

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

Animal Abstract

Element Code: AAABE01020

Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Gastrophryne olivacea*

COMMON NAME: Great Plains narrow-mouthed toad, Western narrow-mouthed toad

SYNONYMS: *Engystoma olivaceum*, *Microphyla mazatlanensis*, *Microhyla olivacea*,
Gastrophryne carolinensis olivacea and *mazatlanensis*

FAMILY: Microhylidae

AUTHOR, PLACE OF PUBLICATION: E. Hallowell, "1856" 1857. Proc. Acad. Nat. Sci. Phila. 8:238-253.

TYPE LOCALITY: Not designated. "...originally described as *Engystoma olivaceum* by Hallowell (1856[1857]), who did not designate a type locality. The type locality was later restricted to "Kansas, Geary Co., Ft. Riley" by Smith and Taylor (1950b) and to "vicinity of Lawrence, Kansas" by Schmidt (1953)." (Degenhardt, Painter and Price, 1996).

TYPE SPECIMEN: Not designated. "Although no type specimen was designated, ANSP 2745, a female collected by Dr. Hammond in Kansas, is likely the Holotype. No date of collection was provided (Nelson, 1972a)." (Degenhardt, Painter and Price, 1996).

TAXONOMIC UNIQUENESS: The species *olivacea* is 1 of 27 in the genus *Gastrophryne*, 2 of which occur in the United States. In Arizona, only one subspecies is recognized, which is *G. o. mazatlanensis*, the Sinoloan Narrow-Mouthed Toad.

DESCRIPTION: A small toad with a relatively stout body (oval shaped) that tapers to a narrow, pointed, flattened head; there is no visible tympanum. They are 0.8 - 1.5 inches (2-3.8 cm) long from snout to vent, with females usually larger than males. The smooth, tough body skin forms a fold along the back of the head. Eyes are small, resembling black, glass beads. The legs are short, with no webbing between the toes, and a single spade on each hind foot. The forelegs are slender when compared to the stout, stubby hind legs. The dorsal coloration is olive-brown, light tan, or grayish, with at least a few dark spots. Distinct bars or blotches are usually present across the thigh and calf. The underside is usually immaculate, but strongly mottled in some Arizona upland populations. Males have a dark vocal sac during the breeding season. Sexually mature males have a dark, distensible throat pouch. The young have distinctive, dark, leaflike pattern on back, fading with age. Tadpoles have a soft mouth disc instead of horny jaws, and a single spiracle that opens mid-ventrally rather than on the side as in other anurans; the tail tip is dark.

AIDS TO IDENTIFICATION: Absence, or near absence of pattern make this an easy frog to identify. Never has a “V” on back or marks on belly, like *Gastrophryne carolinensis*. Its mating call can often be confused with *Bufo retiformis*, and has been described as a high pitched buzz that lasts about 3.5 seconds and ends abruptly (Enderson 2000). Tadpoles have a characteristic habit of floating motionlessly at the waters’ surface (Enderson 2000).

ILLUSTRATIONS: Color drawing (Stebbins 1985)
Color photo (Behler and King 1979, reprint 1992: Plate 221)
Color photos (Erik Enderson *in* THS 2000,
<http://www.arts.arizona.edu/herp/frog11.html>).
Color photo of tadpole (Ronn Altig 1998, AmphibiaWeb)
Color photo (Allen Blake Sheldon, *in* eNature.com)
Color photo (David Cannatella, *in* <http://www.lifesci.utexas.edu/research/>)
Color photo (Colorado Herpetological Society,
<http://coloherp.org/geo/species/spegaol.php>)
Color photo of male adult (Degenhardt et al. 1996: Plate 20)

TOTAL RANGE: Southern Nebraska, southeastern Colorado, and southern Arizona to Nayarit, Durango, and San Luis Potosi, Mexico. Specifically, the eastern subspecies is found from southeastern Nebraska and Missouri south through most of Texas to western Chihuahua, Durango, and San Luis Potosi. The western subspecies extends from southern Arizona and eastern Sonora, south along the Pacific Coast of Mexico to Nayarit.

