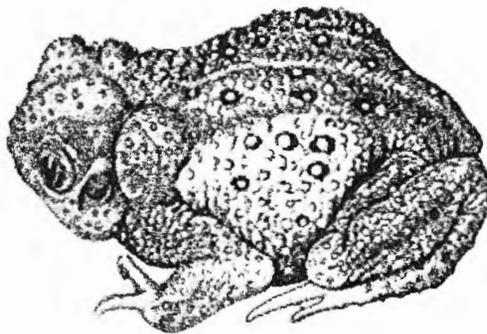
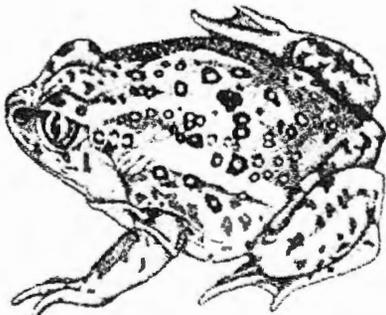


AMPHIBIANS AND REPTILES OF GLEN CANYON

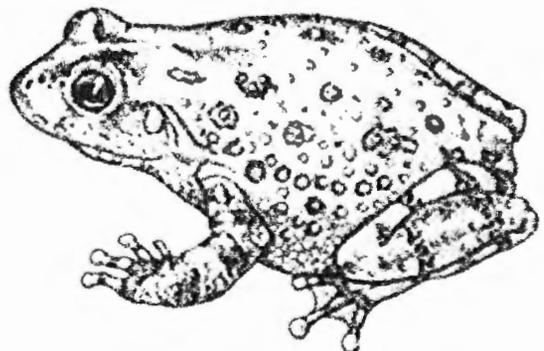
HISTORICAL NATURAL HISTORY SUMMARY



Red spotted Toad



Great Basin Spadefoot Toad



Canyon Treefrog

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October 2000.

**Glen Canyon Species Status Report
Amphibians and Reptiles
Historic Summary**

by
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for the
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1.0 Introduction

The Glen Canyon region of the Colorado River provided a unique refugium and life history zone for many species. Situated on the Colorado Plateau, Glen Canyon was formed by the flowing waters of the Colorado River downcutting through the sedimentary rocks formed by millions of years of deposition. The resulting geologic and ecologic environments defined the living Glen Canyon. While composed of rock, the side canyons and mainstem river corridor provided unique refugia where reptiles, birds, and fish could live, find places to hide from extreme hydrologic events and evolve into the unique assemblages that were found in the Colorado River system.

This report documents the historic reptiles and amphibians found within the Glen Canyon environment. These species lend insight into the ecosystem dynamics of Glen Canyon and throughout the region. Amphibian and Reptile species noted in this report include 6 amphibians and 15 reptiles. These species were all located in Glen Canyon. Today due to the flooding of Glen Canyon by reservoir Powell, the majorities of these species are relegated to fragmented locations or have been extirpated from region.

Fragmentation of the Colorado River and Glen Canyon ecosystems by Glen Canyon dam has separated species, reduced the abilities for natural distribution corridors, and corrupted the ecological processes that historically defined the Colorado River system. Today the remaining species are isolated from their historic genetic distribution patterns with the result eventually leading to species loss. Ecological sustainability requires us to understand the past before we can begin to reconnect the pieces.

This status report, consolidated from historic studies and data, identify the primary amphibian and reptile species that were known to frequent the Glen Canyon area. We have attempted to document the natural history of the species, their habitats, and the ecological interactions that define their use of the Glen Canyon region.

2.0 Status Summary

Although it is difficult to determine if fluctuations in species number and diversity are related to human impacts or natural causes, there are several effects that clearly implicate human populations. Through the creation of Glen Canyon Dam, the canyon itself has been inundated, altering species by destroying the habitat on which they rely. Threats to these native species include not only the dam itself, but also several indirect effects. The first of these is obviously habitat destruction. As the dam prevents natural flooding, native vegetation such as cottonwood and willow cannot regenerate. Many species rely on this indigenous habitat for their survival and once this becomes altered or destroyed, populations are effected. Secondly, once habitats are altered, food sources vary be it vegetation or species of prey. Finally there is a steady increase in tourism at Reservoir Powell creating impacts from motorboats, jet skis, and garbage. This environmental and noise pollution has the potential to greatly effect the species number and diversity in Glen Canyon. Other non-native threats include the introduction of the bullfrog, *Rana catesbeiana*, which is both a predator and competitor for many native species. Environmentally, increased pollution resulting in acid rain has greatly effected tiger salamander populations. UV rays have been linked to harm amphibian eggs, and toxins such as agricultural pesticides and herbicides have aided the decline of many species.

