

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

**Animal Abstract**

**Element Code:** AAABD04171

**Data Sensitivity:** No

**CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE**

**NAME:** *Eleutherodactylus augusti cactorum*  
**COMMON NAME:** Western Barking Frog  
**SYNONYMS:** *Hylodes augusti*, *Eleutherodactylus cactorum*, *Eleutherodactylus bolivari*,  
*Eleutherodactylus augusti*, *Eleutherodactylus latrans*, *Hylactophryne augusti cactorum*  
**FAMILY:** Anura: Leptodactylidae

**AUTHOR, PLACE OF PUBLICATION:** Species: Dugès. 1879. Brocchi, Bull. Soc. Philomath. Paris (7)3:21.  
Subspecies: Taylor. 1938 [1939]. Univ. Kansas Sci. Bull., 25(17):385-399.

**TYPE LOCALITY:** Species: Guanajuato, Guanajuato, Mexico.  
Subspecies: 20 miles northwest of Tehuacán, Mexico.

**TYPE SPECIMEN:** Species:  
Subspecies: Field Mus. Nat. Hist. 100021 (formerly E.H. Taylor - H.M. Smith 6383), adult female collected 30 August 1936.

**TAXONOMIC UNIQUENESS:** Four subspecies of *Eleutherodactylus augusti* are currently recognized. *E.a. latrans*, *E.a. augusti*, and *E.a. fuscofemora* are the three outside of Arizona. *E.a. cactorum* is quite similar to *E.a. augusti* in size and pigmentation, however the tympanum diameter to head width ratio is usually smaller in *E.a. cactorum* (Zweifel 1956, Zweifel 1967). Recent measurements in Arizona confirmed the small tympanum size (Goldberg and Schwalbe 2000). *E.a. cactorum* is the smallest of the subspecies in body length (Zweifel 1956).

**DESCRIPTION:** Adults are olive to gray-green to light brown with dark spots, often with light edges, dorsally. Juveniles have a prominent light band that darkens with age across the center of their backs. Their eyes are large and dark brown (Stebbins 1985, Schwalbe 1990). Males have dark tympana and during the breeding season, have dark throats, which become mottled in late summer. Females have white throats and pink tympana (Goldberg and Schwalbe 2000). The snout-vent length for the species ranges from 5.0-9.5 cm (2.0-3.8 in.) (Stebbins 1985). At Coronado National Memorial in Arizona, the mean size of females was 80 mm and of males was 72.0 mm (Goldberg and Schwalbe 2000). The frogs have a broad head and short legs, which gives them a squat, toad-like appearance. They have smooth skin and slender, unwebbed toes with prominent tubercles beneath joints. Although they can make hops from boulder to boulder, they frequently walk in a stilted fashion with their hindquarters and heels off ground. There is a fold of skin across back of the head and a circular fold on the belly. Their tympana are semitransparent and smooth (Stebbins 1985, Schwalbe 1990).

**AIDS TO IDENTIFICATION:** The fold of skin on the back of the head and circular fold on the belly, distinguish this species from other anurans that may be encountered in the habitat. The distinctive call sounds like a series of small dog barks in 2-3 second intervals in New Mexico and Texas (Zweifel 1967, Stebbins 1985) or in Arizona the croak of a raven (Schwalbe 1997). The juvenile color pattern of a light band across the center of their dark backs is distinctive, but has not been observed in Arizona. The subspecies *E. a. cactorum* can be distinguished from the other subspecies by their smaller tympana (Zweifel 1956, Goldberg and Schwalbe 2000). The tympana diameter / head width ratio is usually less than 0.17 (Zweifel 1956).

**ILLUSTRATIONS:** Color drawing (Behler and King 1979)  
Black and white photo (Bezy et al. 1966)  
Black and white drawing (Stebbins 1985)  
Color drawing (Conant 1975)  
Color photo (Schwalbe 1990)  
Black and white photo (Zweifel 1956)

**TOTAL RANGE:** The range of the species encompasses extreme southern Arizona, southeast New Mexico and central Texas and extends south to Isthmus of Tehuantepec in Mexico (Zweifel 1956, Zweifel 1967, Stebbins 1985).

**RANGE WITHIN ARIZONA:** *E. a. cactorum* is found in extreme southern Pima and Santa Cruz counties: Santa Rita and Pajarito Mountains (Wright and Wright 1949, Zweifel 1956, Bezy et al. 1966, Zweifel 1967, Stebbins 1985) and Cochise County: Huachuca Mountains (Schwalbe et al. 1997, Goldberg and Schwalbe 2000).

