

TARAHUMARA FROG
(Rana tarahumarae)

STATUS: No Federal Status.

SPECIES DESCRIPTION: The Tarahumara frog is a medium-sized (adults range from 64 to 114 mm [2.5 to 4.5 in] in snout-vent length), drab green-brown frog with small brown to black spots on the body and dark crossbars on the legs. The hind feet are extensively webbed. The dorsolateral fold, characteristic of related leopard frogs and other ranid species, is absent or faint. Larvae are dark gray to greenish-yellow. Later stage larvae exhibit small dark spots over the dorsum and larger spots on the tail. Larvae grow as large as 97 mm (3.8 in) prior to metamorphosis. Adult and juvenile Tarahumara frogs of both sexes have calls that are not very loud and consist of short snores, a whining noise, and occasional "eeeps".

HABITAT: Throughout its range the Tarahumara frog is typically associated with canyons and deep "plunge pools" formed amidst boulders or in bedrock. Plunge pools in canyons with low mean flows (<0.2 cubic feet per second) and relatively steep gradients (> 60 m per km of stream) provide the best breeding sites. Permanent water is probably necessary for metamorphosis. Tarahumara frog habitats are located within oak, pine-oak woodland, or the Pacific coast tropical area (Sinaloa thornscrub and tropical deciduous forest).

RANGE: Historical: In the United States, the species was known historically from six locales, including three from Santa Rita Mountains and three from Atascosa-Pajarito-Tumacacori Mountains complex, which are located north and west, respectively, of Nogales in Santa Cruz County, Arizona. In Mexico they occurred historically in the mountains of eastern Sonora, western Chihuahua, and south to the Sierra Surutato, Sinaloa. The Tarahumara frog disappeared from all localities in the U.S. by 1983. The last historical observation of Tarahumara frogs in Arizona, and thus in the United States, was in May 1983 in Big Casa Blanca Canyon in the Santa Rita Mountains.

Current: The current range of this species is similar to its historical range, but the species is no longer extant at some northern localities. It was reestablished at Big Casa Blanca Canyon in Arizona in 2004. A portion of an egg mass collected from the Sierra de la Madera, northern Sonora, was imported to Arizona in May 2000 for propagation. Frogs reared from that egg mass, as well as progeny of those frogs, were used for the reestablishment project. The reestablished population is persisting and reproducing. Nine egg masses were found in Big Casa Blanca Canyon in May 2005; and the population survived a dramatic flood in August 2005 following the Florida Fire.

REASONS FOR DECLINE/VULNERABILITY: Causes of population decline and extirpation are not clear, but the following factors have been implicated: winter cold, flooding or severe drought, competition with and predation by nonnative fish and bullfrogs, disease, habitat loss, and heavy metal poisoning. Airborne pollutants from copper smelters and/or mildly acidic rain that mobilize naturally-occurring metals near streams may have resulted in toxic levels of cadmium in the frog's habitats. A fungal disease, chytridiomycosis, implicated in global declines of frogs and toads, has been found in populations of the Tarahumara frog in Sonora and was identified in specimens collected in Arizona in 1974. The disease likely contributed to observed declines and extirpations. Stressors, such as winter cold and heavy metal contamination, likely make individual frogs more susceptible to the effects of chytridiomycosis.

LAND MANAGEMENT/OWNERSHIP: Historical and current habitats in Arizona are primarily on lands owned and managed by the Coronado National Forest.

NOTES: A State of Arizona Species of Special Concern. A conservation program developed by the Tarahumara Frog Conservation Team, a consortium of researchers, interested members of the public, and

representatives from State and Federal wildlife management and land management agencies, coordinated the reestablishment to Big Casa Blanca Canyon. Additional sites, such as Sycamore Canyon in the Pajarito Mountains, are being considered for additional reestablishments.

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