

Southeastern Utah's Amphibians



Southeastern Utah's Amphibians (Amphibian Species)

Thirteen amphibian species inhabit the ecosystems of southeastern Utah. Only the bullfrog (*Rana catesbeiana*) is exotic. All others are native and were likely present at the time of settlement (1847). The spotted frog (*Rana pretiosa*), which inhabits the west side of the Wasatch Plateau, has been included due to its high interest value as a Utah Division of Wildlife Resources listed threatened species. There is the potential for land use activities on the east side of the Wasatch Plateau to negatively impact the critical valued habitats of the spotted frog due to the westerly dip of groundwater flow.

To date no amphibian species in the region appear to be in jeopardy. Such is not the situation from a worldwide perspective. Caution and forethought relative to environmental protection should guide decisions regarding development and amphibians.

Amphibian dependence on water sources is evident in Table 2, where the wetland ecosystems contain the highest proportion of amphibians as compared with all other ecosystems. The agricultural ecosystem also supports a wide variety of species due primarily to the provision of water by irrigation practices. The majority of amphibian species in southeastern Utah inhabit the cold desert ecological association, followed by submontane, and montane zones. The tiger salamander (*Ambystoma tigrinum*) is the only species to inhabit the alpine, spruce/fir, aspen, and ponderosa ecosystems at montane elevations. It utilizes these ecosystems for foraging and burrowing, but maintains a close association with wetland areas (Table 2).

Moisture is the major limiting factor for the success of amphibian populations. Amphibians are dependent upon perennial, intermittent, or ephemeral water sources. Their scaleless skin, when exposed to air, will lose ambiotic fluid; particularly in dry environments with little humidity. They regain lost body fluid by absorbing it back through the skin from water sources or moist soil. Amphibians can be affected by changes to quantity of water and water quality parameters that include, but are not limited to, temperature, pH, dissolved oxygen concentrations, and turbidity. If such changes occur, amphibian species do not have the ability to move great distances to new localities.

Generally, pH 6.5 to 9.0 is considered suitable for maintaining healthy populations of aquatic life as long as rapid fluctuations within this range are avoided. Dissolved solid concentrations exceeding 15,000 ppm result in the disappearance of most aquatic life. Adult frogs can survive 10,000 ppm dissolved solids, whereas eggs suffer negative impacts at 5,000 ppm. Turbidity can also affect the survival and growth rate of aquatic organisms. Silt can adhere to eggs and kill them by preventing oxygen and carbon dioxide exchanges.

Life requisite information in this section has been focused towards the identification of preferred aquatic characteristics for amphibians. Breeding dates and optimum water temperatures have been specified. The length of time required for the metamorphosis of the larval form to adult is also indicated. Negative impacts could result to the reproductive behavior, egg development, metamorphosis, and survival of amphibian populations when life requisites and habitat requirements are not taken into account. If land use plans can be developed to avoid crucial biological periods, as well as impacts to critical valued habitats, amphibian species are likely to maintain healthy populations.

Table 2. Numbers (#) of amphibian species that now (1990) inhabit geographic areas and the proportion (%) of that total which each ecosystem by ecological association within southeastern Utah.

