## **Chiricahua leopard frog (*Lithobates chiricahuensis*)**

Status

Threatened (67 FR 40790; June 13, 2002) with Designated Critical Habitat (77 FR 16324; March 20, 2012).

Species Summary Table

|  |  |  |  |  |  |
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|  | Feeding | | Breeding | Sheltering | |
| Juvenile | Adult | Adult | Juvenile | Adult |
| Habitat | Springs, livestock tanks, and streams in upper portions of watersheds | Springs, livestock tanks, and streams in upper portions of watersheds | Springs, livestock tanks, and streams in upper portions of watersheds | Springs, livestock tanks, and streams in upper portions of watersheds | Springs, livestock tanks, and streams in upper portions of watersheds. |
| Prey | Algae, organic debris, plant tissue | Arthropods and other invertebrates | Arthropods and other invertebrates | N/A | N/A |
| Perches | N/A | N/A | N/A | N/A | N/A |
| Cover | Water and aquatic vegetation. | Water and aquatic or emergent vegetation. | Water and aquatic or emergent vegetation. | Aquatic or emergent vegetation. | Water and aquatic or emergent vegetation. |
| Temperature | Warm water temperatures | Warm water temperatures | Water at 12 to 31.5 degrees Celsius for egg masses | N/A | N/A |
| Lighting | Primarily daylight hours | Active both day and night | Active both day and night | N/A | N/A |
| Moisture | High moisture | High moisture | High moisture | High moisture | High moisture |
| Sound | N/A | N/A | N/A | N/A | N/A |
| Water | Permanent and semi-permanent water systems. | Permanent and semi-permanent water systems. | Permanent and semi-permanent water systems. | Permanent and semi-permanent water systems. | In proximity to permanent and semi-permanent water systems. |
| Dispersal | N/A | Male = 161 to 375.7 m2. Females = 57.1 to 92.2 m2. | Male = 161 to 375.7 m2. Females = 57.1 to 92.2 m2. | N/A | 1 mi. overland,  3 mi. along ephemeral or intermittent drainages, 5 mi. along perennial drainages. |
| Seasonal Activity | Born in spring and summer | Active February through November | At high elevation, May through August, and at lower elevations mid-February through June | Overwinter November through February | Overwinter November through February |

Life History

*Species Description and Ecology*

A medium to large sized frog with the snout to vent length of adult frogs measuring between 2 and 5.4 inches. Coloration is green on the head and back, and dark dorsal spots are present. Underneath coloration is a dull whitish progressing towards yellow on the groin and lower abdomen with gray mottling often present on the throat and sometimes the chest. Distinctive patterns to the species are small, raised, cream-colored spots over a dark background on the rear of the thighs, faint or absent upper lip stripe in front of the eye, and dorsolateral folds that are broken toward the rear of the body and angling inward.

The Chiricahua leopard frog (CLF) is highly aquatic; adults will eat arthropods and other invertebrates, while larvae are herbivorous and consume algae, plant tissue, and organic debris. Adults are active both day and night, while juveniles are less active during the night. Home ranges for the CLF vary based on sex and season. Male home ranges may range from 161 square metersduring the dry season to 375.7 square metersduring the wet season. For females, home ranges range from 57.1 square meters during the dry season, to 92.2 square meters during the wet season. From November to February, post-metamorphic CLFs are generally inactive and will overwinter along with some tadpoles; however, detailed studies of overwintering habitat and activity have not been done (AGFD 2015 and USFWS 2012).

*Reproduction*

The species breeds in late May through August at higher elevations. At lower elevations, breeding occurs from mid-February through June and sporadically until September and October. Females deposit 300-1,485 eggs grouped into spherical masses and attached to submerged vegetation within 5 centimeters of the surface. Water temperature ranges needed for CLF embryos has been documented as ranging between 12.0 and 31.5 degrees Celsius. Eggs will hatch in approximately 14 days and larvae metamorphose in 3 to 9 months after hatching (AGFD 2015).

*Suitable Habitat*

The CLF is found in permanent and semi-permanent aquatic systems in a variety of habitats including oak, mixed oak and pine woodlands, and also chaparral, grasslands and desert habitats. Aquatic systems that typically support the species include cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers at elevations ranging from 3,280 to 8,890 feet (AGFD 2015).