3.0 Amphibian Species Listing

Amphibians

-
- Ambystoma tigrinum nebulosum* Tiger salamander
 - Bufo punctatus* Red-spotted toad
 - Bufo woodhousei*..... Woodhouse toad, Rocky Mountain toad
 - Hyla arenicolor*..... Canyon tree frog
 - Rana pipiens* Northern or Western leopard frog
 - Scaphiopus hammondi* Western spadefoot toad

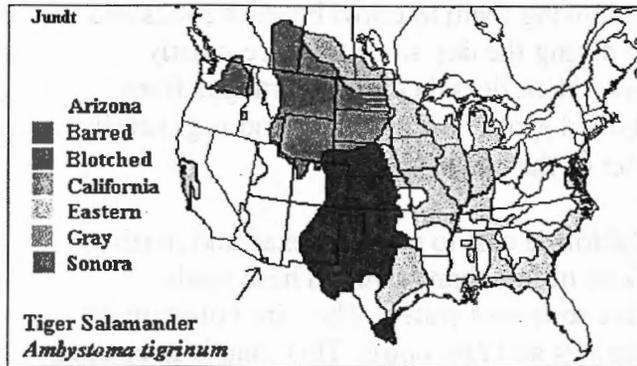
Summary

Several factors have contributed to the decline of amphibian and reptile species diversity and population size. Glen Canyon Dam has created a large impact in the habitat and species that historically utilized the Glen Canyon area. All of the species listed in this report historically relied on Glen Canyon and its surrounding habitat for their survival. Today many of these species are spatially separated from their historic population bases and as a result may not be achieving adequate genetic distribution. It is critical to continue to monitor these species as indicators of the health of this remarkable area.

3.1 *Ambystoma tigrinum nebulosum* Arizona Tiger salamander

The Arizona Tiger Salamander (*Ambystoma tigrinum nebulosum*) has a dark black or gray background with light yellow markings in the form of mottled spots or bars. Some specimens in small populations may look similar to the Gray Tiger Salamander with the black dots on the dark gray background. The Arizona Tiger Salamander is found

throughout western Colorado and New Mexico, southeast to northwestern Arizona, and much of Utah. (see yellow area in distribution map below)



Glen Canyon ecological studies site specimens taken from mile 30 on the San Juan River, and several specimens taken from Navajo country.

Adult & Juvenile

To protect themselves from the hot summer sun, the Tiger Salamander finds shelter in decomposing logs, under rocks and in burrows made by mammals. The salamander comes out of its shelter only when temperatures are cool, for example, at night or after a rainstorm. The life span of the Arizona salamander can reach as long as twenty years.

Reproduction and Spawning

Mating activity occurs underwater, where females lay eggs two days after picking up the male's sperm. The female Tiger Salamander attaches her eggs to vegetation about 2-25cm under the water's surface. After two to four weeks the eggs hatch and the larvae stay hidden in weeds near the top of the pond. It takes three or four months for the larvae of the Tiger Salamander to grow into adults.

Diet

Adult, metamorphosed salamanders eat earthworms, and snails, bugs and larval stages of insects. Larvae feed on aquatic invertebrates and insect larvae, zooplankton, tadpoles and other larvae.

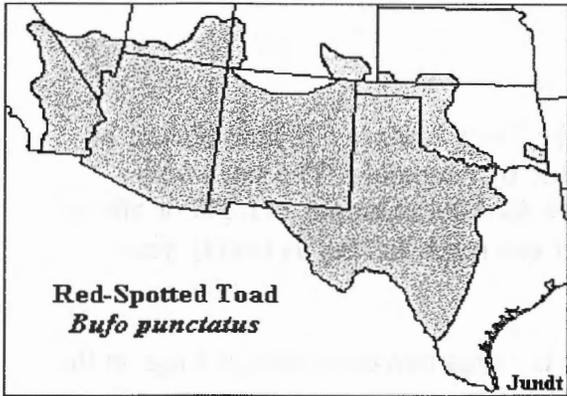
Biotic interactions

Trout readily consume and deplete larval populations, and the two species are only found to coexist where vegetated shallows provide habitat inaccessible to trout. Known predators also include the raccoon, aquatic turtles, western terrestrial garter snake, bullfrog, bass, American white pelican, ring-billed gull, black-crowned night heron, green heron, snowy egret, American kestrel, ducks, common raven, crayfish, and giant water bug. Larval populations can also be affected indirectly by grazing livestock, where bacterial infections are caused by fecal contamination.

3.2 *Bufo punctatus*Red-spotted toad

The Red-Spotted Toad is a smaller toad reaching lengths around 2 1/2 to 3 inches. They have a general body pattern that is flattened, allowing them to crawl beneath rocks and crevices where they spend much of their time during the day since they are mostly nocturnal. Additionally, this toad also burrows. Their dorsal coloration ranges from various shades of brown to gray with scattered red spots. The parotid gland is generally round and equal to or smaller than the diameter of the eye in size.

