softshell (<i>Apalone spinifera</i>)	G5	SE?
northern alligator lizard (<i>Elgaria coerulea</i>)	G5	SRF
western banded gecko (<i>Coleonyx variegatus</i>)	G5	S2S3
zebra-tailed lizard (<i>Callisaurus draconoides</i>)	G5	S2

Note: Natural Heritage tracking list species appear in **bold** type.

Reptiles (cont.):**Global Rank State Rank**

Mojave black-collared lizard (<i>Crotaphytus bicinctores</i>)	G5	S4
collared lizard (<i>Crotaphytus collaris</i>)	G5	S4
desert iguana (<i>Dipsosaurus dorsalis</i>)	G5	S1
long-nosed leopard lizard (<i>Gambelia wislizenii</i>)	G5	S4
lesser earless lizard (<i>Holbrookia maculata</i>)	G5	S2S3
short-horned lizard (<i>Phrynosoma douglasi</i>)	G5	S4
desert horned lizard (<i>Phrynosoma platyrhinos</i>)	G5	S4
chuckwalla (<i>Sauromalus obesus</i>)	G5	S2
sagebrush lizard (<i>Sceloporus graciosus</i>)	G5	S5
desert spiny lizard (<i>Sceloporus magister</i>)	G5	S3S4
western fence lizard (<i>Sceloporus occidentalis</i>)	G5	S3S4
plateau lizard (<i>Sceloporus undulatus</i>)	G5	S4S5
brush lizard (<i>Urosaurus graciosus</i>)	G5	SP
northern tree lizard (<i>Urosaurus ornatus</i>)	G5	S4S5
side-blotched lizard (<i>Uta stansburiana</i>)	G5	S5
many-lined skink (<i>Eumeces multivirgatus</i>)	G5	S2S3
western skink (<i>Eumeces skiltonianus</i>)	G5	S4
western whiptail (<i>Cnemidophorus tigris</i>)	G5	S5
plateau striped whiptail (<i>Cnemidophorus velox</i>)	G5	S3
desert night lizard (<i>Xantusia vigilis</i>)	G5	S2
Gila monster (<i>Heloderma suspectum</i>)	G4	S1

Note: Natural Heritage tracking list species appear in **bold** type.

Reptiles (cont.):**Global Rank State Rank**

western blind snake (<i>Leptotyphlops humilis</i>)	G5	S2
rubber boa (<i>Charina bottae</i>)	G5	S3
glossy snake (<i>Arizona elegans</i>)	G5	S2
racer (<i>Coluber constrictor</i>)	G5	S4
ringneck snake (<i>Diadophis punctatus</i>)	G5	S3
corn snake (<i>Elaphe guttata</i>)	G5	S2
night snake (<i>Hypsiglena torquata</i>)	G5	S4
common kingsnake (<i>Lampropeltis getula</i>)	G5	S3
Sonoran mountain kingsnake (<i>Lampropeltis pyromelana</i>)	G5	S2S3
milk snake (<i>Lampropeltis triangulum</i>)	G5	S2S3
coachwhip (<i>Masticophis flagellum</i>)	G5	S2S3
striped whipsnake (<i>Masticophis taeniatus</i>)	G5	S5
smooth green snake (<i>Opheodrys vernalis</i>)	G5	S3
spotted leaf-nosed snake (<i>Phyllorhynchus decurtatus</i>)	G5	S1
gopher snake (<i>Pituophis melanoleucus</i>)	G5	S5
long-nosed snake (<i>Rhinocheilus lecontei</i>)	G5	S3
western patch-nosed snake (<i>Salvadora hexalepis</i>)	G5	S2S3
ground snake (<i>Sonora semiannulata</i>)	G5	S2
southwestern black-headed snake (<i>Tantilla hobartsmithi</i>)	G5	S2
black-necked garter snake (<i>Thamnophis cyrtopsis</i>)	G5	S2S3
western terrestrial garter snake (<i>Thamnophis elegans</i>)	G5	S5

Note: Natural Heritage tracking list species appear in **bold** type.

Reptiles (cont.):**Global Rank State Rank**

common garter snake (<i>Thamnophis sirtalis</i>)	G5	S3 S4
lyre snake (<i>Trimorphodon biscutatus</i>)	G5	S2
sidewinder (<i>Crotalus cerastes</i>)	G5	S2
speckled rattlesnake (<i>Crotalus mitchellii</i>)	G5	S1
Mojave rattlesnake (<i>Crotalus scutulatus</i>)	G5	S1
western rattlesnake (<i>Crotalus viridis</i>)	G5	S5

Birds:

red-throated loon (<i>Gavia stellata</i>)	G5	SAN
common loon (<i>Gavia immer</i>)	G5	SZN
yellow-billed loon (<i>Gavia adamsii</i>)	G4	SAN
Pacific loon (<i>Gavia pacifica</i>)	G5	SZN
pied-billed grebe (<i>Podilymbus podiceps</i>)	G5	S3 S4N, S4B
horned grebe (<i>Podiceps auritus</i>)	G5	S3N, SRFB
red-necked grebe (<i>Podiceps grisegena</i>)	G5	SAN
eared grebe (<i>Podiceps nigricollis</i>)	G5	S3N, S4B
western grebe (<i>Aechmophorus occidentalis</i>)	G5	S3N, S4B
Clark's grebe (<i>Aechmophorus clarkii</i>)	G5	S3N, S3 S4B
American white pelican (<i>Pelecanus erythrorhynchos</i>)	G3	S1B
brown pelican (<i>Pelecanus occidentalis</i>)	G4	SAN

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

double-crested cormorant (<i>Phalacrocorax auritus</i>)	G5	S3N,S3 S4B
American bittern (<i>Botaurus lentiginosus</i>)	G4	S3N,S3 S4B
least bittern (<i>Ixobrychus exilis</i>)	G5	S1B
great blue heron (<i>Ardea herodias</i>)	G5	S3S4
great egret (<i>Ardea alba</i>)	G5	S1S2N
snowy egret (<i>Egretta thula</i>)	G5	S4S5B
little blue heron (<i>Egretta caerulea</i>)	G5	SAN
tricolored heron (<i>Egretta tricolor</i>)	G5	SAN
cattle egret (<i>Bubulcus ibis</i>)	G5	S4B
green heron (<i>Butorides virescens</i>)	G5	S1B,SAN
black-crowned night-heron (<i>Nycticorax nycticorax</i>)	G5	S3N,S3 S4B
white-faced ibis (<i>Plegadis chihi</i>)	G5	S2S3B,SAN
roseate spoonbill (<i>Ajaia ajaja</i>)	G5	SAH
wood stork (<i>Mycteria americana</i>)	G4	SAN
greater flamingo (<i>Phoenicopterus ruber</i>)	G3	SE
fulvous whistling-duck (<i>Dendrocygna bicolor</i>)	G5	SAN
tundra swan (<i>Cygnus columbianus</i>)	G5	S3N
trumpeter swan (<i>Cygnus buccinator</i>)	G4	S1N,SHB?
greater white-fronted goose (<i>Anser albifrons</i>)	G5	SZN
snow goose (<i>Chen caerulescens</i>)	G5	SZN
Ross' goose (<i>Chen rossii</i>)	G4	SZN

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

brant (<i>Branta bernicla</i>)	G5	SAN
Canada goose (<i>Branta canadensis</i>)	G5	S4
wood duck (<i>Aix sponsa</i>)	G5	S2 S3B, S3 S4N
green-winged teal (<i>Anas crecca</i>)	G5	S3B, S5N
American black duck (<i>Anas rubripes</i>)	G4	SR
mallard (<i>Anas platyrhynchos</i>)	G5	S4N, S4 S5B
northern pintail (<i>Anas acuta</i>)	G5	S4N, S4 S5B
blue-winged teal (<i>Anas discors</i>)	G5	S3B
cinnamon teal (<i>Anas cyanoptera</i>)	G5	S3N, S4 S5B
northern shoveler (<i>Anas clypeata</i>)	G5	S3 S4N, S4 S5B
gadwall (<i>Anas strepera</i>)	G5	S4N, S4 S5B
Eurasian wigeon (<i>Anas penelope</i>)	G5	SAN
American wigeon (<i>Anas americana</i>)	G5	S2 S3B, S3 S4N
canvasback (<i>Aythya valisineria</i>)	G5	S2 S3B, S3N
redhead (<i>Aythya americana</i>)	G5	S3B, S3 S4N
ring-necked duck (<i>Aythya collaris</i>)	G5	S4 S5N, SPB
greater scaup (<i>Aythya marila</i>)	G5	SZN
lesser scaup (<i>Aythya affinis</i>)	G5	S1B, S3 S4N
harlequin duck (<i>Histrionicus histrionicus</i>)	G4	SAN
oldsquaw (<i>Clangula hyemalis</i>)	G5	S1N
black scoter (<i>Melanitta nigra</i>)	G5	SAN

