ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AAABE01030
Data Sensitivity: No

CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Gastrophryne mazatlanensis*
COMMON NAME: Sinoloan Narrow-mouthed Toad, Sinoloa Narrow-mouthed Toad, Mazatlan Narrow-mouthed Toad, Mazatlan Narrowmouth Toad
SYNONYMS: *Microhyla mazatlanensis*, *Microhyla carolinensis mazatlanensis, Microhyla olivacea mazatlanensis, Gastrophryne olivacea mazatlanensis*
FAMILY: Microhylidae

AUTHOR, PLACE OF PUBLICATION: Taylor, E.H., 1943. Herpetological novelties from Mexico. Univ. Kan. Sci. Bull. 29, 343–361.

TYPE LOCALITY: "two miles east of Mazatlán, Sinaloa", Mexico.

TYPE SPECIMEN: HT: EHT-HMS 1236, by original designation; now FMNH 100040

TAXONOMIC UNIQUENESS: *Gastrophryne mazatlanensis* is one of four recognized species in the genus *Gastrophryne*, 3 of which occur in the United States. *G. mazatlanensis* is the only representative of its genus found in Arizona.

The western clade was previously considered a distinct species, *G. mazatlanensis* (Taylor 1943), but the taxon was later synonymized with *G. olivacea* (Hecht and Matalas 1946). Some authors retained the western group as a subspecies, *G. o. mazatlanensis* (Chrapliwy et al. 1961). Based on mitochondrial analysis and examination of nuclear DNA, *G. mazatlanensis* has been resurrected for the disjunct western clade, which is removed from the synonym of *G. olivaceae* (Streicher et. al. 2012). This taxonomy has been accepted by Amphibian Species of the World (Frost 2020) and the Society for the Study of Amphibians and Reptiles (Crother 2017).

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 identity. Never has a "V" on back or marks on belly, like *Gastrophryne carolinensis*. Its mating call can often be confused with *Anaxyrus 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 photo (Streicher et. al. 2012)

TOTAL RANGE: South-central Arizona to Nayarit, Mexico, along the coastal plain, including the states of Nayarit, Sonora, and Sinaloa (Streicher et. al. 2012).

RANGE WITHIN ARIZONA: From Santa Cruz County, north to Maricopa County and west to near Ajo in western Pima County (Enderson, 2000).

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: An inconspicuous, small, 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 about 600 eggs, which are deposited 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 - 1,434 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: None

STATE STATUS:
2 (AGFD, AWCS 2022)
[1C as *G. olivacea* (AGFD SWAP 2012)]
[WSC as *G. olivacea* (AGFD, WSCA 1996 in prep)]
[Candidate as *G. olivacea* (AGFD, TNW 1988)]

OTHER STATUS:
Bureau of Land Management Sensitive *as G. olivacea* (USDI, BLM AZ 2017, 2010, 2008)
Not Forest Service Sensitive (USDA, FS Region 3 2013, 1999)
[Forest Service Sensitive USDA, FS Region 3 2007, 1988]
Determined Subject to Special Protection (Secretaria de Medio Ambiente 2000, 2010)
[Listed Rare, Secretaría de Desarrollo Social 1994]

MANAGEMENT FACTORS: Limited distribution, and the fact that the United States populations are on the extreme northern edge of its, 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 (AZGFD 1996 in prep).

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

SUGGESTED PROJECTS: Future phylogenetic studies should incorporate samples from 1) eastern AZ and western NM in the US, and 2) along the west coast of Mexico between the

localities Streicher et. al. sampled for *G. mazatlanensis*, and 3) from localities of intermediate elevation in the Mexican state of Chihuahua (Streicher et al. 212).

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. Arizona Game and Fish Department Publication. p. 10.

Arizona Game and Fish Department. 1996, in prep. Wildlife of special concern in Arizona. Arizona Game and Fish Department Publication. Phoenix, Arizona. p. 10.

Arizona Game and Fish Department. 2012. Arizona's State Wildlife Action Plan 2012-2022. Arizona Game and Fish Department, Phoenix, Arizona. 233 pages.

Arizona Game and Fish Department. 2022. Arizona Wildlife Conservation Strategy: 2022-2032. Arizona Game and Fish Department, Phoenix, Arizona. 378 pages.

Behler, J.L., and F.W. King. 1979. The Audubon Society field guide to North American reptiles and amphibians. Alfred A. Knopf, New York, New York. p. 384

Blair, A.P. 1950. Note on Oklahoma Microhylid frogs. Copeia 1950:152. https://doi.org/10.2307/1438963

Chrapliwy, P.S., K.L. Williams, and H.M. Smith. 1961. Noteworthy records of amphibians from Mexico. Herpetologica 17:85–90. https://www.jstor.org/stable/3889658

Collins, J.T. 1982. Amphibians and reptiles in Kansas. Second edition. University of Kansas Natural History Museum, Public Education Series 8. Lawrence, Kansas. xiii + 356 pages.