They are found from extreme southeastern California east to central Texas and north to the southern part of Utah to Kansas at elevations of less than 6000'. These toads generally inhabit drier areas, but need a reliable source of water. They are common in desert canyons or in semi-arid regions with springs and rain pools. This toad is nocturnal, but may be diurnal during the breeding season.



According to the Glen Canyon ecological studies, the red spotted toad was common throughout the Glen Canyon area, primarily utilizing small streams and temporary pools as its habitat. This species can survive drought conditions by living underground and re-appearing after storms when water is available.

Adult & Juvenile

Glen Canyon ecological studies notes adults at Ticaboo Creek mouth and side canyon river mile 140.5; adults common in side canyon with large rocks and water pockets at mile 140.5, adults at Hidden Passage canyon at mile 76.1, immature adults from Aztec Canyon to Rainbow Bridge; adults at side canyon, river mile 44.4 and mouth of Warm Creek, Specimens noted at the mouths of Rock Creek.

Reproduction and Spawning

The red-spotted toad breeds from March to September during or after rains in springs, rain pools, and temporary pools of intermittent streams, often bounded by large rocks. Eggs are laid singly, in short strings with sticky jelly around, sometimes as loose, flat clusters on the bottom of ponds. The eggs hatch in three days and the tadpoles transform in about 40 - 60 days. Glen Canyon ecological studies noted larvae abundant Trachyte Creek mouth; tadpoles in side canyon at river mile 44.4 and mouth of Warm Creek

Diet

Larvae eat suspended matter, algae, plant tissue and organic debris.
Adults consume a variety of terrestrial arthropods such as bugs, and beetles.

Biotic interactions

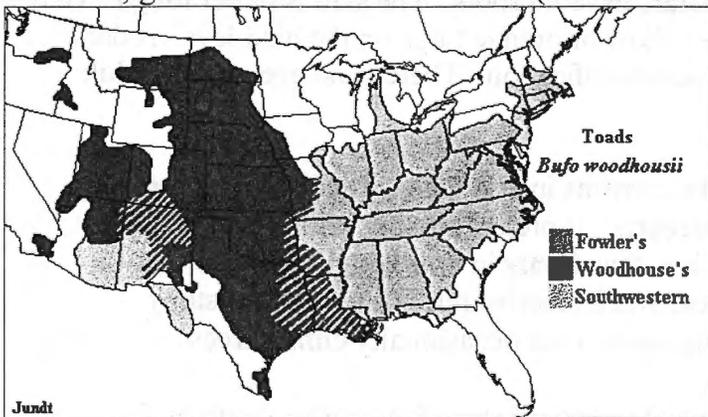
Predators include birds and mammals; in many instances spadefoot larvae consumes red-spotted toad larvae through predation.

3.3 *Bufo woodhousei*.....Woodhouse toad, Rocky Mountain toad

Adult & Juvenile

The Woodhouse's Toad is a fairly large toad attaining lengths greater than 4 inches. They usually have a light line running middorsally down their back. The belly of the Woodhouse's Toad is usually white. Occasionally there may be some other coloration. There is much variability found within the Woodhouse's Toad; within the same area, they usually look the same, but across the country or even a state they can look quite different.

The range extends from southeast Montana down through the Great Plains west to Utah and eastern New Mexico. Woodhouse toads are generally found below 7,000 feet in elevation in wooded bottomlands, mountain canyons, riverbanks, marshes, irrigated farmland, gardens and residential areas. (see the dark blue region on the map below)



Like most toads, it is predominantly nocturnal and burrows underground or hides under rocks and plants when inactive. It is active during the wet and dry weather.

Stream and pond habitat about 5 mi up Ticaboo Canyon from mile 149 in Glen Canyon; lower Kane Creek, mile 40.6; specimens by the river in willow habitat at mile 162; specimens at mouth of Rock Creek and on San Juan River at mile 20; Warm Springs Creek at mile 136.6; many specimens from Navajo Country

Reproduction and Spawning

The Woodhouse Toad breeds in ponds, lakes, reservoirs, flooded areas and other bodies of water lacking a strong current. The eggs are pigmented and laid in two long intertwined strands of up to 25,000 eggs and attached to submerged vegetation or debris. Eggs hatch after about 3 days, followed by the larval period, which lasts about 4-7 weeks.

