

**ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM**

Animal Abstract

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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Rana subaquavocalis*
COMMON NAME: Ramsey Canyon Leopard Frog
SYNONYMS:
FAMILY: Anura: Ranidae

AUTHOR, PLACE OF PUBLICATION: Platz. 1993. J. of Herpetology 27(2): 154-162.

TYPE LOCALITY: Ramsey Canyon, 7 km southwest of Sierra Vista, Cochise County, Arizona.

TYPE SPECIMEN: American Museum of Natural History. #136096. J.E. Platz. 24 May 1990.

TAXONOMIC UNIQUENESS: Large genus, including Old and New World species. *R. subaquavocalis* is part of the *R. pipiens* complex from the central United States. No subspecies are recognized. There is some dispute concerning the taxonomic uniqueness of this species when compared to *R. chiricahuensis*. Further genetic analyses are required.

DESCRIPTION: Like other ranid frogs, *R. subaquavocalis* is highly aquatic with webbed hind feet. Snout-ventral length averages 83.0 mm (3.24 in.) for males, 105.0 mm (4.2 in.) for females. Dorsal skin is green to olive brown in color with large brown spots that are round to elongate. Thigh pattern is salt and pepper like, formed by small whitish tubercles on the dark thighs. Dorsolateral folds are broken towards rear and inset medially. There is an incomplete lip stripe on the upper jaw. As in the very similar *R. chiricahuensis*, eyes are upturned and set high on the head. Adult male can be distinguished from females by the presence of prominent, gray thumb pads and external vocal sacs. Males have well-developed vestigial oviducts. Adult females have pigmented ovarian eggs, which are lacking in juvenile specimens. When originally described, it was thought that *R. subaquavocalis* only produced mating calls while completely submerged underwater and that the calls were inaudible in air (Platz 1993b). Further observation has indicated that the males also produce audible calls and probably do so with their heads above the water's surface.

AIDS TO IDENTIFICATION: *R. subaquavocalis* is large, with small white tubercles forming a salt and pepper pattern on the dark rear thighs. The species is found only in the Huachuca Mountains.

ILLUSTRATIONS: B&W photo (Platz 1993b:155)

TOTAL RANGE: *R. subaquavocalis* is only found in the Huachuca Mountains, Cochise County, Arizona. There is speculation that the historical range may have included the San Pedro River Valley and parts of Chihuahua, Mexico (Platz 1997). Its current known range is limited to aquatic habitats in Tinker, Brown, Ramsey, and Miller canyons and several residential ponds in the area.

RANGE WITHIN ARIZONA: See "Total Range."

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: Adults are able to reach at least 10 years of age postmetamorphosis (Platz et al. 1997).

Although detailed study on movement of adults has not been done, marked frogs have moved several hundred meters within Ramsey Canyon (M. Sredl unpublished data). The basic biology of this frog is similar to that of most other ranid frogs. Likely predators include garter snakes, bullfrogs, rats, foxes, coyotes, ring tail cats, coatis, black bear, badger, skunks, bobcats, mountain lions, and various aquatic invertebrates including belostomatids (Platz 1997).

REPRODUCTION: Although Platz (1997) suggested that sexual maturity is reached rather late in life, at approximately 6 years postmetamorphosis, frogs captive reared at The Phoenix Zoo and released in Miller Canyon produced egg masses one year after metamorphosis. Males vocalize from at least mid-March through mid-July (Platz 1993a). Egg masses have been recorded from mid-March through early October (AGFD unpublished data). Mating seems to begin once water temperatures have reached at least 10 EC (50 EF) and oviposition may be correlated with temperatures rather than rainfall. Although amplexus may last 8-20 hours, oviposition is brief (Platz 1997). Eggs are laid in spherical masses, attached to submerged vegetation, so that the egg mass is held near the surface of the water. Egg masses contain approximately 1500 eggs, which hatch in about 14 days in the wild (Platz 1997). In captivity, eggs hatch in about 10 days when held at 23-25 EC (73-77 EF) (M. Demlong unpublished data). Larvae metamorphose in the year they were oviposited or may overwinter as tadpoles (Platz and Grudzien 1993, Platz 1996, Platz et al. 1997). Larvae metamorphose in as few as 100 days in captivity, but frequently take 160 - 200 days (M. Demlong unpublished data).

FOOD HABITS: The diet of *R. subaquavocalis* has not been studied in the wild. It is assumed that the diet is similar to other leopard frogs, which includes arthropods, other invertebrates, and small vertebrates (Stebbins 1951). Tadpoles are herbivorous. Large tadpoles have been observed consuming the gelatinous envelopes of eggs, but may not consume the ova (Platz 1996).

HABITAT: Most habitats in which *R. subaquavocalis* is found are modified or artificial aquatic systems (Sredl et al. 1997). Ponds, streams, plunge pools are occupied.

ELEVATION: Ranges from 4,925 - 6,001 ft. (1502 - 1830 m) (Sredl et al. 1997).

PLANT COMMUNITY: Habitats are found in pine-oak, oak woodland, and semi-desert grassland areas of the Huachuca Mountains. Vegetation at sites is variable but includes, horsetail (*Equisetum* spp.), spikerush (*Eleocharis* spp.), cattail (*Typha* spp.), watercress (*Rorippa*), monkey flower (*Mimulus*), and grasses. Emergent vegetation and root masses provide cover sites (M. Sredl unpublished data).

POPULATION TRENDS: Populations appear to be declining and recruitment is low at all known localities except for Miller Canyon. The animals released there in 1999 produced at least 28 egg masses in 2000 and the population appears to be doing well. At two sites, Tinker Pond and Ramsey Canyon, chytrid fungus has been found in dead frogs. This fungus has been implicated in the declines of amphibians around the world (Berger et al. 1998) and may play a role in the decline of *R. subaquavocalis*.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None (USDI, FWS 1997)
[C USDI, FWS 1996]
[C1 USDI, FWS 1994]

STATE STATUS: WC (AGFD, WSCA 1996 in prep)
OTHER STATUS: Forest Service Sensitive (USDA, FS Region 3 1999)

MANAGEMENT FACTORS: A conservation assessment was developed in 1996 (Platz 1996) and was followed by the signing of a conservation agreement. AGFD; USDI, FWS; USDA, FS; TNC; Ft. Huachuca and a private land owner are signers of the agreement.

PROTECTIVE MEASURES TAKEN: Arizona Game and Fish Commission Order 41 prohibits the collection of *R. subaquavocalis* from the wild in Arizona. Water flow has been maintained in several pond sites. Eggs and larvae have been collected and reared in captivity to increase initial survival rates. The captive reared frogs and larvae have been released at several sites including Ramsey Canyon, the Barchas Ranch, and Miller Canyon.

SUGGESTED PROJECTS: Survival rates of released frogs could be determined through a mark recapture study. Habitat requirements and life history information could be gathered through radio telemetered animals. Studies focusing on factors that may play a role in population declines, including the disease caused by chytrid fungus would be valuable.

LAND MANAGEMENT/OWNERSHIP: Private, The Nature Conservancy, USFS, and DOD - Ft. Huachuca.

SOURCES OF FURTHER INFORMATION

LITERATURE CITATIONS:

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ADDITIONAL INFORMATION:

Head-started individuals have been documented to live for at least 3 years after release in Ramsey Canyon (K. Field unpublished data).

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