### **SPECIES BIOLOGY AND POPULATION TRENDS**

**BIOLOGY:** These secretive frogs are terrestrial and are found in areas with limestone and other rock outcrops. The frog is nocturnal, spending the day under rocks, or in mines, wells, caves, or fissures (Stebbins 1985, Schwalbe 1990, Goldberg and Schwalbe 2000). There is little life history information available. The longest documented lifespan of a wild individual is 5 years as an adult (Goldberg and Schwalbe unpublished data).

**REPRODUCTION:** Males begin calling with the onset of the summer monsoon season. The large-yolked, unpigmented eggs are laid in moist crevices on land (Stebbins 1985). There is possible parental care of the eggs by the female (Goldberg and Schwalbe 2000, but see Jameson 1950). The young undergo direct development within the egg and hatch as small frogs in approximately one month (Stebbins 1985, Schwalbe 1990, Schwalbe 1997).

**FOOD HABITS:** The diet consists of a variety of invertebrates. Scat analyses and observations of the population inhabiting Coronado National Memorial have yielded the following prey items: field crickets (*Acheta assimilis*), scorpions (*Vaejovis* sp.), silverfish (*Lepisma* spp.), centipedes (*Scolopendra* spp.), kissing bugs (*Triatoma* spp.), short-horned grasshoppers (Acrididae), spiders, ant lions (*Hesperoleon niger*), and longhorned katydids (Tettiganiidae) (Schwalbe 1990, Schwalbe 1997, Goldberg and Schwalbe 2000).

**HABITAT:** In Arizona, western barking frogs are found in limestone or rhyolite rock outcrops on the hillsides of canyons within Madrean evergreen woodlands (Bezy et al. 1966, Goldberg and Schwalbe 2000). Permanent water is not necessary.

**ELEVATION:** The species ranges from near sea level to 8,900 ft. (2715 m) (Zweifel 1967, Stebbins 1985). At Coronado National Memorial in Arizona, individuals were caught from 5,250 - 6,200 ft. (1600 - 1890 m) (Goldberg and Schwalbe 2000).

**PLANT COMMUNITY:** The species has been found in yucca-covered hills, brushy woodlands, open pine forests, juniper-live oak woodland, and low dense clumps of cactus (Stebbins 1985). In Arizona, it is found within Madrean evergreen woodlands (Bezy et al. 1966, Goldberg and Schwalbe 2000).

**POPULATION TRENDS:** Little is known about populations in Arizona. At Coronado National Memorial the populations seems to be small, yet the survival rate quite high. Because the populations are estimated to be so small, stochastic events threaten their persistence (Goldberg and Schwalbe 2000).

**SPECIES PROTECTION AND CONSERVATION****ENDANGERED SPECIES ACT STATUS:** None**STATE STATUS:**

WC (AGFD, WSCA in prep 1996)

[State Endangered AGFD, TNW 1988]

**OTHER STATUS:**

Forest Service Sensitive (USDA, FS Region 3 1999)

**MANAGEMENT FACTORS:** In order to gain insight into the location and size of populations, call counts should be performed in areas with rocky outcrops during the first two weeks of the summer monsoon season. There is a very small window of opportunity to detect these frogs and visual encounter surveys are inappropriate for this species. Monitoring sites should then be established so that managers can uncover population trends. Damage to habitat patches may heavily impact the survival of this species. In southern Arizona, rocky areas between 5000 and 7000 ft., especially with southeasterly slopes, should not be developed until they have been surveyed for barking frogs at the appropriate time of year (Goldberg and Schwalbe 2000).

**PROTECTIVE MEASURES TAKEN:** An Arizona fishing license is required to collect amphibians. Arizona Game and Fish Commission Order 41 allows for the collection and possession of 10 individuals of this species per year.

**SUGGESTED PROJECTS:** Further study into population dynamics is needed. Additional information on localities, population sizes, and population trends are needed.

**LAND MANAGEMENT/OWNERSHIP:** U.S. Fish and Wildlife Service, National Park Service, Private.

**SOURCES OF FURTHER INFORMATION****LITERATURE CITATIONS:**

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**ADDITIONAL INFORMATION:**

The specific name *augusti* is in honor of the 19<sup>th</sup> century French herpetologist August Duméril. Taylor collected the subspecies type specimen in a cactus patch, thus *cactorum*. The trinomial was first used by Zweifel 1956 (Zweifel 1967). The frogs can be difficult to find when following the sound of their call and have been called ventriloquists by many (Wright and Wright 1949, Bezy et al. 1966, Schwalbe 1990).

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