The life span of the Woodhouse's Toad is unknown. Glen Canyon Ecological Studies noted larvae in stream and pond habitat about 5 mi up Ticaboo Canyon from mile 149 in Glen Canyon

Diet

Tadpoles eat organic debris, algae, suspended matter and plant tissue. Adult toads eat isopods, scorpions, mites, spiders, grasshoppers, crickets, moths, caterpillars, flies, maggots, bugs, and especially, bees, ants and beetles.

Biotic interactions

Predators include raccoons, skunks, snakes (western hognose snake, northern water snake, bullsnake, and garter snakes), bullfrog, herons and fish (eat the tadpoles). Larvae are often consumed by spadefoot toad larvae, insects, and garter and water snakes.

3.4 *Hyla arenicolor*.....Canyon tree frog

Adult & Juvenile

Although rather small (1 1/4- 2 1/4 inches long), the Canyon Tree Frog is plump and toad-like in appearance. It has a well-developed toe pads. The webbing on the hind foot does not extend to the tip of the fifth toe. The Canyon Tree Frog is normally gray to brown color on the dorsal surface, with darker spots or blotches on the back. Some individuals, particularly in Southwest Utah, have no spots. The skin is rather rough. The ventral surface is cream colored with a yellow or orange tinge on the hind legs. A dark edged light spot beneath the eye is a field identification. There is no eye stripe. Adult males have a dusky throat.

The Canyon Tree Frog is found in rocky canyons in arid areas, usually within jumping distance of perennial and intermittent streams. It prefers streams with a hard rocky bottom. In the Intermountain Region, it is found only in Southern Utah. The Canyon Tree frog is predominantly nocturnal and when inactive retreats to rocks or stony crevices. It is largely a ground dwelling species but occasionally climbs trees.

Distribution is shown on the map below. The Canyon tree frog can be found in all tributary creeks entering Glen Canyon.



CANYON TREE FROG
Hyla arenicolor

Bright orange-yellow color on the backs of the thighs is exposed when the frog leaps, a mechanism for startling or confusing the predator. Immatures and adults have been observed at Bridge Canyon, Utah; specimens at mouth of Rock Creek, San Juan River at miles 35 and 20, and Long canyon at mile 95.5

Reproduction and Spawning

The Canyon Tree Frog normally breeds from March to July and possibly as late as August. Breeding maybe delayed during periods of inadequate rainfall. The frog usually lays its eggs in rock bound pools along canyon bottoms. The pigmented eggs are generally attached to objects at the bottom of these pools. Eggs and tadpoles were observed at Bridge Canyon, Utah.

Diet

Metamorphosed adults feed on caterpillars, beetles, ants, bugs, caddisflies, centipedes, spiders, and worms. Like most amphibian species, the larvae feed on algae, plant tissue and suspended organic debris.

Biotic interactions

Predators, although not well known, most likely include various mammals, snakes, and birds.

3.5 Rana pipiensNorthern or Western leopard frog

Adult & Juvenile

The Western leopard frog is common throughout the region. Glen Canyon ecological studies note specimens in Bridge Canyon, and Navajo Country, also below the mouth of Ticaboo Creek at mile 148, and a side stream at mile 109. Observations in Lower Trachyte Creek, in a pool in side canyon at river mile 101.5, Long canyon, pond on river bank at mile 83.3, pools in West Canyon Creek, lower Kane Creek, near mouth of Padre Creek and Warm Creek.

Diet

The leopard frog feed on caterpillars, beetles, ants, bugs, caddisflies, centipedes, spiders, and worms. Like most amphibian species, the larvae feed on algae, plant tissue and suspended organic debris.

Biotic interactions

Preyed upon by garter snakes, and the common bullfrog.

3.6 *Scaphiopus hammondi*Western spadefoot toad

Adult & Juvenile

The Western spadefoot toad is almost entirely nocturnal, with most above ground movement and breeding occurring during rainy nights. It has a plump body, black, wedge-shaped "spade" on inner side of hind foot. Front toes are slightly webbed. Its habitat is mountain valleys and floodplains in the southwest.

The Western spadefoot toad occurs in the tributaries of Glen Canyon. Specimens found on the San Juan at mile 35; and many in Navajo Country.

Reproduction and Spawning

The Western spadefoot toad waits until water temperature is at least 10 degrees Celsius before egg deposition and enters the water only to breed. Eggs are deposited in irregular small cluster, about 25-30 centimeters in diameter, attached to vegetation or debris in shallow temporary pools or sometimes ephemeral streamcourses. Egg clusters rarely number above 42. Eggs are usually hatched within six days. Complete development can rapidly occur within three weeks, but may last up to 11 weeks depending on water temperature, water evaporation, and food resources

Diet

Tadpoles feed on planktonic organisms and algae, but are also carnivorous and will forage on dead vertebrates and invertebrates. Also, spadefoot tadpoles are known to pursue and eat fairy shrimp. The capability of tadpole cannibalism in this genus (*Scaphiopus*) is one of many adaptations that allows for breeding in temporary pools. Spadefoot toads are more likely to express a carnivorous/cannibalistic phenotype when reared with multiple broods that include non-siblings/kin.

