

RHINOPHRYNUS R. DORSALIS

AMPHIBIA: SALIENTIA: RHINOPHRYNIDAE

Catalogue of American Amphibians and Reptiles.

FOUQUETTE, M. J., JR. 1969. Rhinophrynidae, *Rhinophrynus*, *R. dorsalis*.

Rhinophrynidae Günther Burrowing toads

Rhinophrynidae Günther, 1858a:348. Type genus by monotypy, *Rhinophrynus* Duméril & Bibron, 1841.

• CONTENT. A single recent genus, *Rhinophrynus*, and one fossil genus, *Eorhinophrynus*, have been described.

• DEFINITION. This is the only anuran family which possesses an arciferal pectoral girdle and lacks a sternum (Griffiths, 1963). Vertebral centra are ectochordal, and are usually opisthocelous, with cartilaginous intervertebral elements. There are no ribs. There are eight presacral vertebrae. Teeth are absent. The tongue is free anteriorly, attached posteriorly. The ratio of clavicular to scapular length is less than 3 to 1. A discrete sartorius muscle is present. The phalanges are 2-2-3-3/1-2-3-4-3. There is no Bidder's organ. The larva has a pair of spiracles, and a narrow labial fold about a simple mouth with no horny beak or labial teeth (Type I, Orton, 1953).

• DESCRIPTIONS, ILLUSTRATIONS. See *Rhinophrynus dorsalis*.

• DISTRIBUTION. Eastern and western lowlands of Middle America. See *Rhinophrynus dorsalis*; also Fossil Record.

• FOSSIL RECORD. Hecht (1959) described the genus *Eorhinophrynus* and included species *Eorhinophrynus septentrionalis* from the Bridger Formation, Late Bridgerian, Middle Eocene, Elk's Mountain, Wyoming (Holotype, Amer. Mus. Nat. Hist. No. 3818, an atlas). The genus *Rhinophrynus* is also known from fossil remains (see *Rhinophrynus*).

• PERTINENT LITERATURE. All important references are cited elsewhere in this account, or in genus or species accounts.

• REMARKS. The family Rhinophrynidae apparently arose early in the history of the Anura. Hecht (1963) suggests that the family diverged from the primitive stock at about the same time as the Pipidae. Griffiths (1963) presents evidence for a main line evolving from a pipid stock, with rhinophrynids and pelobatids diverging as a common branch, or very close

branches, shortly after a discoglossid line diverged. Then (1965) interprets the relationships somewhat differently, with a rhinophrynid-pipid branch arising from an ascaphid line. While there is disagreement as to which family is the closest relative, there seems general agreement that the family Rhinophrynidae is very old and was derived early in the history of the order. It is, however, highly specialized in many features, partly due to its fossorial adaptations, which may reflect convergence with some forms rather than phylogenetic relationship.

• ETYMOLOGY. The family name is derived from the name of the type genus.

Rhinophrynus Duméril & Bibron Burrowing toad

Rhinophrynus Duméril & Bibron, 1841:757-758. Type species, *Rhinophrynus dorsalis* Duméril & Bibron, by monotypy. *Rhinophryne*: Gadow, 1905:193, 205.

• CONTENT. A single Recent species, *Rhinophrynus dorsalis*, is known. In addition, a fossil species has been described.

• DEFINITION. The characters defining the family also define the genus *Rhinophrynus*. The extinct genus *Eorhinophrynus* differs in having the atlas with a longer neural arch and a low, distinct neural spine (Hecht, 1959).

• DESCRIPTIONS, ILLUSTRATIONS, DISTRIBUTION. See *Rhinophrynus dorsalis*.

• FOSSIL RECORD. Holman (1963) described *Rhinophrynus canadensis* from the Cypress Hills Formation, Lower Oligocene, Saskatchewan, Canada. It is similar to the living species, but much smaller.

• ETYMOLOGY. *Rhinophrynus* is derived from the Greek *rhino*, for nose, and *phrynos*, meaning toad. The gender is masculine.

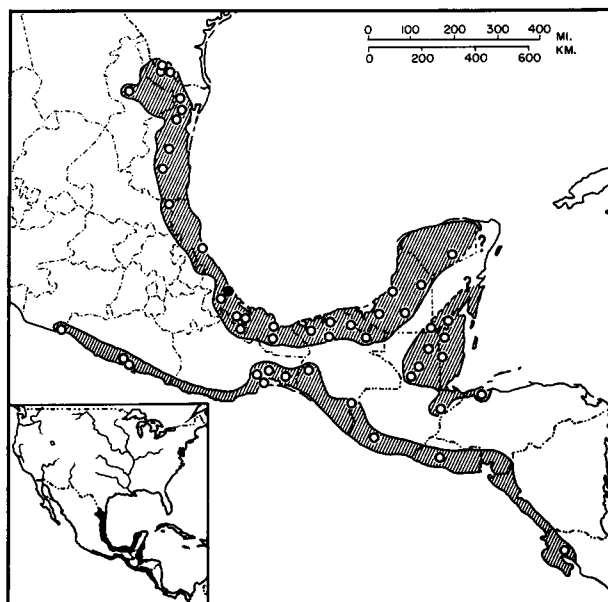
Rhinophrynus dorsalis Duméril & Bibron Mexican burrowing toad

Rhinophrynus dorsalis Duméril & Bibron, 1841:758-760. Type-locality: Veracruz, Mexico ("l'unique exemplaire que renforme notre musée a été envoyé de la Veracruz . . ."). Holotype, Mus. Hist. Nat. Paris No. 693, collected by Auguste Salle (Kellogg, 1932; not examined by author). *Rhinophrynus rostratus* Brocchi, 1877:196-197. Type-locality: "Tehuantepec (Mexique)"; holotype, Mus. Hist. Nat. Paris No. 6335 (not examined by author). *Rhinophryne dorsalis*: Gadow, 1905:193, 205.