RANGE WITHIN ARIZONA: From Santa Cruz County, north to Maricopa County and west to near Ajo in western Pima County. It has also been found in Santa Rosa Valley and the vicinity of Lake St. Cloud, Pinal County. Throughout much of its range in Arizona, they are sympatric with *Pternohyla fodiens* and *Bufo retiformis*.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: An inconspicuous little nocturnal toad that is most active at night after spring and summer rains. During these wet periods, males can be heard giving their breeding calls, which from a distance, has been likened to the “baaing” of sheep and, in closer proximity, to the buzzing of honey-bees. In southern ranges, they may be active all year. Migrates variable distances between breeding pools and adjacent nonbreeding terrestrial habitats. Secretive, hiding in burrows or under bark, in rotten logs, under rocks, or in crevices near a water source during the day. Narrowmouth toads share burrows with tarantulas, lizards, moles, and many other creatures. When handled, they exude a potent toxin that can cause severe nasal reactions and burning of the eyes (Enderson 2000). The toxin appears to kill other amphibians and may be a protective mechanism.

REPRODUCTION: Rainfall stimulates breeding. The male grasps the female from behind and “glues” himself to her back with a viscous skin secretion, which insures a good connection. A

colonial breeder, that lays up about 600 eggs, which are laid in a film at the water's surface, and are fertilized as they are laid. In Arizona, eggs are laid around July. Narrowmouth toads develop quickly, metamorphosing from egg to toad in 24-50 days. Males may breed more than once annually. Toads are sexually mature in 1-2 years. (Wallace 1996, NatureServe 2002).

FOOD HABITS: Adult toads eat almost entirely ants. Their tough skin and fold of skin across their neck, probably afford protection from ant bites and stings. Larvae eat suspended matter, organic debris, algae, and plant tissue.

HABITAT: In Arizona, from mesquite semi-desert grassland to oak woodland, in the vicinity of streams, springs and rain pools. They are more terrestrial than aquatic in habits. They can be found in deep, moist crevices or burrows, often with various rodents, and under large flat rocks, dead wood, and other debris near water.

ELEVATION: Sea level to around 4,100 ft. (1,251 m). In Arizona, ranges from 1,400 – 4,700 ft (427-1434 m) (AGFD, unpublished data, accessed 2003).

PLANT COMMUNITY: Madrean evergreen woodland, semi-desert grassland, and Sonoran Desert scrub.

POPULATION TRENDS: Unknown

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS:

STATE STATUS:

None (AGFD, WSCA in prep)
[State Candidate AGFD, TNW 1988]

OTHER STATUS:

None (USDA, FS Region 3 1999)
[Forest Service Sensitive USDA, FS Region 3
1988]
Determined Subject to Special Protection
(Secretaria de Medio Ambiente 2000)
[Listed Rare, Secretaría de Desarrollo Social 1994]

MANAGEMENT FACTORS: Limited distribution, and the fact that the United States populations are on the extreme northwestern edge of its range (and the northern extreme for the Arizona subspecies), is a concern. The species is sedentary and would probably continue to be associated with a particular site if weather conditions were favorable. Threats may include habitat loss and degradation (AGFD In prep).

PROTECTIVE MEASURES TAKEN: Arizona fishing license required to take any amphibians.

SUGGESTED PROJECTS:

LAND MANAGEMENT/OWNERSHIP: BIA – San Xavier and Tohono O’odham Reservations; BLM – Phoenix Field Office; NPS – Organ Pipe Cactus National Monument; USFS – Coronado National Forest; State Land Department; Private.