Biotic interactions

Placement of mosquito fish by mosquito abatement programs in rain pools threatens some populations. Bullfrogs emigrating into rain pool breeding sites may also pose a threat.

4.0 Reptile Species Listing

Reptiles

- Chrysemys picta belli*Western painted turtle
- Crotaphytus collaris*Collared lizard
- Gambelia wislizeni wislizeni*Long-nosed leopard lizard
- Holbrookia maculata approximana*....Speckled Earless lizard
- Sauromalus obesus multiforaminatus* .Glen Canyon chuckwalla
- Sceloporus magister cephaloflavus*Utah spiny lizard
- Sceloporus undulatus elongatus*Northern plateau lizard
- Sceloporus graciosus graciosus*Great Basin sagebrush lizard
- Uta stansburiana stansburiana*.....Northern side-blotched lizard
- Phrynosoma douglassi hernandesi*.....Mountain short-horned lizard
- Xantusia vigilis utahensis*Utah night lizard
- Cnemidophorus tigris septentrionalis*..Western whiptail
- Cnemidophorus sacki innotatus*Plateau whiptail
- Thamnophis cyrtopsis cyrtopsis*Western black-necked garter snake
- Thamnophis elegans vagrans*..... .Wandering garter snake

4.1 *Chrysemys picta belli*Western painted turtle

Adult & Juvenile

The painted turtle has a somewhat flattened, hard shell that is orange or reddish underneath. Yellow lines are seen on the head and limbs, and the upper jaw is notched at the tip. Habitat typically includes permanent ponds, reservoirs, marshes, river backwaters, and the slowest moving portions of streams. These turtles rarely move far from permanent water, but sometimes colonize nearby seasonally flooded areas before returning to permanent water sources.

Juvenile painted turtles are more sedentary compared to adults, who move throughout their inhabited ponds or roam several kilometers along stream or river segments. Specimens have been taken near a pool at the mouth of Rock Creek, mile 55.6, 3200'. Additional species were taken at Face Canyon, mile 44.4, and Labyrinth Canyon.

Reproduction and Spawning

Mating usually occurs in the spring, but can also take place in summer and fall. Clutch and egg size increases with females' body size, and sex is determined by incubation temperature (temps above 30°C yield only females; temps at about 21-23°C yield only males). When temperature is consistently below 20°C, eggs fail to hatch.

Diet

Painted turtles obtain food from a variety of aquatic sources such as living and dead plants, including bryozoans, worms, leeches, insects at all life stages, water mites, spiders, crustaceans, snails, clams, and fishes. Juveniles feed typically on crustacean

zooplankton. It has been noted that the amount of plant material in a diet may increase with the turtle's size.

Biotic interactions

Raccoons and skunks frequently eat the turtle eggs, sometimes within 24 hrs of the eggs being deposited in nests. Other predators include herons, watersnakes, racers, and bullfrogs. Interestingly, largemouth bass and other often predatory fishes avoid painted turtles, possibly because of the turtles clawing and biting capabilities. Other notes are that these turtles are sometimes infested with leeches and also females are sensitive to nest disturbances.

4.2 *Crotaphytus collaris*Collared lizard

Adult & Juvenile

The collared lizard can be recognized by its large and sometimes bright yellow head. It has a long tail and two areas of black colorization resembling an incomplete collar around the neck. Body color varies from turquoise to greenish to brown and adults are covered with numerous small light spots. The lizard is located throughout the western and south-central U.S., from eastern Utah, Colorado, Kansas, and Missouri, south through Arizona, New Mexico, Oklahoma, Arkansas, and Texas, to northern Mexico. Habitat includes rocky canyons, slopes, and gullies, rocky ledges above cliffs, exposures of bedrock, and areas with scattered large rocks and sparse vegetation.

Adult males tend to be aggressive and territorial towards other males, especially during breeding season when females are present. Younger males avoid adult males whenever possible.

Reproduction and Spawning

Reproductive females develop orange spots on their sides that vary in brightness depending on the females' ovulation stage. Mating takes place in the spring with copulation occurring a day or two prior to bright coloration. Eggs hatch about 7-13 weeks after oviposition and growth is rapid.

Diet

Beetles and grasshoppers comprise the majority of the diet, along with arthropods and small lizards, however, collared lizards are opportunistic feeders and their diets change based on availability. Juveniles eat small insects and spiders

Biotic interactions

The list of predators includes diurnal raptors and snakes. Although perching in the open would make them an easy target, collard lizards continue to do so with lack of concern.