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

surf scoter (<i>Melanitta perspicillata</i>)	G5	S1N
white-winged scoter (<i>Melanitta fusca</i>)	G5	S1S2N
common goldeneye (<i>Bucephala clangula</i>)	G5	S3S4N
Barrow's goldeneye (<i>Bucephala islandica</i>)	G5	S1S2N
bufflehead (<i>Bucephala albeola</i>)	G5	S3S4N
hooded merganser (<i>Lophodytes cucullatus</i>)	G5	S3N
common merganser (<i>Mergus merganser</i>)	G5	S3S4N,SAB
red-breasted merganser (<i>Mergus serrator</i>)	G5	S1S2N,SRB
ruddy duck (<i>Oxyura jamaicensis</i>)	G5	S2S3N,S4S5B
turkey vulture (<i>Cathartes aura</i>)	G5	S4B
California condor (<i>Gymnogyps californianus</i>)	G1	SR
osprey (<i>Pandion haliaetus</i>)	G5	S1S2B
white-tailed kite (<i>Elanus leucurus</i>)	G5	SA
bald eagle (<i>Haliaeetus leucocephalus</i>)	G4	S1B,S3N
northern harrier (<i>Circus cyaneus</i>)	G5	S3N,S4B
sharp-shinned hawk (<i>Accipiter striatus</i>)	G5	S4
Cooper's hawk (<i>Accipiter cooperii</i>)	G4	S3S4N,S4B
northern goshawk (<i>Accipiter gentilis</i>)	G4	S3
common black-hawk (<i>Buteogallus anthracinus</i>)	G4G5	S1B
red-shouldered hawk (<i>Buteo lineatus</i>)	G5	SAN
broad-winged hawk (<i>Buteo platypterus</i>)	G5	SZN

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

Swainson's hawk (<i>Buteo swainsoni</i>)	G4	S3B,SRN
zone-tailed hawk (<i>Buteo albonotatus</i>)	G4	SAN
red-tailed hawk (<i>Buteo jamaicensis</i>)	G5	S4S5
ferruginous hawk (<i>Buteo regalis</i>)	G4	S2N,S2S3B
rough-legged hawk (<i>Buteo lagopus</i>)	G5	S4S5N
golden eagle (<i>Aquila chrysaetos</i>)	G5	S4
American kestrel (<i>Falco sparverius</i>)	G5	S4N,S4S5B
merlin (<i>Falco columbarius</i>)	G5	S3N,SHB
peregrine falcon (<i>Falco peregrinus</i>)	G4	S2
gyrfalcon (<i>Falco rusticolus</i>)	G5	SAN
prairie falcon (<i>Falco mexicanus</i>)	G4G5	S4
gray partridge (<i>Perdix perdix</i>)	G5	SE
chukar (<i>Alectoris chukar</i>)	G5	SE
ring-necked pheasant (<i>Phasianus colchicus</i>)	G5	SE
blue grouse (<i>Dendragapus obscurus</i>)	G5	S4
white-tailed ptarmigan (<i>Lagopus leucurus</i>)	G5	SE
ruffed grouse (<i>Bonasa umbellus</i>)	G5	S4
sage grouse (<i>Centrocercus urophasianus</i>)	G5	S2
sharp-tailed grouse (<i>Tympanuchus phasianellus</i>)	G4	S1S2
wild turkey (<i>Meleagris gallopavo</i>)	G5	SE
scaled quail (<i>Callipepla squamata</i>)	G5	SER

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

Gambel's quail (<i>Callipepla gambelii</i>)	G5	S3S4
California quail (<i>Callipepla californica</i>)	G5	SE
Virginia rail (<i>Rallus limicola</i>)	G5	S3N,S4B
sora (<i>Porzana carolina</i>)	G5	S3N,S4S5B
purple gallinule (<i>Porphyryla martinica</i>)	G5	SA
common moorhen (<i>Gallinula chloropus</i>)	G5	S1
American coot (<i>Fulica americana</i>)	G5	S5
sandhill crane (<i>Grus canadensis</i>)	G5	S1B
whooping crane (<i>Grus americana</i>)	G1	SEN
black-bellied plover (<i>Pluvialis squatarola</i>)	G5	SZN
American golden-plover (<i>Pluvialis dominicus</i>)	G5	SZN
snowy plover (<i>Charadrius alexandrinus</i>)	G4	S2S3B
semipalmated plover (<i>Charadrius semipalmatus</i>)	G5	SZN
killdeer (<i>Charadrius vociferus</i>)	G5	S4N,S5B
mountain plover (<i>Charadrius montanus</i>)	G2	S1B,SZN
black-necked stilt (<i>Himantopus mexicanus</i>)	G5	S4B
American avocet (<i>Recurvirostra americana</i>)	G5	S4B
greater yellowlegs (<i>Tringa melanoleuca</i>)	G5	SZN
lesser yellowlegs (<i>Tringa flavipes</i>)	G5	SZN
solitary sandpiper (<i>Tringa solitaria</i>)	G5	SZN,SRFB
willet (<i>Catoptrophorus semipalmatus</i>)	G5	S4B

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

wandering tattler (<i>Heteroscelus incanus</i>)	G5	SAN
spotted sandpiper (<i>Actitis macularia</i>)	G5	S4B
upland sandpiper (<i>Bartramia longicauda</i>)	G5	SAN
whimbrel (<i>Numenius phaeopus</i>)	G5	SZN
long-billed curlew (<i>Numenius americanus</i>)	G5	S3B
Hudsonian godwit (<i>Limosa haemastica</i>)	G4	SA
marbled godwit (<i>Limosa fedoa</i>)	G5	SZN
ruddy turnstone (<i>Arenaria interpres</i>)	G5	SZN
red knot (<i>Calidris canutus</i>)	G5	SZN
sanderling (<i>Calidris alba</i>)	G5	S3N
semipalmated sandpiper (<i>Calidris pusilla</i>)	G5	SZN
western sandpiper (<i>Calidris mauri</i>)	G5	SZN
least sandpiper (<i>Calidris minutilla</i>)	G5	S3N
white-rumped sandpiper (<i>Calidris fuscicollis</i>)	G5	SAN
Baird's sandpiper (<i>Calidris bairdii</i>)	G5	SZN
pectoral sandpiper (<i>Calidris melanotos</i>)	G5	SZN
dunlin (<i>Calidris alpina</i>)	G5	SZN
curlew sandpiper (<i>Calidris ferruginea</i>)	G5?	SAN
stilt sandpiper (<i>Calidris himantopus</i>)	G5	SZN
short-billed dowitcher (<i>Limnodromus griseus</i>)	G5	SZN
long-billed dowitcher (<i>Limnodromus scolopaceus</i>)	G5	SZN

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

common snipe (<i>Gallinago gallinago</i>)	G5	S3N,S4B
American woodcock (<i>Scolopax minor</i>)	G5	SAN
Wilson's phalarope (<i>Phalaropus tricolor</i>)	G4	S4B
red-necked phalarope (<i>Phalaropus lobatus</i>)	G5	SZN
red phalarope (<i>Phalaropus fulicaria</i>)	G5	SAN
pomarine jaeger (<i>Stercorarius pomarinus</i>)	G5	SAN
parasitic jaeger (<i>Stercorarius parasiticus</i>)	G5	SAN
long-tailed jaeger (<i>Stercorarius longicaudus</i>)	G5	SAN
laughing gull (<i>Larus atricilla</i>)	G5	SAN
Franklin's gull (<i>Larus pipixcan</i>)	G5	S4B
Bonaparte's gull (<i>Larus philadelphia</i>)	G5	SZN
mew gull (<i>Larus canus</i>)	G5	SAN
ring-billed gull (<i>Larus delawarensis</i>)	G5	S4N,SPB
California gull (<i>Larus californicus</i>)	G5	S5
herring gull (<i>Larus argentatus</i>)	G5	S3N
Thayer's gull (<i>Larus thayeri</i>)	G5Q	S1S2N
lesser black-backed gull (<i>Larus fuscus</i>)	G5	SAN
glaucous-winged gull (<i>Larus glaucescens</i>)	G5	SAN
glaucous gull (<i>Larus hyperboreus</i>)	G5	S1S2N
black-legged kittiwake (<i>Rissa tridactyla</i>)	G5	SAN
Sabine's gull (<i>Xema sabini</i>)	G5	SZN