Primary Constituent Elements (PCEs) for CLF habitat were identified for two distinct habitat types: breeding habitat, and dispersal and non-breeding habitat. The PCEs that were identified in the 2012 Designation of Critical Habitat for the species include:

1. Aquatic breeding habitat and immediately adjacent uplands exhibiting the following characteristics:
   1. Standing bodies of fresh water (with salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present), including natural and manmade ponds, slow-moving streams or pools, and other ephemeral or permanent water bodies that typically hold water or rarely dry for more than a month. During periods of drought, or less than average rainfall, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but they would still be considered essential breeding habitat in non-drought years.
   2. Emergent and/or submerged vegetation, root masses, undercut banks, fractures rock substrates, or some combination thereof, but emergent vegetation does not completely cover the surface of water bodies.
   3. Nonnative predators absent or occurring at levels that do not preclude presence of the CLF.
   4. Absence of chytridiomycosis, or if present, then environmental, physiological, and genetic conditions are such that allow persistence of CLF.
   5. Upland habitats that provide opportunities for foraging and basking that are immediately adjacent to or surrounding breeding aquatic and riparian habitat.
2. Dispersal and nonbreeding habitat, consisting of areas with ephemeral (present for only a short time), intermittent, or perennial water that are generally not suitable for breeding, and associated upland or riparian habitat that provides corridors (overland movement or along wetted drainages) for frogs among breeding sites in a metapopulation with the following characteristics:
   1. Are not more than 1.0 mile (1.6 kilometers) overland, 3.0 miles (4.8 kilometers) along ephemeral or intermittent drainages, 5.0 miles (8.0 kilometers) along perennial drainages, or some combination thereof not to exceed 5.0 miles (8.0 kilometers).
   2. In overland and nonwetted corridors, provide some vegetation cover or structural features (e.g., boulders, rocks, organic debris such as downed trees or logs, small mammal burrows, or leaf litter) for shelter, forage, and protection from predators; in wetted corridors, provide some ephemeral, intermittent, or perennial aquatic habitat.
   3. Are free of barriers that block movement by CLFs, including, but not limited to, urban, industrial, or agricultural development; reservoirs that are 50 acres (20 hectares) or more in size and contain nonnative predatory fish, bullfrogs, or crayfish; highways that do not include from fencing and culverts; and walls, major dams, or other structures that physically block movement.

Threats

The most serious threats to the species is an introduced fungal skin disease (chytridiomycosis [also called chytrid or “Bd”] and predation by non-native organisms, particularly bullfrogs, sport fishes, crayfish and barred tiger salamanders. Other threats include habitat alteration, destruction, and fragmentation (USFWS 2002).

Range and Survey History

Within Arizona, the range of the Chiricahua leopard frog is divided into two distinct populations. The northern (Mogollon Rim) population occurs in montane areas of central Arizona, extending east and south along the Mogollon Rim into montane New Mexico. The southern population occurs in mountains and valleys south of the Gila River, with the population extending through southeastern Arizona into southwestern New Mexico, and Mexico.

Surveys predominantly focused in the southern portion of the CLFs range, have been conducted since the mid 1980s to document the species status and distribution. From 1990 to 1997, these frogs were reported at 61 different sites in southeastern Arizona and 15 sites in central and east-central Arizona. However, since 1995 this species has not been found in the following drainages or river main stems where it historically occurred: White River, East Clear Creek, West Clear Creek, Silver Creek, Tonto Creek, Verde River mainstem, San Francisco River, San Carlos River, upper San Pedro River mainstem, Santa Cruz River mainstem, Aravaipa Creek, Babocomari River mainstem, and Sonoita Creek (USFWS 2000).

Include information in this section to establish an environmental baseline (i.e. survey data, local status, etc) for the CLF within your projects vicinity. The following references and resources may assist in establishing an environmental baseline. Always obtain permission from the ADOT biologist prior to contacting outside agencies about an ADOT project.

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| US Fish and Wildlife Service | | | |
| Cat Crawford | Species Lead | (520)670-6150 ext. 232 | Cat\_Crawford@fws.gov |
| Website: https://www.fws.gov/southwest/es/arizona/CLF\_Recovery\_Home.htm | | | |

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| Arizona Game and Fish Department | | |
| Audrey Owens | Ranid Frogs Program Coordinator | aowens@azgfd.gov |
| Hunter McCall | Wildlife Specialist | hmccall@azgfd.gov |
| Cody Mosley | Wildlife Specialist | cmosley@azgfd.gov |
| Website: https://www.azgfd.com/wildlife/speciesofgreatestconservneed/chiracahualeopardfrog/ | | |

Notes: 1Consultants are NOT to discuss potential effect findings with outside agencies.

2Red text is to be removed prior to placing this evaluation into a Biological Evaluation.

References

AGFD. 2015*. lithobates chiricahuensis*. Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, Arizona.

US Fish and Wildlife Service. 2000. “Endangered and Threatened Wildlife and Plants; Proposal to List the Chiricahua Leopard Frog as Threatened With a Special Rule.” *Federal Register* 65(115):37343–37357.

\_\_\_\_. 2002. “Endangered and Threatened Wildlife and Plants; Listing of the Chiricahua Leopard Frog (Rana chiricahuensis).” *Federal Register* 67(114):40790–40811.

\_\_\_\_. 2012. “Endangered and Threatened Wildlife and Plants; Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog.” *Federal Register* 77(54):16324-16434.