4.3 *Gambelia wislizeni wislizeni*Long-nosed leopard lizard

Adult/ Juvenile

The leopard lizard can be distinguished by its light brownish-gray body with numerous small brown spots. Female has red-orange spots that occur on her sides during the breeding season. Leopard lizard can be found in Oregon, southern Idaho south through southern and eastern California, Nevada, Utah, western Colorado, Arizona, New Mexico, and western Texas to northern Mexico.

Leopard Lizards can be most commonly found on sparsely vegetated, flat or gently sloping shrublands, consisting of greasewood and sagebrush, in or near the mouths of canyons. Lizards may use rodent or other burrows to seek refuge at nighttime and during the winter months.

Reproduction

Mating occurs in the spring and eggs are laid underground in their burrows. Hatchlings appear by the end of the summer and reach maturity in 1-2 yrs.

Diet

Long-nosed leopard lizard diet is dominated by grasshoppers, but also consists of beetles, spiders, wasps, ant lions, caterpillars, and lizards such as the western whiptail, side-blotched lizard, and plateau lizard.

Biotic Interactions

Predators include various raptors, carnivorous mammals, and large snakes.

4.4 *Holbrookia maculata approximana* ..Speckled Earless lizard

Other Common Names: Speckled Earless Lizard, Lesser Earless Lizard

Adult/Juvenile

They are found in southwestern Utah and Colorado, southern South Dakota, eastern Wyoming south through Nebraska, Kansas, Oklahoma, Arizona, New Mexico, and Texas to central Mexico. Body 4 1/2 inches long, short, and somewhat flattened. During breeding season, reproductive females have an orange-yellow of their throat and sides of the body. Dry, rocky or sandy areas along streams, and flat areas with sparse vegetation; lower Sonoran- Transition life zones. The lizard buries itself underground during hot and cold temperature extremes.

Reproduction

6-8 eggs laid early July –August, hatchlings appear August to September

Diet

Earless lizard is an opportunist, feeding on various small invertebrates such as grasshoppers, bugs, ants, Lepidoptera, beetles, and spiders.

Biotic Interactions

Predators include owls, the long-nosed leopard lizard, hog-nosed snake, racer, bullsnake, milk snake, western rattlesnake, various hawks and carnivorous mammals, including the northern grasshopper mouse (*Onychomys leucogaster*)

4.5 *Sauromalus obesus multiforaminatus*Glen Canyon chuckwalla

Adult/ Juvenile

Glen Canyon subspecies of chuckwalla is found only in the Colorado River gorge between Garfield County, Utah and Page County, Arizona. The Glen Canyon chuckwalla is listed on the species of special concern list due to its population and habitat decline. It is a rock-dwelling lizard that occurs around the Colorado River from the Glen Canyon Dam area to near Hite and the Henry Mountains of southeastern Utah. Characteristics include its thick tail with its blunt tip; it has nasal salt-secreting glands that are effective in eliminating salts with minimal water loss. This diurnal lizard emerges in the morning and, before seeking food, basks in the sun until its optimum body temperature of 100 ° F. is reached.

Reproduction

Females lay six to ten white soft-shelled eggs during the summer months

Diet

This desert lizard is primarily vegetarian (unlike other reptiles in the region), and eats fruit, leaves, buds and flowers.

Biotic Interactions

Biotic Interactions are unavailable for this species.

4.6 *Sceloporus magister cephaloflavus*Utah spiny lizard

Adult/ Juvenile

Dorsum with large spiny scales, often scattered yellowish scales on the sides; head yellowish to orange in adult; male: blue patch at center of the throat, vivid black-edged blue or green patch on each side of the belly, large black mark on each side of the neck; females: blue areas faint or absent; found in central California, southern Utah, southwestern Colorado south through Arizona, New Mexico, and western Texas to northeastern Baja California and north-central mainland Mexico. Habitat includes shrub-covered dirt banks and sparsely vegetated rocky areas near flowing streams. Adults remain in a relatively small home range that is fairly constant year to year in contrast to juveniles who move several hundred meters before establishing a home range.

Reproduction

Mating takes place in the spring, clutch size is 2-8 and 2 clutches a year are produced in southern Utah; hatchlings appear in early Aug in southern Utah and occur most often on the ground.

Diet

Feed opportunistically on available arthropods, occasional small lizards such as the western whiptail, and some plant material.

Biotic Interactions

Perch on large rocks, shrubs, or trees such as cottonwoods. They prefer soft soils under greasewood, rabbit brush, or salt-cedar. Predators include various birds that pluck them from their perches, collared lizard, and long-nosed leopard lizard.

