

Amphibian and Reptile Diversity of the Lahontan Valley

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Amphibians are potentially good indicators of ecosystem health because of their two stage life-cycle (aquatic and terrestrial stages) and their permeable skin. The aquatic and terrestrial life stage exposes them to disturbances in both habitats, and their permeable skin allows harmful chemicals to easily enter the body. As of recent, there is much interest in the apparent global amphibian decline (Barinaga 1990 and Blaustein and Wake 1990). There may or may not be one global reason for the decline; most likely, these declines are due to localized disturbances (Blaustein 1994). One problem determining if amphibians are declining is that many amphibian species have secretive lives and unusual life cycles. To mitigate this, long-term studies are needed to determine whether or not populations are really declining (Pechmann et al. 1991 and Blaustein 1994).

Little information exists on the distribution of amphibians and reptiles in the Lahontan Valley (Linsdale 1940, LaRivers 1942 and Banta 1965). The work contained in this summary can be considered baseline data for future monitoring of amphibian and reptile diversity in the Lahontan Valley. I compiled a species list and estimated relative abundances (Table 1) of amphibians and reptiles for the Stillwater National Wildlife Refuge (SNWR), Stillwater Wildlife Management Area (SWMA), and Carson Lake (CL). The above was accomplished with casual observations, personnel interviews, collection of roadkills, and a timed visual encounter surveys according to the methods in Heyer et. al. (1994). All specimens were identified to species using Stebbins 1985. Visual encounter surveys consist of walking a specific area and numerating all the species observed. A total of eleven sites were surveyed at least twice from 4 April 1995 until 21 August 1995.

Table 1: Species observed at Stillwater National Wildlife Refuge, Stillwater Wildlife Management Area and Carson Lake from 4 April 1995 until 21 August 1995, and their relative abundances.

Taxon	Species (Latin Name)	Relative abundance
Lizards	Desert Horned Lizard ( <i>Phrynosoma platyrhinos</i> )	U
	Zebra-tailed Lizard ( <i>Callisaurus draconoides</i> )	U
	Long-Nosed Leopard Lizard ( <i>Gambelia wislizenii</i> )	A
	Great Basin Collard Lizard ( <i>Crotaphytus insularis</i> )	C
	Side-blotched Lizard ( <i>Uta stansburiana</i> )	A
	Sagebrush Lizard ( <i>Sceloporus graciosus</i> )	U
	Western Fence Lizard ( <i>Sceloporus occidentalis</i> )	U
	Desert Spiny Lizard ( <i>Sceloporus magister</i> )	C
	Great Basin Whiptail Lizard ( <i>Cnemidophorus tigris</i> )	A
Snakes	Great Basin Gopher Snake ( <i>Pituophis melanoleucus</i> )	C
	Western Aquatic Garter Snake ( <i>Thamnophis couchii</i> )	U
	Wandering Garter Snake ( <i>Thamnophis elegans vagrans</i> )	A
	Racer ( <i>Coluber constrictor</i> )	U
	Long-nosed Snake ( <i>Rhinocheilus lecontei</i> )	U
Amphibians	Great Basin Spadefoot ( <i>Scaphiopus intermontanus</i> )	U
	Bullfrog ( <i>Rana catesbeiana</i> )	C
	Northern Leopard Frog ( <i>Rana pipiens</i> )	C

\* U = uncommon; C = Common; A = Abundant

### Lizards

The most abundant lizard species in the surveyed area are the great basin whiptail, long-nosed leopard lizard and the side-blotched lizard (Table 1). These species were seen in all desert habitats. Zebra-tailed lizard, and desert horned lizard were the least abundant lizard species in the survey area. The relatively low abundance of these lizard species may be due to the lack of preferred habitat (open desert scrub with small hard substrate) in the surveyed areas. The great basin collard lizard was found at one site, Stillwater point (SNWR). This area has the preferred habitat (open areas with large boulders) of the great basin collard lizard. The maintenance of open desert scrublands and stabilized sand-dunes would be beneficial for maintaining many desert

lizard species.

### Snakes

The great basin gopher snake and the wandering garter snake were the most abundant snake species in the survey area (Table 1). These two species were found at all sites associated with water. A young western aquatic garter snake was observed in the rip rap below a water control structure at Indian Lakes (SWMA). This is unusual because fast moving streams in the Sierra Nevadas is where the western aquatic garter snake is commonly found. Lack of some desert snake species (i.e. striped whipsnake, western patch-nosed snake, and long-nosed snake) during this survey is of interest. These species being absent may be contributed to human disturbances, the lack of fresh water, or the recent drought; however, none of these hypotheses are mutually exclusive. Another possibility may be that the densities of these snakes are so low that none were encountered during the survey.

### Amphibians

The most abundant amphibian species found in the Lahontan Valley was the introduced bullfrog (Table 1). However, this species was not found in alkaline areas. A remarkable find was that the great basin spadefoot toad breed at timber lakes (SWMA), an area that was dry since 1986. Toadlets (newly metamorphosed individuals) were very abundant during late June. The maintenance of a high water table would allow the adults to burrow into rehydrate and egest during the summer months and would be beneficial for maintaining this unusual amphibian. In addition, this amphibian prefers to breed in ephemeral ponds, and spring floods of fresh water would be beneficial for their breeding. Another interesting finding was the presence of the northern leopard frog at Carson Lake and the Stillwater Point Reservoir (SNWR). These two areas are alkaline, and there are other known populations of northern leopard frog living in brackish waters in the Salton sea (Ruibal 1959). I suspect that the northern leopard frog breeds at the major inflows in order to minimize the effect alkaline water has on the eggs (the vulnerable stage). The maintenance of this inflow during the breeding season is critical for the preservation of this unique population. In addition, the maintenance of wet meadows during the summer months would provide feeding grounds for the adult and juvenile northern leopard frogs.

### Conclusions

The diversity of lizards species in the surveyed area was high, all desert species of lizards were found. The absence of desert snake species often found in nearby areas is of interest and should be investigated further. I believe the most significant find of this work was the northern leopard frog living in the alkaline water of Carson lake and Stillwater Point Reservoir.

#### Literature cited

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