SOURCES OF FURTHER INFORMATION**REFERENCES:**

- Arizona Game and Fish Department. 1988. Threatened Native Wildlife in Arizona. p. 10.
- Arizona Game and Fish Department. In prep. Wildlife of special concern in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. 32 pp.
- Behler, J.L., and F.W. King. 1979. The Audubon Society field guide to North American reptiles and amphibians. Alfred A. Knopf, New York. p. 384
- Blair, A.P. 1950. Note on Oklahoma Microhylid frogs. *Copeia* 1950:152.
- Collins, J.T. 1982. Amphibians and reptiles in Kansas. Second edition. Univ. Kansas Mus. Nat. Hist., Pub. Ed. Ser. 8. xiii + 356 pp.
- Degenhardt, W.G., C.W. Painter, and A.H. Price. 1996. Amphibians and Reptiles of New Mexico. University of New Mexico Press, Albuquerque, New Mexico. Pp. 75-77.
- eNature.com. Online field guide, frogs and toads, Great Plains Narrow-mouthed Toad, *Gastrophryne olivacea*. Accessed 4/16/2003.
- Enderson, E.F. 2000. Frogs and Toads, Great Plains Narrow-mouthed Toad, *Gastrophryne olivacea*. The Tucson Herpetological Society Web Publication, <http://www.arts.arizona.edu/herp/frog11.html>. Accessed 4/16/2003.
- Hammerson, G.A. 1982. Amphibians and reptiles in Colorado. Colorado Division of Wildlife, Denver. vii + 131 pp.
- Hecht, M.K. and B.L. Matal. 1946. A review of the middle North American toads of the genus *Microhylidae*. *Amer. Mus. Novitates* 1315:1-21.
- Integrated Taxonomic Information System (ITIS). Retrieved 4/16/2003 from ITIS, <http://www.itis.usda.gov>.
- Johnson, T.R. 1977. The amphibians of Missouri. Univ. Kansas Mus. Nat. Hist., Pub. Ed. Ser. 6. i + 134 pp.
- Lowe, C.H. 1964. The vertebrates of Arizona. University of Arizona Press. pp. 157-158.
- NatureServe Explorer: An online encyclopedia of life [web application]. 2002. Version 1.6. Arlington, Virginia, USA: NatureServe. Available: <http://www.natureserve.org/explorer>. (Accessed: April 16, 2003).
- Nelson, C.E. 1972. GASTROPHRYNE OLIVACEA. *Cat. Am. Amph. Rep.* 122.1-222.4.
- Nelson, C.E. 1972. Systematic studies of the North American Microhylid genus *Gastrophryne*. *J. Herpetology* 6:111-137.
- New Mexico Game and Fish. 2002. Biota Information System of New Mexico (BISON), Species Account Great Plains Narrowmouth Toad, *Gastrophryne olivacea*. New Mexico

- Game and Fish Web Publ. Accessed 4/16/2003 from
http://www.cmiweb.org/states/nmex_main/species/020110.htm.
- Secretaría de Desarrollo Social. 1994. Diario Oficial de la Federacion. p. 48.
- Secretaría de Medio Ambiente. 2000. Diario Oficial de la Federacion. p. 36.
- Smith, H.M. 1978. A guide to field identification amphibians of North America. Golden Press, New York. p. 26.
- Stebbins, R.C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. p. 78.
- Stebbins, R.C. 1985. A field guide to western reptiles and amphibians. Second edition. Houghton Mifflin Co., Boston. pp. 94-95.
- USDA, Forest Service Region 3. 1988. Regional Forester's Sensitive Species List.
- USDA, Forest Service Region 3. 1999. Regional Forester's Sensitive Species List.
- Wake, D.B. 1961. The distribution of the Sinaloa narrow-mouthed toad. Bull. So. Calif. Academy of Sciences 60(2):88-92.
- Wallace, J.E. 1996. Nongame Field Notes, Great Plains Narrowmouth Toad. Wildlife Views, Arizona Game and Fish Department Publication. Phoenix, Arizona. P. 16.
- Wright, A.H. and A.A. Wright. 1949. Handbook of frogs and toads of the United States and Canada. Comstock Publishing Associates, Ithaca, NY. pp. 578-584.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Cecil Schwalbe - University of Arizona, Tucson
 Tom Van Devender - Arizona-Sonora Desert Museum, Tucson
 Brian Sullivan - Arizona State University West, Phoenix

ADDITIONAL INFORMATION:

The scientific name *Gastrophryne olivacea* comes from the Greek *gaster* (=belly) and *phryne* (=toad), possibly referring to the pot-bellied appearance, and from the Latin *oliva* (=olive), referring to the general coloration (Wallace, 1996).

Revised: 1992-11-13 (SSS)
 1995-07-18 (MJS)
 2003-04-24 (SMS)

To the user of this abstract: you may use the entire abstract or any part of it. We do request, however, that if you make use of this abstract in plans, reports, publications, etc. that you credit the Arizona Game and Fish Department. Please use the following citation:

Arizona Game and Fish Department. 20XX (= **year of last revision as indicated at end of abstract**). X...X (= **taxon of animal or plant**). Unpublished abstract compiled and edited by the Heritage Data Management System, Arizona Game and Fish Department, Phoenix, AZ. X pp.