4.7 *Sceloporus undulatus elongatus*Northern plateau lizard

Adult/Juvenile

Found in rocky areas throughout eastern Utah, western Colorado, southwestern and south-central Wyoming, and south into northern Arizona and north-western New Mexico. Blue patches on sides of throat don't usually meet at midline; lips and chin never orange or yellow in color, dark crossbands on back often faint, discontinuous or absent, dark lateral stripe usually present on adult male.

Reproduction

Mating occurs in the spring

Diet

Eats whatever small arthropods are available, ants, beetles and grasshoppers dominate their diet.

Biotic Interactions

Taxa *elongates* and *tristichus* intergrade in southwestern Utah.

4.8 *Sceloporus graciosus graciosus*Great Basin sagebrush lizard

Adult/Juvenile

Dorsum has small, spiny scales, usually with a pale dorsal-lateral stripe on each side; rear thigh scales are small, often granular and unkeeled; throat may be blue-mottled, but not distinct; supra ocular scales separated from median head scales by complete rows of small scales. Max size is 15cm TL. Distribution: Washington, Idaho, Montana, and western north Dakota south to northern Baja California, central Arizona, and northwestern New Mexico. Habitat includes pinon-juniper, semi-desert shrubland (including saltbush, sagebrush), montane woodlands.

Reproduction- in So Utah: courtship begins in May ; most females produce 2 clutches/yr and average 4 eggs, laid in June and July; Hatchlings appear early to mid August. Survival is 12-66% for egg-to-yearling stage, 40-50% for yearlings, and 40-70% for adults. In Utah 3/4 of hatchlings don't survive their first year.

Diet

Ants most important food source, other food includes, grasshoppers, flies, beetles, spiders, mites and pseudoscorpions.

Biotic Interactions

The sagebrush lizard perches on junipers and other plants, usually near the ground, but up to heights of 1-2 m. Temp extremes are spent under rocks or in rodent burrows. Predators include assortment of mammals, birds, and reptiles, noted cases include striped whipsnake, plateau lizard, American kestrels, and ash-throated flycatcher.

4.9 Uta stansburiana stansburiana.....Northern side-blotched lizard

Adult/Juvenile

Dorsum uniform color or w/ numerous small light and dark dots, scales along the middle of back are uniform size; dark blotch on the sides of chest , throat often blue with orange rim; a large % of adults have either broken or regenerated tails. Distribution: south-central Washington, southeastern Idaho, western Colorado, southwestern Oklahoma, south through Oregon, California, Nevada, Arizona, New Mexico, and Texas to southern Baja California, and northwestern and north-central mainland Mexico. Abundance increases with amt of precipitation from previous year.

It's found in washes, boulder-strewn ravines, rocky canyon slopes, bedrock exposures, rimrock outcroppings, rocky cliff bases, and flat, shrubby areas in canyon bottoms with soft, deep soils. Open pinon-juniper, semidesert shrubland, patchy stream-side vegetation. Burrow underground in winter.

Reproduction

Courtship begins in the spring following the emergence from hibernation; females may store and use sperm for up to several months after mating. One clutch/season, hatchlings emerge in August.

Diet

Opportunistic foragers; include grasshoppers, beetles, leafhoppers, and other bugs, ants, various insect larvae, and spiders. Cannibalism occasionally occurs (noted that adult males had eaten juveniles).

Biotic Interactions

Predators include striped whipsnake and especially the leopard lizard, also potential from reptiles, birds, mammals, and invertebrates such as spiders and scorpions.

4.10 *Phrynosoma douglassi hernandesi*... Mountain short-horned lizard

Adult/Juvenile

Body wide and flattened, spines at back of the head are the same length as width at the base, one row of enlarged scales fringing each side of the body. Dorsal color orientation blends cryptically with soil. 30-33mm TL in Utah; distribution: southern Alberta and Saskatchewan south through Montana, Wyoming, the western Dakotas, eastern Nevada, Utah, Colorado, western Nebraska, Arizona, New Mexico, and western Texas to south-central Mexico. Habitat varies from short-grass prairie, sagebrush, semidesert shrubland, shale barrens, pinon-juniper, pine-oak, oak-grass, open conifer forests. Note: movement patterns poorly known, but in Utah a juvenile displaced 400m from its capture location returned to that site after 280 days.

Reproduction

Mating in the spring, some females may be unreceptive to males after mating, others mate more than once in a few-day period. This species does not lay eggs, rather it gives birth to live young (eggs develop inside the female during spring and summer –gestation is about 3 months). Neonates quickly shed their sacs and begin feeding after 1-2 hrs from birth.

Diet

Ants dominate the diet, also eat miscellaneous other insects and spiders, also beetles and small grasshoppers.