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

Caspian tern (<i>Sterna caspia</i>)	G5	S1B
common tern (<i>Sterna hirundo</i>)	G5	SZN
Forster's tern (<i>Sterna forsteri</i>)	G5	S4B
least tern (<i>Sterna antillarum</i>)	G4	SA
black tern (<i>Chlidonias niger</i>)	G4	S2B
ancient murrelet (<i>Synthliboramphus antiquus</i>)	G4	SAN
rock dove (<i>Columba livia</i>)	G5	SE
band-tailed pigeon (<i>Columba fasciata</i>)	G5	S3S4B
spotted dove (<i>Streptopelia chinensis</i>)	G5	SER
white-winged dove (<i>Zenaida asiatica</i>)	G5	S2B
mourning dove (<i>Zenaida macroura</i>)	G5	S3N,S5B
passenger pigeon (<i>Ectopistes migratorius</i>)	GX	SX
Inca dove (<i>Columbina inca</i>)	G5	SA,SPB
common ground dove (<i>Columbina passerina</i>)	G5	SA
black-billed cuckoo (<i>Coccyzus erythrophthalmus</i>)	G5	SA,SPB
yellow-billed cuckoo (<i>Coccyzus americanus</i>)	G5	S1S2B
greater roadrunner (<i>Geococcyx californianus</i>)	G5	S2S3
barn-owl (<i>Tyto alba</i>)	G5	S3
flamulated owl (<i>Otus flammeolus</i>)	G4	S3S4B
western screech-owl (<i>Otus kennicottii</i>)	G5	S3S4
great horned owl (<i>Bubo virginianus</i>)	G5	S4

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

snowy owl (<i>Nyctea scandiaca</i>)	G5	SAN
northern hawk-owl (<i>Surnia ulula</i>)	G5	SAN
northern pygmy-owl (<i>Glaucidium gnoma</i>)	G5	S3S4B
burrowing owl (<i>Speotyto cunicularia</i>)	G4	S3B
spotted owl (<i>Strix occidentalis</i>)	G3	S1
great gray owl (<i>Strix nebulosa</i>)	G5	SAN
long-eared owl (<i>Asio otus</i>)	G5	S3S4
short-eared owl (<i>Asio flammeus</i>)	G5	S2S3
northern saw-whet owl (<i>Aegolius acadicus</i>)	G5	S3
lesser nighthawk (<i>Chordeiles acutipennis</i>)	G5	S2S3B
common nighthawk (<i>Chordeiles minor</i>)	G5	S4S5B
common poorwill (<i>Phalaenoptilus nuttallii</i>)	G5	S4S5B
whip-poor-will (<i>Caprimulgus vociferus</i>)	G5	SR
black swift (<i>Cypseloides niger</i>)	G4	S1B
chimney swift (<i>Chaetura pelagica</i>)	G5	SA
Vaux's swift (<i>Chaetura vauxi</i>)	G5	SZN
white-throated swift (<i>Aeronautes saxatalis</i>)	G5	S4S5B
broad-billed hummingbird (<i>Cynanthus latirostris</i>)	G4	SAN
blue-throated hummingbird (<i>Lampornis clemenciae</i>)	G5	SAN
magnificent hummingbird (<i>Eugenes fulgens</i>)	G5	SA
black-chinned hummingbird (<i>Archilochus alexandri</i>)	G5	S4S5B

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

Anna's hummingbird (<i>Calypte anna</i>)	G5	SAN
Costa's hummingbird (<i>Calypte costae</i>)	G5	S2S3B
Calliope hummingbird (<i>Stellula calliope</i>)	G5	S3S4B
broad-tailed hummingbird (<i>Selasphorus platycercus</i>)	G5	S4S5B
rufous hummingbird (<i>Selasphorus rufus</i>)	G5	SZN
belted kingfisher (<i>Ceryle alcyon</i>)	G5	S3N,S3S4B
Lewis' woodpecker (<i>Melanerpes lewis</i>)	G4G5	S2S3
red-headed woodpecker (<i>Melanerpes erythrocephalus</i>)	G5	SA,SPB
acorn woodpecker (<i>Melanerpes formicivorus</i>)	G5	S1S2
red-breasted sapsucker (<i>Sphyrapicus ruber</i>)	G5	SA
Williamson's sapsucker (<i>Sphyrapicus thyroideus</i>)	G5	S2S3B,SAN
red-naped sapsucker (<i>Sphyrapicus nuchalis</i>)	G5	S3N,S4B
ladder-backed woodpecker (<i>Picoides scalaris</i>)	G5	S2S3
downy woodpecker (<i>Picoides pubescens</i>)	G5	S4S5
hairy woodpecker (<i>Picoides villosus</i>)	G5	S4S5
three-toed woodpecker (<i>Picoides tridactylus</i>)	G5	S2S3
northern flicker (<i>Colaptes auratus</i>)	G5	S5
gilded flicker (<i>Colaptes chrysoides</i>)	G?	SR
pileated woodpecker (<i>Dryocopus pileatus</i>)	G5	SR
olive-sided flycatcher (<i>Contopus borealis</i>)	G4	S3S4B
western wood-pewee (<i>Contopus sordidulus</i>)	G5	S4B

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

willow flycatcher (<i>Empidonax traillii</i>)	G5	S4B
southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	G5T2	S1B
least flycatcher (<i>Empidonax minimus</i>)	G5	SA
Hammond's flycatcher (<i>Empidonax hammondi</i>)	G5	S3S4B
dusky flycatcher (<i>Empidonax oberholseri</i>)	G5	S4B
gray flycatcher (<i>Empidonax wrightii</i>)	G5	S4S5B
Pacific-slope flycatcher (<i>Empidonax difficilis</i>)	G5	SR
Cordilleran flycatcher (<i>Empidonax occidentalis</i>)	G5	S3S4B
black phoebe (<i>Sayornis nigricans</i>)	G5	S2S3
eastern phoebe (<i>Sayornis phoebe</i>)	G5	SAN
Say's phoebe (<i>Sayornis saya</i>)	G5	S3N,S4S5B
vermillion flycatcher (<i>Pyrocephalus rubinus</i>)	G5	S2B,SAN
ash-throated flycatcher (<i>Myiarchus cinerascens</i>)	G5	S4S5B
great crested flycatcher (<i>Myiarchus crinitus</i>)	G5	SA
brown-crested flycatcher (<i>Myiarchus tyrannulus</i>)	G5	S1B
Cassin's kingbird (<i>Tyrannus vociferans</i>)	G5	S3S4B
western kingbird (<i>Tyrannus verticalis</i>)	G5	S4S5B
eastern kingbird (<i>Tyrannus tyrannus</i>)	G5	S3B
scissor-tailed flycatcher (<i>Tyrannus forficatus</i>)	G5	SAN
horned lark (<i>Eremophila alpestris</i>)	G5	S5
purple martin (<i>Progne subis</i>)	G5	S2S3B