Geographic Areas (Elevation in feet)/#	Proportion (%) of species that inhabit each ecosystem by (1) Cold Desert (3,700 -5,800 ft.); (2) Submontane (5,500-8,500 ft.); and (3) Submontane (6,500-12,721 ft.) ecological associations.																																																										
	UPLANDS																		WETLANDS																																								
	Urban			Agricultural			Alpine			Spruce/Fir			Aspen			Ponderosa			Sagebrush/Grass			Mountain Brush			Pinyon/Juniper			Saltbrush/Grass			Blackbrush			Grassland			Barren			Marsh			Mesic Meadow			Riparian			Stream			Lake							
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3								
Wasatch Plateau (5,500-10,741)/8	12	12		87					12			12			12			12			50	12			37			25						50	12			0	0			87	62			87	62			87	62			87	62			87	62
Tavaputs Plateau (5,500-10,118)/8				87					12			12			12			50	12			37			25						62	12			0	0			87	50			87	50			87	50			87	50							
Cedar Mountain (5,500-7,664)/5																		60			40			20						80			0			100			100			100			100			100			100								
Henry Mountains (5,500-11,506)/9				100					12			12			12			50	12			37			25			37			62	12			0	0			100	37			100	37			100	37			100	37							
Abajo/Elk Ridge (5,500-11,362)/9	11			100					11			11			11			44	11			33			33			44			55	11			0	0			100	44			100	44			100	44			100	44							
LaSal Mountains (5,500-12,72)/9	11			100					11			11			11			44	11			33			33			44			50	11			0	0			100	44			100	44			100	44			100	44							
Dolores Triangle (3,937-7,428)/6				100	83													50	50			33			17			50			33	33			67	67			0	0			100	83			100	83			100	83							
San Rafael Desert (4,120-7,920)/7	14	14		86	100													57	57			43			29			57			43	43			71	71			0	0			86	100			86	100			86	100							
Burr Desert (4,500-6,522)/6	17			100														67	67			50			33			67			50	50			83	83			0	0			100	100			100	100			100	100							
Cisco Desert (3,937-5,300)/7	14			100														57										57			71			0			100			100			100			100			100										
Canyonlands (3,700-10,388)/10	17	10		90	90							10			10			10	40	40	10			30			30			50			40	40			60	60	20			0	0	0	90	90	40			90	90	40			90	90			

Amphibian Species (* high-interest because of economic, aesthetic, educational, scientific, or ecological value.	Relative Abundance ¹	indigenous/exotic	Relative Biological value of Ecosystems: (C) critical; (H) high priority; (S) substantial; (L) limited																				
			Urban	Agricultural	Alpine	Spruce/Fir	Aspen	Ponderosa	Sagebrush/grass	Mountain Brush	Pinyon/juniper	Saltbrush/grass	Blackbrush	Grassland	Barren	wetlands							
																Marsh	Mesic Meadow	Riparian	Stream	Lake			
Family: Ambystomatidae tiger salamander <i>Ambystoma tigrinum</i>	c c k c c c k c c c c	Indigenous Wasatch Plateau Tavaputs Plateau Cedar Mountain Henry Mountains Abajo/Elk Ridge LaSal Mountains Dolores Triangle San Rafael Desert Burr Desert Cisco Desert Canyonlands	S	S	L	L	L	L	L	L	L	L	L		C	C	C	C	C	These fossorial, nongame, insectivorous salamanders inhabit all elevations. Breeding occurs from March to June in perennial or intermittent waters with a pH of 6.8 to 9.6, and water temperatures greater than 50°F. Eggs hatch after 14 days. Where conditions limit metamorphosis, larvae can breed. Only the Utah subspecies (<i>A.t. utahensis</i>) is known to inhabit southeastern Utah. The Arizona subspecies (<i>A.t. nebulosum</i>) may be found in the Canyonlands area. The introduction of bullfrogs, crayfish, and fish could be detrimental to populations.			
				L								S	S	S		C	C	C	C		C	These nongame toads inhabit cold desert, submontane, and montane elevations. They are insectivorous. Breeding occurs during May-July rains at perennial or intermittent waters. Eggs are laid on vegetation. They hatch within 2 days and metamorphosis to adult occurs within 4 to 6 weeks. They are restricted to the Four Corners area on the Navajo Indian Nation.	
Family: Pelobatidae western spadefoot <i>Scaphiopus hammondi</i>	k k k k k k k k k l	Indigenous Wasatch Plateau Tavaputs Plateau Cedar Mountain Henry Mountains Abajo/Elk Ridge LaSal Mountains Dolores Triangle San Rafael Desert Burr Desert Cisco Desert Canyonlands		L										S	S	S		C	C	C	C		C

1. Relative Abundance: (c) common; (u) uncommon; (l) limited; (r) rare; (e) endangered; (t) threatened; (o) occasional; (a) accidental; (k) unknown to inhabit area