Biotic Interactions

Little predation info avail; striped whipsnake and burrowing owl

4.11 *Xantusia vigilis utahensis*.....Utah night lizard

Adult/Juvenile

The Utah night lizard is listed as a species of special concern due to its specialized habitat within the Glen Canyon region. It occurs under and among rocks or fallen plant material (e.g. yucca) from Henry Mountains and Natural Bridges National Monument (east of the Colorado River) south to the San Juan River. The Utah Night lizard has lidless eyes and vertical pupils.

Reproduction

Night lizards give birth to live young. They mate in early summer, usually May or June, and 1 to 3 young are born, tail first, a few months later.

Diet

It frequents yucca plants and agaves and feeds on termites, ants, beetles and flies, which it finds among vegetation or rocks.

Biotic Interactions

Biotic Interactions are unavailable for this species.

4.12 *Cnemidophorus tigris septentrionalis*.....Western whiptail

Adult/Juvenile

Body long and slender, dorsum with small granular scales, belly with larger rectangular scales, unmarked or with black marks on the front edge of some; dorsum with light stripes, dark fields broken into separate bars or spots; throat may be pinkish or orangish in adults; distribution: eastern Oregon and southern Idaho, south through California, Nevada, Utah, western Colorado, Arizona and New Mexico, and western Texas to southern Baja California and northwestern and north-central Mexico.

Larger individuals spend more time in the shade than juveniles despite similar thermal preferences and tolerances.

Lowland river valleys, canyon bottoms to adjacent low mesa tops; openly spaced shrubs (greasewood, sagebrush, rabbit brush) or pinon pine; areas along rivers with patchy shrubs and scattered cottonwood trees; winter spent in rodent or self-dug burrows.

Reproduction

Mating from late May to mid June; male and female form temporary monogamous pairs; hatchlings appear in September; clutch size and growth rates increase with arthropod abundance associated with higher precipitation levels

Diet

They feed opportunistically on arthropods, specifically those found in plant litter at the base of perennial plants. Probe leaf litter and climb into plants to get prey. Odors sensed by the tongue help reveal potential prey. Diet includes beetles, grasshoppers, insect larvae, termites, ants, and sometimes scorpions and side-blotched lizards. Also predation on small *Sceloporus* lizards.

Biotic Interactions

Predators include roadrunners, hawks, collared lizards, leopard lizards, whip snakes, and racers, long-nosed leopard lizard.

4.13 *Cnemidophorus sacki innotatus*.....Plateau whiptail

Adult/ Juvenile

Body long and slender, dorsum with small granular scales, belly with large rectangular scales, dorsum and sides with six or seven light stripes, dark fields between the stripes are interrupted by light areas; tail blue (pale in adult; bright in juvenile)

Distribution: southern Utah, western Colorado, northern and central Arizona, and northern and central New Mexico.

Habitat includes pinon juniper, sagebrush, semi-desert and mountain shrublands, lowland riparian zones, encompassing rocky slopes and deep sandy soils in flat areas. Ground-dwelling.

Reproduction

Species consists only of females and reproduces by parthenogenesis. Eggs are laid around June and hatchlings appear mid- to late August.

Diet

Opportunistic feeders –arthropods found on the ground or shallowly buried; includes spiders, caterpillars, grasshoppers, crickets, adult and larval beetles, aphids, leafhoppers and other insects; ants eaten infrequently;

Biotic interactions: predators include various birds, reptiles, and mammals

4.14 *Thamnophis cyrtopsis cyrtopsis*.....Western black-necked garter snake

Adult/Juvenile

Aquatic snake; Sees well in the air, but poor underwater vision; moderately fragile tail that breaks between rather within the vertebrae and doesn't significantly regenerate.

Biotic interactions

Prey on amphibians in temporary pools in both lowland and upland areas; native stream associated spp include red-spotted toad, plains leopard frog, black-necked garter snake, and plains garter snake. Black-necked garter snake sometimes preys on Woodhouse toads. Garters are preyed upon by racers

4.15 *Thamnophis elegans vagrari*.....Wandering garter snake

Adult/Juvenile

Aquatic snake; Sees well in the air, but poor underwater vision; moderately fragile tail that breaks between rather within the vertebrae and doesn't significantly regenerate.

Biotic interactions

Prey on amphibians in temporary pools in both lowland and upland areas; native stream associated spp include red-spotted toad, plains leopard frog, black-necked garter snake, and plains garter snake.

5.0 Summary

Several factors have contributed to the decline of amphibian and reptile species diversity and population size. By far, Glen Canyon Dam has created a large impact in the habitat and species associated. All of the species listed in this report currently rely on Glen Canyon and its surrounding habitat for their survival. It is critical to continue to monitor these species as indicators of the health of this remarkable area.

6.0 Literature Cited

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