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

tree swallow (<i>Tachycineta bicolor</i>)	G5	S4B
violet-green swallow (<i>Tachycineta thalassina</i>)	G5	S4S5B
northern rough-winged swallow (<i>Stelgidopteryx serripennis</i>)	G5	S4S5B
bank swallow (<i>Riparia riparia</i>)	G5	S4B
cliff swallow (<i>Hirundo pyrrhonota</i>)	G5	S5B
barn swallow (<i>Hirundo rustica</i>)	G5	S5B
gray jay (<i>Perisoreus canadensis</i>)	G5	S3S4
Steller's jay (<i>Cyanocitta stelleri</i>)	G5	S4S5
blue jay (<i>Cyanocitta cristata</i>)	G5	SZN
western scrub-jay (<i>Aphelocoma californica</i>)	G5	S5
pinyon jay (<i>Gymnorhinus cyanocephalus</i>)	G5	S4
Clark's nutcracker (<i>Nucifraga columbiana</i>)	G5	S4
black-billed magpie (<i>Pica pica</i>)	G5	S5
American crow (<i>Corvus brachyrhynchos</i>)	G5	S3B,S5N
common raven (<i>Corvus corax</i>)	G5	S5
black-capped chickadee (<i>Parus atricapillus</i>)	G5	S5
mountain chickadee (<i>Parus gambeli</i>)	G5	S4
plain titmouse (<i>Parus inornatus</i>)	G5	S4S5
verdin (<i>Auriparus flaviceps</i>)	G5	S2S3
bushtit (<i>Psaltiriparus minimus</i>)	G5	S4
red-breasted nuthatch (<i>Sitta canadensis</i>)	G5	S4

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

white-breasted nuthatch (<i>Sitta carolinensis</i>)	G5	S3 S4
pygmy nuthatch (<i>Sitta pygmaea</i>)	G5	S3 S4
brown creeper (<i>Certhia americana</i>)	G5	S3 S4
cactus wren (<i>Campylorhynchus brunneicapillus</i>)	G5	S2 S3
rock wren (<i>Salpinctes obsoletus</i>)	G5	S3 N, S4 S5 B
canyon wren (<i>Catherpes mexicanus</i>)	G5	S4 S5
Bewick's wren (<i>Thryomanes bewickii</i>)	G4	S4 S5
house wren (<i>Troglodytes aedon</i>)	G5	S3 N, S5 B
winter wren (<i>Troglodytes troglodytes</i>)	G5	S3 N, SR B
marsh wren (<i>Cistothorus palustris</i>)	G5	S3 N, S3 S4 B
American dipper (<i>Cinclus mexicanus</i>)	G5	S3 S4
golden-crowned kinglet (<i>Regulus satrapa</i>)	G5	S3 S4
ruby-crowned kinglet (<i>Regulus calendula</i>)	G5	S5
blue-gray gnatcatcher (<i>Polioptila caerulea</i>)	G5	S5 B, SAN
black-tailed gnatcatcher (<i>Polioptila melanura</i>)	G5	S1 B
eastern bluebird (<i>Sialia sialis</i>)	G5	SA
western bluebird (<i>Sialia mexicana</i>)	G5	S3 N, S3 S4 B
mountain bluebird (<i>Sialia currucoides</i>)	G5	S3 S4 N, S4 S5 B
Townsend's solitaire (<i>Myadestes townsendi</i>)	G5	S3 S4
veery (<i>Catharus fuscescens</i>)	G5	S2 B
gray-cheeked thrush (<i>Catharus minimus</i>)	G5	SR

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

Swainson's thrush (<i>Catharus ustulatus</i>)	G5	S3 S4B, SRFN
hermit thrush (<i>Catharus guttatus</i>)	G5	S2N, S4B
wood thrush (<i>Hylocichla mustelina</i>)	G5	SAN
American robin (<i>Turdus migratorius</i>)	G5	S5
varied thrush (<i>Ixoreus naevius</i>)	G5	SZN
gray catbird (<i>Dumetella carolinensis</i>)	G5	S2B
northern mockingbird (<i>Mimus polyglottos</i>)	G5	S3N, S3 S4B
sage thrasher (<i>Oreoscoptes montanus</i>)	G5	S4 S5B, SAN
brown thrasher (<i>Toxostoma rufum</i>)	G5	S2 S3N, SPB
Bendire's thrasher (<i>Toxostoma bendirei</i>)	G5	S2 S3B
crissal thrasher (<i>Toxostoma crissale</i>)	G5	S2
Le Conte's thrasher (<i>Toxostoma lecontei</i>)	G4	S1
American pipit (<i>Anthus spinoletta</i>)	G5	S3 S4N, S4B
Sprague's pipit (<i>Anthus spragueii</i>)	G4	SR
Bohemian waxwing (<i>Bombycilla garrulus</i>)	G5	SZN
cedar waxwing (<i>Bombycilla cedrorum</i>)	G5	S2 S3B, S4 S5N
phainopepla (<i>Phainopepla nitens</i>)	G5	S1N, S2B
northern shrike (<i>Lanius excubitor</i>)	G5	SZN
loggerhead shrike (<i>Lanius ludovicianus</i>)	G4G5	S3 S4N, S4B
European starling (<i>Sturnus vulgaris</i>)	G5	SE
white-eyed vireo (<i>Vireo griseus</i>)	G5	SA

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

Bell's vireo (<i>Vireo bellii</i>)	G5	S1S2B
gray vireo (<i>Vireo vicinior</i>)	G5	S4B
solitary vireo (<i>Vireo solitarius</i>)	G5	SZN
yellow-throated vireo (<i>Vireo flavifrons</i>)	G5	SA
warbling vireo (<i>Vireo gilvus</i>)	G5	S4B
Philadelphia vireo (<i>Vireo philadelphicus</i>)	G5	SR
red-eyed vireo (<i>Vireo olivaceus</i>)	G5	SZN
plumbeous vireo (<i>Vireo plumbeus</i>)	G5	S3S4B
blue-winged warbler (<i>Vermivora pinus</i>)	G5	SAN
Tennessee warbler (<i>Vermivora peregrina</i>)	G5	SZN
orange-crowned warbler (<i>Vermivora celata</i>)	G5	S3N,S4S5B
Nashville warbler (<i>Vermivora ruficapilla</i>)	G5	SZN,SRFB
Virginia's warbler (<i>Vermivora virginiae</i>)	G5	S4S5B
Lucy's warbler (<i>Vermivora luciae</i>)	G5	S3B
northern parula (<i>Parula americana</i>)	G5	SAN
yellow warbler (<i>Dendroica petechia</i>)	G5	S4S5B
chestnut-sided warbler (<i>Dendroica pensylvanica</i>)	G5	SAN
magnolia warbler (<i>Dendroica magnolia</i>)	G5	SAN
black-throated blue warbler (<i>Dendroica caerulescens</i>)	G5	SAN
yellow-rumped warbler (<i>Dendroica coronata</i>)	G5	S3N,S4S5B
black-throated gray warbler (<i>Dendroica nigrescens</i>)	G5	S4S5B

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):

	<u>Global Rank</u>	<u>State Rank</u>
Townsend's warbler (<i>Dendroica townsendi</i>)	G5	SZN
hermit warbler (<i>Dendroica occidentalis</i>)	G5	SAN
black-throated green warbler (<i>Dendroica virens</i>)	G5	SR
Blackburnian warbler (<i>Dendroica fusca</i>)	G5	SR
yellow-throated warbler (<i>Dendroica dominica</i>)	G5	SAN
Grace's warbler (<i>Dendroica graciae</i>)	G5	S3 S4B
palm warbler (<i>Dendroica palmarum</i>)	G5	SAN
bay-breasted warbler (<i>Dendroica castanea</i>)	G5	SAN
blackpoll warbler (<i>Dendroica striata</i>)	G5	SZN
black-and-white warbler (<i>Mniotilta varia</i>)	G5	SZN
ovenbird (<i>Seiurus aurocapillus</i>)	G5	SAN
northern waterthrush (<i>Seiurus noveboracensis</i>)	G5	SZN
Kentucky warbler (<i>Oporornis formosus</i>)	G4	SAN
Connecticut warbler (<i>Oporornis agilis</i>)	G4	SAN
MacGillivray's warbler (<i>Oporornis tolmiei</i>)	G5	S4 S5B
common yellowthroat (<i>Geothlypis trichas</i>)	G5	S3B
hooded warbler (<i>Wilsonia citrina</i>)	G5	SAN
Wilson's warbler (<i>Wilsonia pusilla</i>)	G5	S3 S4B, SZN
Canada warbler (<i>Wilsonia canadensis</i>)	G5	SAN
American redstart (<i>Setophaga ruticilla</i>)	G5	S2B, SZN
painted redstart (<i>Myioborus pictus</i>)	G5	S1B