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																Marsh	Mesic Meadow	Riparian	Stream	Lake	
Great Basin spadefoot <i>Scaphiopus intermontanus</i>	c c c c c c c c c c c c	Indigenous Wasatch Plateau Tavaputs Plateau Cedar Mountain Henry Mountains Abajo/Elk Ridge LaSal Mountains Dolores Triangle San Rafael Desert Burr Desert Cisco Desert Canyonlands		S		S	S	S	S	S	S	S	S			C	C	C	C	C	These insectivorous, nongame toads inhabit cold desert, submontane, and montane zones. They are nocturnally active at air temperatures of 54-69°F. Breeding occurs during May-July rains in springs and temporary pools. Females probably produce just one clutch a year. Metamorphosis from egg to adult is rapid and can occur in as little as two weeks. These toads require loose soil that can be easily burrowed into for overwintering. Underground burrows are also utilized during dry periods.
Mexican spadefoot <i>Scaphiopus multiplicatus</i>	k k k k l l k k k k l	Indigenous Wasatch Plateau Tavaputs Plateau Cedar Mountain Henry Mountains Abajo/Elk Ridge LaSal Mountains Dolores Triangle San Rafael Desert Burr Desert Cisco Desert Canyonlands		L						S	S	S				C	C	C	C	C	

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																Marsh	Mesic Meadow	Riparian	Stream	Lake	
Family: Bufonidae western toad <i>Bufo boreas</i>	u u k k k k k k k k k	Indigenous Wasatch Plateau Tavaputs Plateau Cedar Mountain Henry Mountains Abajo/Elk Ridge LaSal Mountains Dolores Triangle San Rafael Desert Burr Desert Cisco Desert Canyonlands		L												C	C	C	C	C	
			These insectivorous, nongame toads inhabit montane zones. They are active at air temperatures of 37- 85°F. Breeding occurs in shallow, vegetated, stillwater areas from January to September. Eggs are usually deposited in May or June. Metamorphosis usually takes 30-45 days. However, at elevations exceeding 9,000 ft., metamorphosis is delayed until the following summer. During dry conditions, they excavate burrows in loose soil or utilize those of other animals. The Boreal subspecies (<i>B.b. boreas</i>) inhabits southeastern Utah.																		
Great Plains toad <i>Bufo cognatus</i>	c c c c c c c c c c c	Indigenous Wasatch Plateau Tavaputs Plateau Cedar Mountain Henry Mountains Abajo/Elk Ridge LaSal Mountains Dolores Triangle San Rafael Desert Burr Desert Cisco Desert Canyonlands		S					S	S		S	S	S		C	C	C	C	C	
			These nongame toads prefer grassland areas of cold desert and submontane zones. They are insectivorous. Breeding begins during March-September rainfalls in clear, shallow, ephemeral or intermittent pools. Eggs are deposited on submerged debris when water temperatures are 55-68°F. Larvae hatch in 2-3 days, and metamorphosis is complete after about 17 days, depending on temperatures. Although this species can be found in irrigated cropland, reproduction success in these areas is unknown.																		

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		Distribution by Geographic Area	Urban	Agricultural	Alpine	Spruce/Fir	Aspen	Ponderosa	Sagebrush/grass	Mountain Brush	Pinyon/juniper	Saltbrush/grass	Blackbrush	Grassland	Barren	wetlands						
																Marsh	Mesic Meadow	Riparian	Stream	Lake		
*spotted frog <i>Rana pretiosa</i>	t k k k k k k k k k k	Indigenous Wasatch Plateau Tavaputs Plateau Cedar Mountain Henry Mountains Abajo/Elk Ridge LaSal Mountains Dolores Triangle San Rafael Desert Burr Desert Cisco Desert Canyonlands		L													C	C	C	C	C	These nongame frogs inhabit submontane and montane zones. They are insectivorous and diurnal. Breeding occurs from mid-February through August in permanent cold water pools which lack emergent vegetation. Males reach sexual maturity after 1-2 years and females after 2-3 years. They are considered to be state listed, threatened animals. Without proper management, they may soon become federally listed as threatened. Most likely, no populations persist on the east side of the Wasatch Plateau. However, they are present on the west side.
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