• CONTENT. No subspecies have been described.

• DEFINITION. The family characteristics serve to define this, the only living species.

• DESCRIPTIONS. This toad has a stocky, rounded body, with a relatively smooth, loose skin. The small, narrow head seems to protrude from the mass of the body. The eyes are very small, with vertical pupils and moveable lids. There is no external tympanum. The nostrils are dorsal. The arms are short, with no



MAP. The solid circle marks the type-locality; open circles indicate other records. The question marks indicate uncertainty of distribution.

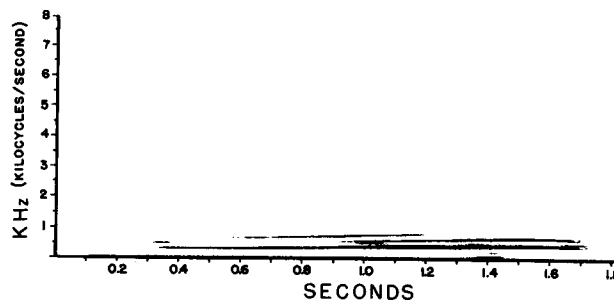


FIGURE. Audiospectrogram (narrow band, 45 cycles per second) of mating call of *Rhinophrynus dorsalis*: 7 mi. W Cintalapa, Chiapas, Mexico, air 25° C (courtesy of W. F. Blair).

distinct webbing between the fingers. The hind limbs are largely enclosed by the skin of the body, with only the large feet noticeably protruding. The toes are separated by extensive thick webs. Toe 4 is much longer than the others. The hallux is reduced to a vestige (a single phalanx), but with an enlarged, keratinized, digging tubercle, just distal to a larger inner metatarsal tubercle similarly modified for digging. The tips of the digits are not expanded. The dorsal ground color is typically dark chocolate brown, becoming lighter laterally and onto the limbs and head. There is a pattern of yellowish to orange markings, usually consisting of a broad vertebral stripe (often broken), and some irregular spots and flecks laterally. The venter is generally uniform grayish. Mature adults average around 60–65 mm snout to vent; the range is probably about 50 to 88 mm, with the female tending somewhat larger than the male (the upper extreme was reported by Nelson and Nickerson, 1966). The male breeding call is a low moan, described by Porter (1962), Fouquette and Rossman (1963), and Nelson and Nickerson (1966).

Other significant features are included in the familial definition. Günther (1858a) detailed external and internal features in his redescription of the species. The skeleton was described briefly by Dugès (1892; cited as 1897 by Walker, 1938), Noble (1922), and Kellogg (1932), and in detail by Walker (1938). Aspects of the myology were described by Noble (1922), Walker (1938), and Dunlap (1960).

See family definition for basic features of the larva, and Orton (1943) and Starrett (1960) for detailed descriptions.

The eggs have not been described, but Stuart (1935) notes that they are deposited in the water in a mass, but separate and float singly at the surface.

• **ILLUSTRATIONS.** Duméril and Bibron (1854) figured the type specimen, but the head is poorly represented. Günther's (1858b) catalogue has good figures illustrating foot, hand, and face. There is a colored plate of an adult in Dugès (1892). Duellman (1960) presented a photograph of a calling male, and there is a good photograph of a living adult on the cover of the Texas Journal of Science (1966:v. 18, no. 3). Larvae were figured by Orton (1943) and Starrett (1960). Porter (1962) reproduced a sonagram of the call.

• **DISTRIBUTION.** The range extends along coastal lowlands from southern Texas to northwestern Honduras in the Caribbean drainage, and from the mouth of the Rio Balsas (Mexico) to Costa Rica in the Pacific drainage. Specimens have been taken from near sea level to above 600 m. James (1966) reported the only records for the United States, from Starr County, Texas.

• **Fossil RECORD.** No fossils are referred to this species. See Fossil Record in family and genus accounts.

• **PERTINENT LITERATURE.** Most of the pertinent material published on this species has been cited elsewhere in this account or that of the genus or family. In addition, some observations on larval behavior were reported by Starrett (1960) and Stuart (1961). Notes on breeding behavior and aestivation were presented by Fouquette and Rossman (1963). Other published references, too numerous to include here, cite the additional localities indicated on the map.

• **REMARKS.** Duméril & Bibron (1841) assigned this species to their Phaneroglosses Bufoniformes (corresponding to the Bufonidae of current classifications). Shortly after, Günther (1858a, b) included the species in his separate monotypic family Rhinophrynidae. However, Boulenger (1882) returned the species to the Bufonidae, and this arrangement was followed by Cope (1889), Neiden (1923), and Noble (1931), although Noble separated it in a subfamily Rhinophryninae. Kellogg (1932) resurrected the family Rhinophrynidae for the species, citing Günther's (1858b) catalogue as the source of the family name. Actually, Günther (1858a) defined the family in an earlier paper, to which he refers in the preface of his catalogue (1858b:iii). Other authors have perpetuated this error in citation. Walker's (1938) study of the skeleton presented convincing evidence justifying the separate family Rhinophrynidae.

• **ETYMOLOGY.** The name *dorsalis* is from the Latin *dorsum*, meaning back or upper surface, and refers to the dorsal stripe.

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