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

yellow-breasted chat (<i>Icteria virens</i>)	G5	S3S4B
hepatic tanager (<i>Piranga flava</i>)	G5	SR
summer tanager (<i>Piranga rubra</i>)	G5	S2B
scarlet tanager (<i>Piranga olivacea</i>)	G5	SA,SRB
western tanager (<i>Piranga ludoviciana</i>)	G5	S4B
northern cardinal (<i>Cardinalis cardinalis</i>)	G5	SA
rose-breasted grosbeak (<i>Pheucticus ludovicianus</i>)	G5	SZN
black-headed grosbeak (<i>Pheucticus melanocephalus</i>)	G5	S4B
blue grosbeak (<i>Guiraca caerulea</i>)	G5	S3S4B
lazuli bunting (<i>Passerina amoena</i>)	G5	S4S5B
indigo bunting (<i>Passerina cyanea</i>)	G5	S2S3B
dickcissel (<i>Spiza americana</i>)	G5	SA
green-tailed towhee (<i>Pipilo chlorurus</i>)	G5	S4B
Abert's towhee (<i>Pipilo aberti</i>)	G5	S1S2
spotted towhee (<i>Pipilo maculatus</i>)	G5	S4N,S4S5B
Cassin's sparrow (<i>Aimophila cassini</i>)	G5	SRFB
rufous-crowned sparrow (<i>Aimophila ruficeps</i>)	G5	S1
American tree sparrow (<i>Spizella arborea</i>)	G5	S3S4N
chipping sparrow (<i>Spizella passerina</i>)	G5	S4S5B
clay-colored sparrow (<i>Spizella pallida</i>)	G5	SA
Brewer's sparrow (<i>Spizella breweri</i>)	G4	S4S5B

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

black-chinned sparrow (<i>Spizella atrogularis</i>)	G5	S3B
vesper sparrow (<i>Pooecetes gramineus</i>)	G5	S2N,S5B
lark sparrow (<i>Chondestes grammacus</i>)	G5	S2N,S5B
black-throated sparrow (<i>Amphispiza bilineata</i>)	G5	S2N,S5B
sage sparrow (<i>Amphispiza belli</i>)	G5	S3S4
lark bunting (<i>Calamospiza melanocorys</i>)	G5	S2S3B
savannah sparrow (<i>Passerculus sandwichensis</i>)	G5	S3S4N,S5B
Baird's sparrow (<i>Ammodramus bairdii</i>)	G4	SR
grasshopper sparrow (<i>Ammodramus savannarum</i>)	G4	S1B
Le Conte's sparrow (<i>Ammodramus leconteii</i>)	G4?	SAN
fox sparrow (<i>Passerella iliaca</i>)	G5	S2S3B
song sparrow (<i>Melospiza melodia</i>)	G5	S4S5
Lincoln's sparrow (<i>Melospiza lincolni</i>)	G5	S3N,S4B
swamp sparrow (<i>Melospiza georgiana</i>)	G5	S3N
white-throated sparrow (<i>Zonotrichia albicollis</i>)	G5	S3S4N
golden-crowned sparrow (<i>Zonotrichia atricapilla</i>)	G5	S3N
white-crowned sparrow (<i>Zonotrichia leucophrys</i>)	G5	S4
Harris' sparrow (<i>Zonotrichia querula</i>)	G5	S3N
dark-eyed junco (<i>Junco hyemalis</i>)	G5	S4B,S5N
McCown's longspur (<i>Calcarius mccownii</i>)	G5	SAN
Lapland longspur (<i>Calcarius lapponicus</i>)	G5	S3N

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):**Global Rank State Rank**

chestnut-collared longspur (<i>Calcarius ornatus</i>)	G5	SAN
snow bunting (<i>Plectrophenax nivalis</i>)	G5	S3N
bobolink (<i>Dolichonyx oryzivorus</i>)	G5	S2S3B
red-winged blackbird (<i>Agelaius phoeniceus</i>)	G5	S5
western meadowlark (<i>Sturnella neglecta</i>)	G5	S5
yellow-headed blackbird (<i>Xanthocephalus xanthocephalus</i>)	G5	S3N,S4S5B
rusty blackbird (<i>Euphagus carolinus</i>)	G5	SAN
Brewer's blackbird (<i>Euphagus cyanocephalus</i>)	G5	S4S5
great-tailed grackle (<i>Quiscalus mexicanus</i>)	G5	S2S3
common grackle (<i>Quiscalus quiscula</i>)	G5	S3B
bronzed cowbird (<i>Molothrus aeneus</i>)	G5	SA
brown-headed cowbird (<i>Molothrus ater</i>)	G5	S3N,S5B
orchard oriole (<i>Icterus spurius</i>)	G5	SAR
hooded oriole (<i>Icterus cucullatus</i>)	G5	S2B
Baltimore oriole (<i>Icterus galbula</i>)	G5	SA
Scott's oriole (<i>Icterus parisorum</i>)	G5	S3B
Bullock's oriole (<i>Icterus bullockii</i>)	G5	S4S5B
brambling (<i>Fringilla montifringilla</i>)	G5	SAN
black rosy-finch (<i>Leucosticte atrata</i>)	G4	S3
gray-crowned rosy-finch (<i>Leucosticte tephrocotis</i>)	G5	S3N
pine grosbeak (<i>Pinicola enucleator</i>)	G5	S3S4

Note: Natural Heritage tracking list species appear in **bold** type.

Birds (cont.):

	<u>Global Rank</u>	<u>State Rank</u>
purple finch (<i>Carpodacus purpureus</i>)	G5	SRN
Cassin's finch (<i>Carpodacus cassinii</i>)	G5	S4N,S4S5B
house finch (<i>Carpodacus mexicanus</i>)	G5	S5
red crossbill (<i>Loxia curvirostra</i>)	G5	S3S4
white-winged crossbill (<i>Loxia leucoptera</i>)	G5	SA
common redpoll (<i>Carduelis flammea</i>)	G5	S3N
pine siskin (<i>Carduelis pinus</i>)	G5	S4
lesser goldfinch (<i>Carduelis psaltria</i>)	G5	S3N,S3S4B
Lawrence's goldfinch (<i>Carduelis lawrencei</i>)	G4?	SRN
American goldfinch (<i>Carduelis tristis</i>)	G5	S4
evening grosbeak (<i>Coccothraustes vespertinus</i>)	G5	S2B?,SZN
house sparrow (<i>Passer domesticus</i>)	G5	SE

Mammals:

Virginia opossum (<i>Didelphis virginiana</i>)	G5	SP
cinereous or masked shrew (<i>Sorex cinereus</i>)	G5	S3
Preble's shrew (<i>Sorex preblei</i>)	G4	S2?
vagrant shrew (<i>Sorex vagrans</i>)	G5	S4
dusky or montane shrew (<i>Sorex monticolus</i>)	G5	S3S4
dwarf shrew (<i>Sorex nanus</i>)	G4	S2?

Note: Natural Heritage tracking list species appear in **bold** type.

Mammals (cont.):

	<u>Global Rank</u>	<u>State Rank</u>
water shrew (<i>Sorex palustris</i>)	G5	S4
Merriam's shrew (<i>Sorex merriami</i>)	G5	S2?
desert shrew (<i>Notiosorex crawfordi</i>)	G5	S2?
California leaf-nosed bat (<i>Macrotus californicus</i>)	G4	SP
little brown myotis (<i>Myotis lucifugus</i>)	G5	S4
Yuma myotis (<i>Myotis yumanensis</i>)	G5	S3
cave myotis (<i>Myotis velifer</i>)	G5	SRF
long-eared myotis (<i>Myotis evotis</i>)	G5	S4B,SZN?
fringed myotis (<i>Myotis thysanodes</i>)	G5	S2B,SZN?
long-legged myotis (<i>Myotis volans</i>)	G5	S4
California myotis (<i>Myotis californicus</i>)	G5	S3
western small-footed myotis (<i>Myotis ciliolabrum</i>)	G5	S2
silver-haired bat (<i>Lasionycteris noctivagans</i>)	G5	S4B,SZN
western pipistrelle (<i>Pipistrellus hesperus</i>)	G5	S4
big brown bat (<i>Eptesicus fuscus</i>)	G5	S4
hoary bat (<i>Lasiurus cinereus</i>)	G5	S4B,SZN
western red bat (<i>Lasiurus blossevillii</i>)	G5	S1
spotted bat (<i>Euderma maculatum</i>)	G4	S2
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	G4	S2
Allen's big-eared bat (<i>Idionycteris phyllotis</i>)	G5	S1
pallid bat (<i>Antrozous pallidus</i>)	G5	S3

Note: Natural Heritage tracking list species appear in **bold** type.