Crother, B. I. (editor). 2017. Scientific and standard English names of amphibians and reptiles of North America north of Mexico, with comments regarding confidence in our understanding. 8th edition. SSAR Herpetological Circular 43:1-104. [Updates in SSAR North American Species Names Database at: https://ssarherps.org/cndb]

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.

Enderson, E.F. 2000. Frogs and Toads, Great Plains Narrow-mouthed Toad, *Gastrophryne olivacea*. The Tucson Herpetological Society Web Publication, https://tucsonherpsociety.org/amphibians-reptiles/amphibians/mazatlan-narrow-mouthed-toad-gastrophryne-mazatlanensis/. Accessed 4/16/2003.

Frost, D. R., R. W. McDiarmid, and J. R. Mendelson III. 2008. Anura: Frogs. IN B. I. Crother (editor), Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, pp. 2-12 SSAR Herpetological Circular 37.

Frost, D.R. 2020. Amphibian Species of the World: an Online Reference. Version 6.0. American Museum of Natural History, New York, USA. Online: http://research.amnh.org/herpetology/amphibia/index.html

Hammerson, G.A. 1982. Amphibians and reptiles in Colorado. Colorado Division of Wildlife, Denver, Colorado. vii + 131 pages.

Hecht, M.K. and B.L. Matal. 1946. A review of the middle North American toads of the genus *Microhylidae*. American Museum 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, Tucson, Arizona. pp. 157-158.

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org. (Accessed: June 10, 2019).

Nelson, C.E. 1972. *Gastrophryne olivacea* (Hallowell), western narrow-mouthed toad. Catalogue of American Amphibians and Reptiles 122:1-4.

Nelson, C.E. 1972. Systematic studies of the North American Microphylid genus *Gastrophyne*. J. Herpetology 6:111-137.

Biota Information System of New Mexico. 2000. BISON species account 020110: Western Narrow-mouthed Toad, *Gastrophryne olivacea*. New Mexico Game and Fish, Available: https://www.bison-m.org/booklet.aspx?SpeciesID=020110 (Accessed 4/16/2003)

Secretaría de Desarrollo Social. 1994. Diario Oficial de la Federacion. p. 48.

Secretaría de Medio Ambiente. 2000. Diario Oficial de la Federacion. p. 36.

Secretaría de Medio Ambiente y Recursos Naturales. 2010. NORMA Oficial Mexicana NOM-059-SEMARNAT-2010, Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo.

Smith, H.M. 1978. A guide to field identification amphibians of North America. Golden Press, New York, New York. p. 26.

Stebbins, R.C. 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston, Massachusetts. p. 78.

Stebbins, R.C. 1985. A field guide to western reptiles and amphibians. Second edition. Houghton Mifflin Co., Boston, Massachusetts. pp. 94-95.

Streicher, J.W., C.L. Cox, J.A. Campbell, E.N. Smith, R.O. de Sa. 2012. Rapid range expansion in the Great Plains narrow-mouthed toad (*Gastrophryne olivacea*) and a revised taxonomy for North American microhylids. Molecular Phylogenetics and Evolution 64 (2012) 645–653. https://doi.org/10.1016/j.ympev.2012.05.020

Taylor, E.H. 1943. Herpetological novelties from Mexico. University of Kansas Science Bulletin 29:343–361.

USDA, Forest Service Region 3. 1988. Regional Forester's sensitive species list.

USDA, Forest Service Region 3. 1999. Regional Forester's sensitive species list.

USDA, Forest Service Region 3. 2007. Regional Forester's sensitive species list.

USDA, Forest Service Region 3. 2013. Regional Forester's sensitive species list.

USDI, Bureau of Land Management Region 2. 2008. Arizona BLM sensitive species list. Bureau of Land Management, Arizona State Office, Phoenix, Arizona.

USDI, Bureau of Land Management Region 2. 2010. Arizona BLM sensitive species list. Instruction memorandum No. AZ-IM-2011-005. Bureau of Land Management, Arizona State Office, Phoenix, Arizona.

USDI, Bureau of Land Management. 2017. Arizona BLM sensitive species list. Instruction memorandum No. AZ-IM-2017-009. Bureau of Land Management, Arizona State Office, Phoenix, Arizona. 6 pages.

Wake, D.B. 1961. The distribution of the Sinaloa narrow-mouthed toad. Bulletin of the Southern California Academy of Sciences 60(2):88-92. https://doi.org/10.3160/0038-3872-60.2.88

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, New York. pp. 578-584.

MAJOR KNOWLEDGEABLE INDIVIDUALS:

Jeffrey W. Streicher, Amphibian and Reptile Diversity Research Center, Department of Biology, The University of Texas at Arlington, Arlington, TX 76010

ADDITIONAL INFORMATION:

Revised: 1992-11-13 (SSS)
1995-07-18 (MJS)
2003-04-24 (SMS)
2013-11-08 (BDT)
2019-06-10 (BDT)
2021-11-30 (KSL)
2022-12-14 (MBL)

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.