Mammals (cont.):**Global Rank State Rank**

Brazilian free-tailed bat (<i>Tadarida brasiliensis</i>)	G5	S4B
western mastiff bat (<i>Eumops perotis</i>)	G5	SP
big free-tailed bat (<i>Nyctinomops macrotis</i>)	G5	S2B
American pika (<i>Ochotona princeps</i>)	G5	S3
mountain cottontail (<i>Sylvilagus nuttalli</i>)	G5	S5
desert cottontail (<i>Sylvilagus audubonii</i>)	G5	S5
snowshoe hare (<i>Lepus americanus</i>)	G5	S3
white-tailed jackrabbit (<i>Lepus townsendii</i>)	G5	S3S4
black-tailed jackrabbit (<i>Lepus californicus</i>)	G5	S5
pygmy rabbit (<i>Brachylagus idahoensis</i>)	G5	S2S3
least chipmunk (<i>Tamias minimus</i>)	G5	S5
yellow-pine chipmunk (<i>Tamias amoenus</i>)	G5	S2S3
cliff chipmunk (<i>Tamias dorsalis</i>)	G5	S4
Uinta chipmunk (<i>Tamias umbrinus</i>)	G5	S4S5
Hopi chipmunk (<i>Tamias rufus</i>)	G5	S4
yellow-bellied marmot (<i>Marmota flaviventris</i>)	G5	S4S5
white-tailed antelope squirrel (<i>Ammospermophilus leucurus</i>)	G5	S5
Piute ground squirrel (<i>Spermophilus mollis</i>)	G5	S5
Uinta ground squirrel (<i>Spermophilus armatus</i>)	G5	S5
Belding's ground squirrel (<i>Spermophilus beldingi</i>)	G5	S2S3
thirteen-lined ground squirrel (<i>Spermophilus tridecemlineatus</i>)	G5	S2S3

Note: Natural Heritage tracking list species appear in **bold** type.

Mammals (cont.):**Global Rank State Rank**

spotted ground squirrel (<i>Spermophilus spilosoma</i>)	G5	SH
rock squirrel (<i>Spermophilus variegatus</i>)	G5	S5
golden-mantled ground squirrel (<i>Spermophilus lateralis</i>)	G5	S5
Wyoming ground squirrel (<i>Spermophilus elegans</i>)	G5	S2S3
white-tailed prairie dog (<i>Cynomys leucurus</i>)	G4	S4
Utah prairie dog (<i>Cynomys parvidens</i>)	G1	S1
Gunnison's prairie dog (<i>Cynomys gunnisoni</i>)	G5	S3
Abert's squirrel (<i>Sciurus aberti</i>)	G5	S1S2
red squirrel (<i>Tamiasciurus hudsonicus</i>)	G5	S5
northern flying squirrel (<i>Glaucomys sabrinus</i>)	G5	S3
Botta's pocket gopher (<i>Thomomys bottae</i>)	G5	S4S5
northern pocket gopher (<i>Thomomys talpoides</i>)	G5	S4S5
Idaho pocket gopher (<i>Thomomys idahoensis</i>)	G5Q	S2?
olive-backed pocket mouse (<i>Perognathus fasciatus</i>)	G5	S2?
plains pocket mouse (<i>Perognathus flavescens</i>)	G5	S3
silky pocket mouse (<i>Perognathus flavus</i>)	G5	S2?
little pocket mouse (<i>Perognathus longimembris</i>)	G5	S3
Great Basin pocket mouse (<i>Perognathus parvus</i>)	G5	S5
dark kangaroo mouse (<i>Microdipodops megacephalus</i>)	G5	S2
Ord's kangaroo rat (<i>Dipodomys ordii</i>)	G5	S5
chisel-toothed kangaroo rat (<i>Dipodomys microps</i>)	G5	S3

Note: Natural Heritage tracking list species appear in **bold** type.

Mammals (cont.):

	<u>Global Rank</u>	<u>State Rank</u>
desert kangaroo rat (<i>Dipodomys deserti</i>)	G5	S1S2
Merriam's kangaroo rat (<i>Dipodomys merriami</i>)	G5	S3
long-tailed pocket mouse (<i>Chaetodipus formosus</i>)	G5	S4
rock pocket mouse (<i>Chaetodipus intermedius</i>)	G5	S2?
desert pocket mouse (<i>Chaetodipus penicillatus</i>)	G5	S1
American beaver (<i>Castor canadensis</i>)	G5	S4
western harvest mouse (<i>Reithrodontomys megalotis</i>)	G5	S5
cactus mouse (<i>Peromyscus eremicus</i>)	G5	S3
deer mouse (<i>Peromyscus maniculatus</i>)	G5	S5
canyon mouse (<i>Peromyscus crinitus</i>)	G5	S5
brush mouse (<i>Peromyscus boylii</i>)	G5	S4S5
pinon mouse (<i>Peromyscus truei</i>)	G5	S4S5
northern rock mouse (<i>Peromyscus nasutus</i>)	G5	SH
northern grasshopper mouse (<i>Onychomys leucogaster</i>)	G5	S4S5
southern grasshopper mouse (<i>Onychomys torridus</i>)	G5	S2S3
white-throated woodrat (<i>Neotoma albigula</i>)	G5	S3
desert woodrat (<i>Neotoma lepida</i>)	G5	S4
Arizona woodrat (<i>Neotoma devia</i>)	G4?Q	S4
Stephens' woodrat (<i>Neotoma stephensi</i>)	G5	S2?
Mexican woodrat (<i>Neotoma mexicana</i>)	G5	S3
bushy-tailed woodrat (<i>Neotoma cinerea</i>)	G5	S4S5

Note: Natural Heritage tracking list species appear in **bold** type.

Mammals (cont.):**Global Rank State Rank**

southern red-backed vole (<i>Clethrionomys gapperi</i>)	G5	S3
heather vole (<i>Phenacomys intermedius</i>)	G5	S3
meadow vole (<i>Microtus pennsylvanicus</i>)	G5	S3
montane vole (<i>Microtus montanus</i>)	G5	S4
Virgin River montane vole (<i>Microtus montanus rivularis</i>)	G5T2?Q	S2?
long-tailed vole (<i>Microtus longicaudus</i>)	G5	S5
Mexican vole (<i>Microtus mexicanus</i>)	G5	S1
water vole (<i>Microtus richardsoni</i>)	G5	S3
sagebrush vole (<i>Lemmiscus curtatus</i>)	G5	S3S4
muskrat (<i>Ondatra zibethicus</i>)	G5	S5
black rat (<i>Rattus rattus</i>)	G5	SE
Norway rat (<i>Rattus norvegicus</i>)	G5	SE
house mouse (<i>Mus musculus</i>)	G5	SE
western jumping mouse (<i>Zapus princeps</i>)	G5	S3S4
common porcupine (<i>Erethizon dorsatum</i>)	G5	S4S5
coyote (<i>Canis latrans</i>)	G5	S5
gray wolf (<i>Canis lupus</i>)	G4	SX
red fox (<i>Vulpes vulpes</i>)	G5	S5
swift (kit) fox (<i>Vulpes velox</i>)	G3	S3
common gray fox (<i>Urocyon cinereoargenteus</i>)	G5	S4
black bear (<i>Ursus americanus</i>)	G5	S3
brown (grizzly) bear (<i>Ursus arctos</i>)	G4	SX

Note: Natural Heritage tracking list species appear in **bold** type.

Mammals (cont.):**Global Rank State Rank**

ringtail (<i>Bassariscus astutus</i>)	G5	S3
common raccoon (<i>Procyon lotor</i>)	G5	S5
American marten (<i>Martes americana</i>)	G4G5	S2
fisher (<i>Martes pennanti</i>)	G4G5	SR
ermine (<i>Mustela erminea</i>)	G5	S3S4
long-tailed weasel (<i>Mustela frenata</i>)	G5	S4S5
black-footed ferret (<i>Mustela nigripes</i>)	G1	S1?
mink (<i>Mustela vison</i>)	G5	S3S4
wolverine (<i>Gulo gulo</i>)	G4	S1
american badger (<i>Taxidea taxus</i>)	G5	S5
western spotted skunk (<i>Spilogale gracilis</i>)	G5	S4S5
striped skunk (<i>Mephitis mephitis</i>)	G5	S5
northern river otter (<i>Lutra canadensis</i>)	G5	S1S2
mountain lion (<i>Felis concolor</i>)	G5	S4
lynx (<i>Lynx lynx</i>)	G4G5	S1
bobcat (<i>Lynx rufus</i>)	G5	S5
red deer (wapiti or elk) (<i>Cervus elaphus</i>)	G5	S4
mule deer (<i>Odocoileus hemionus</i>)	G5	S5
white-tailed deer (<i>Odocoileus virginianus</i>)	G5	SA
moose (<i>Alces alces</i>)	G5	S3S4
pronghorn (<i>Antilocapra americana</i>)	G5	S4

Note: Natural Heritage tracking list species appear in **bold** type.

Mammals (cont.):

	<u>Global Rank</u>	<u>State Rank</u>
American bison (<i>Bos bison</i>)	G4	S3
mountain goat (<i>Oreamnos americanus</i>)	G5	SE
mountain sheep (<i>Ovis canadensis</i>)	G4G5	S3
(feral) horse (<i>Equus caballus</i>)	G5	SE
(feral) ass (<i>Equus asinus</i>)	G5	SE

Note: Natural Heritage tracking list species appear in **bold** type.

Note: Natural Heritage tracking list species appear in **bold** type.

APPENDIX D: COUNTY AND ECOREGION STATUS TERMINOLOGY.

native and natural:	the animal occurs naturally in the county or region.
reintroduced:	the animal occurs in the county or ecoregion as a result of reintroductions (but is known, or at least strongly presumed, to have been present naturally in the county or ecoregion historically).
introduced:	the animal occurs, or occurred, in the county or ecoregion only as a result of introductions.
origin data uncertain:	the origin of the animals presence (i.e., natural, reintroduced, introduced) in the county or ecoregion is uncertain.
unknown:	needs further data development.
presence confident:	the animal is known, or confidently assumed, to occur in the county or ecoregion.
presence probable:	the animal is predicted (e.g., based on suitable habitat) to occur in the county or ecoregion.
presence possible:	the animal possibly or potentially occurs in the county or ecoregion.
presumed extirpated:	the animal is known to have occurred in the county or ecoregion but is presumed no longer to be present.

APPENDIX E: GLOSSARY OF TERMS

accidental: occurring incidentally or by chance.

acid precipitation: rain or snow of unnaturally high acidity, usually the result of air pollution.

allozymic: pertaining to certain protein characteristics of an organism and used as indicators of genetic diversity in and between populations.

anthropogenic: relating to, or resulting from the influence of human beings on nature.

artificially established: established by human rather than natural agents.

asexual clone: any group of genetically identical individuals (e.g. identical human twins).

bat detectors: devices used to detect and record the ultrasonic sound (beyond the human range of hearing) vocalizations of bats.

carnivore: a flesh-eating animal

catastrophic: pertaining to a violent or sudden change or event that imperils a local population.

congener: a member of the same taxonomic genus as another plant or animal.

conspecific: of the same species.

cryptic species: two or more species that, though reproductively isolated, appear to be exactly alike.

DDT: a chlorinated hydrocarbon formerly used commonly as an insecticide.

diurnal: active during daylight.

ecomorph: a population or individual that is physically distinguishable from others as a result of a developmental response to local ecological factors rather than genetic differentiation.

ecoregion: a sizable geographical area of distinctive climate, physiography, and biota.

ectomycorrhizal: A mutualistic fungal association with the roots of plants in which the fungus forms a sheath around the outside of the root.

ectoparasite: A parasite, (e.g. a tick, flea, or louse) that lives on, or attached to, the host's surface.

electrophoretic technique: a process that separates chemical compounds, such as proteins, by molecular weight and polarity (electrical charge).

endemic: restricted to a particular locality or region.

exotic: not native to the place where found; introduced by humans.

extant: to be in existence; not to be lost or destroyed.

extinct: no longer existing at any location on the earth.

extirpated: no longer existing in a particular location.

falconry: the art of training hawks to hunt in cooperation with a person; the sport of hunting with hawks.

folivorous: foliage-eating, leaf-eating.

fossorial: adapted to digging.

genotype: the genetic constitution of an individual or group.

genus: a category of biological classification ranking between the family and the species.

granivorous: seed-eating.

herbivore: a plant-eating animal.

herpetology: a branch of zoology dealing with reptiles and amphibians.

hibernaculum: a winter residence; a shelter occupied in the winter by a dormant animal (e.g. a bat).

holotype: the single specimen designated by an author as the type of a species or lesser taxon

at the time of establishing the group; the type of a species or lesser taxon designated at a date later than that of establishing a group or by another person than the author of the taxon.

hybrid: an offspring of two animals or plants of different species.

hybridization: the production of hybrids.

hypogeous: growing or living below the surface of the ground.

hypolimnion: the part of a lake below the thermocline made up of water that is stagnant and of essentially uniform temperature except during the period of overturn.

ICZN: The International Commission of Zoological Nomenclature.

infraspecific: included within a species of lower taxonomic rank than a species (e.g. a race or subspecies).

insecticide: an agent (usually chemicals) that destroys insects.

interbreeding: to breed with a member of a different population or species.

intraspecific: occurring within a species or involving members of one species.

introduced: an animal occurring unnaturally in a particular place to which it has been brought by man; the animal occurs, or occurred, in the county or ecoregion only as a result of introductions.

invertebrate: an animal (e.g. an insect, a snail) lacking a spinal column.

lapsus calami: a “slip of the pen”.

lentic: of, relating to, or living in still waters (as lakes, ponds, or swamps).

lotic: of, relating to, or living in actively moving water.

malacology: a branch of zoology dealing with mollusks.

maternity colonies: groupings of adult females who have borne or about to bear young and their dependant offspring.

mensural: of, or relating to measure.

meristic: involving number or in geometrical pattern of body parts.

mesic: characterized by, relating to, or requiring a moderate amount of moisture.

migrant: an animal that travels from one location to another, usually seasonally.

mist nets: extremely fine nets set between poles and used for the capture of birds or bats.

monotypic: including a single representative-used especially of a genus with only one species.

montane: of, relating to, growing in, or being the biogeographic zone of relatively moist, cool, upland slopes below often timberline dominated by large evergreen trees.

morphology: the form and structure of an organism or any of its parts.

morphometric: a measurement of external form.

mtDNA (mitochondrial DNA): DNA that is present in the mitochondria of cells, outside the nucleus, and inherited only from the female parent.

natality: the birthrate.

native: living or growing naturally in a particular region.

native and natural: the animal occurs naturally in the county or region.

nest parasitism: the laying of eggs by one female in the nest of another, often of a different species; also called “brood parasitism”.

nocturnal: active at night.

nomenclature: any system of names or naming, such as an international system of standardized New Latin names used in biology for kinds and groups of kinds of animals and plants.

nominal: in name only; named but questionable valid.

nominate race: the race or subspecies of a species bearing the same name as the species

itself (e.g. *Sorex merriami merriami*); also known as the type race.

occurrence: In Natural Heritage terminology, any geographic site of importance to the biology, and thus the conservation, of a species; usually this is an area supporting a local breeding population.

origin data uncertain: the origin of the animal's presence (i.e., natural, reintroduced, introduced) in the county or ecoregion is uncertain.

omnivore: an organism that feeds on both animals and plants.

paratype: a specimen used in the type (or original) description in addition to the holotype.

parthenogenic clone: a special case of an asexual clone in which females produce offspring identical to themselves.

perennial: persisting from year to year; present throughout the year.

pesticide: an agent (often chemicals) used to destroy pests.

phenotype: the visible properties of an organism that are produced by the interaction of the genotype and the environment.

pheromone: a chemical substance that is produced by an animal and serves especially as a stimulus to other individuals of the same species for one or more behavioral responses.

piscivorous: feeding on fishes.

population: a group of interbreeding organisms that represents the level of organization at which speciation begins.

presence confident: the animal is known, or confidently assumed, to occur in the county or ecoregion.

presence possible: the animal possibly or potentially occurs in the county or ecoregion.

presence probable: the animal is predicted (e.g., based on suitable habitat) to occur in the county or ecoregion.

presumed extirpated: the animal is known to have occurred in the county or ecoregion but is presumed no longer to be present.

protonymph: an immature developmental form of certain arthropods (e.g. mites).

race: a taxonomic category (as a subspecies) representing an interbreeding group within a species; a subspecies.

refugium (plural refugia): an area of relatively unaltered habitat where plants or animals are able to persist during periods of widespread environmental change.

reintroduced: the animal occurs in the county or ecoregion as a result of reintroductions (but is known, or at least strongly presumed, to have been present naturally in the county or ecoregion historically).

reintroduction: the introduction of a species to a particular locality or region after that species had previously been extirpated from that particular locality or region.

remnant population: relictual or persisting population remaining after the main, larger population has disappeared.

resident: an individual or population (usually of birds) that remains in an area for a season or longer.

riparian: relating to or living or located on the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater.

roost: a resting place, usually elevated, utilized by flying species.

sensitive species: a species of conservational concern.

sonogram: graphic representation of sounds, such as vocalizations of animals, usually represented as a sound frequency through time.

spawning: to produce or deposit eggs-used of an aquatic animal.

speciation: the process of biological species formation.

species: a category of biological classification ranking immediately below the genus or subgenus, comprising related organisms or populations potentially capable of interbreeding, and being designated by a binomial that consists of the name of a genus followed by a Latin or latinized uncapitalized noun or adjective agreeing grammatically with the genus name.

stochastic: a random variable.

strutting grounds: a lek or communal breeding ground.

subspecies: a taxonomic category that ranks immediately below a species and designates a morphologically or physiologically distinguishable and geographically isolated group whose members interbreed successfully with those of other subspecies of the same species where the ranges meet.

sympatric: occupying the same range without loss of identity from interbreeding.

systematics: the study of the evolutionary relationships between organisms.

taxon (plural: taxa): a name applied to a group of organisms in a formal system of nomenclature.

taxonomy: the study of the general principles of scientific classification; orderly classification of plants and animals according to their presumed natural relationships.

tetrapod: an amphibian, reptile, bird, or mammal, usually (but not always) having four limbs.

topotype: a specimen from the type locality of its taxon, but not necessarily utilized in the type description.

transient: an individual or a population (usually of birds) that moves through a given area, remaining for much less than a full season.

translocated: moved, usually by humans.

trophic: having to do with feeding.

type locality: the locality of the holotype, used in the original description of a newly named organism.

type race: the race bearing the same name as the species to which it belongs.

type specimen: the holotype or a paratype; a specimen used in the original description of an organism.

umbilicus: in gastropods (snails) the opening (if present) between the whorls of the shell when viewed from below.

unisexual: possessing only one sex (e.g. certain lizards in which males do not exist).

unknown: needs further data development.

vagility: ability to move about.

vertebrate: having a spinal column.

visitant: a migratory bird that appears at intervals for a limited period.

wintering species: a species (usually a bird) that is present in a given area during the winter.

xeric: characterized by, relating to, or requiring only a small amount of moisture.

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three-toed woodpecker	399
trumpeter swan	289
vermilion flycatcher	407
veery	413
white-winged dove	359
whooping crane	343
Williamson's sapsucker	395
yellow-billed cuckoo	365
yellow-breasted chat	439

Birds by scientific name

<i>Accipiter gentilis</i>	309
<i>Aimophila ruficeps</i>	449
<i>Ammodramus savannarum</i>	451
<i>Asio flammeus</i>	383
<i>Aythya affinis</i>	293
<i>Buteo regalis</i>	319
<i>Buteo swainsoni</i>	315
<i>Buteogallus anthracinus</i>	313
<i>Butorides virescens</i>	287

Birds by scientific name (cont'd)

<i>Catharus fuscescens</i>	413
<i>Centrocercus urophasianus</i>	329
<i>Charadrius montanus</i>	347
<i>Chlidonias niger</i>	357
<i>Coccothraustes vespertinus</i>	457
<i>Coccyzus americanus</i>	365
<i>Cygnus buccinator</i>	289
<i>Cypseloides niger</i>	45
<i>Dumetella carolinensis</i>	417
<i>Ectopistes migratorius</i>	361
<i>Empidonax traillii extimus</i>	403
<i>Falco columbarius</i>	323
<i>Falco peregrinus</i>	325
<i>Gallinula chloropus</i>	335
<i>Gavia immer</i>	279
<i>Geothlypis trichas</i>	429
<i>Grus americana</i>	343
<i>Grus canadensis</i>	339
<i>Gymnogyps californianus</i>	297
<i>Haliaeetus leucocephalus</i>	305
<i>Icterus cucullatus</i>	455
<i>Icteria virens</i>	439
<i>Ixobrychus exilis</i>	285
<i>Melanerpes formicivorus</i>	391
<i>Melanerpes lewis</i>	387
<i>Mergus merganser</i>	295
<i>Myiarchus tyrannulus</i>	409
<i>Myioborus pictus</i>	435
<i>Numenius americanus</i>	351
<i>Otus flammeolus</i>	367
<i>Pandion haliaetus</i>	301
<i>Pelecanus erythrorhynchos</i>	281
<i>Phainopepla nitens</i>	425
<i>Picoides tridactylus</i>	399
<i>Pipilo aberti</i>	445
<i>Piranga rubra</i>	443
<i>Polioptila melanura</i>	411
<i>Pyrocephalus rubinus</i>	407
<i>Setophaga ruticilla</i>	433
<i>Speotyto cunicularia</i>	371
<i>Sphyrapicus thyroideus</i>	395

Birds by scientific name (cont'd)

<i>Sterna caspia</i>	355
<i>Strix nebulosa</i>	379
<i>Strix occidentalis</i>	375
<i>Toxostoma crissale</i>	421
<i>Toxostoma lecontei</i>	423
<i>Tympanuchus phasianellus</i>	333
<i>Vireo bellii</i>	427
<i>Zenaida asiatica</i>	359

Mammals by common name

Abert's squirrel	531
Allen's big-eared bat	495
American marten	599
American pika	507
Belding's ground squirrel	515
big free-tailed bat	503
black-footed ferret	607
Brazilian free-tailed bat	499
brown (grizzly) bear	591
cactus mouse	565
dark kangaroo mouse	545
desert kangaroo rat	549
desert pocket mouse	561
desert shrew	475
dwarf shrew	471
fisher	603
fringed myotis	479
gray wolf	587
Idaho pocket gopher	539
lynx	619
Merriam's kangaroo rat	553
Merriam's shrew	467
Mexican vole	577
northern flying squirrel	535
northern river otter	615
northern rock mouse	567
olive-backed pocket mouse	541
Preble's shrew	463
ringtail	583
rock pocket mouse	557
silky pocket mouse	543
southern grasshopper mouse	569

Mammals by common name (cont'd)

spotted bat	55
spotted ground squirrel	521
Stephens' woodrat	573
thirteen-lined ground squirrel	517
Townsend's big-eared bat	491
Utah prairie dog	527
Virgin River Montane Vole.	581
western red bat	487
western small-footed myotis	483
wolverine	611
Wyoming ground squirrel	523
yellow-pine chipmunk	511

Mammals by scientific name

<i>Bassariscus astutus</i>	595
<i>Canis lupus</i>	587
<i>Chaetodipus intermedius</i>	557
<i>Chaetodipus penicillatus</i>	561
<i>Corynorhinus townsendii</i>	491
<i>Cynomys parvidens</i>	527
<i>Dipodomys deserti</i>	525
<i>Dipodomys merriami</i>	553
<i>Euderma maculatum</i>	55
<i>Glaucomys sabrinus</i>	535
<i>Gulo gulo</i>	611
<i>Idionycteris phyllotis</i>	495
<i>Lasiurus blossevillii</i>	487
<i>Lutra canadensis</i>	615
<i>Lynx lynx</i>	619
<i>Martes americana</i>	599
<i>Martes pennanti</i>	603
<i>Microdipodops megacephalus</i>	545
<i>Microtus mexicanus</i>	577
<i>Microtus montanus rivularis</i>	581
<i>Mustela nigripes</i>	607
<i>Myotis ciliolabrum</i>	483
<i>Myotis thysanodes</i>	479
<i>Neotoma stephensi</i>	573
<i>Notiosorex crawfordi</i>	475
<i>Nyctinomops macrotis</i>	503

Mammals by scientific name (cont'd)

[illegible]