



6-29-1968

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Recommended Citation

Fouquette, M. J. Jr. (1968) "Remarks on the type specimen of *Bufo alvarius* Girard," *Great Basin Naturalist*. Vol. 28 : No. 2 , Article 4.

Available at: <https://scholarsarchive.byu.edu/gbn/vol28/iss2/4>

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REMARKS ON THE TYPE SPECIMEN OF
BUFO ALVARIUS GIRARD

M. J. Fouquette, Jr.¹

The Colorado River Toad, *Bufo alvarius*, occurs in lowland areas of southern Arizona and adjacent corners of southeastern California, southwestern New Mexico and northeastern Baja California, through most of Sonora, and into northern Nayarit, Mexico. It is one of the largest anurans in the U. S., sometimes exceeding seven inches, snout to vent. Kellogg (1932) reviewed the taxonomy of the species and was not able to satisfactorily define the holotype or type locality.

The toad was originally described, in a brief paragraph, by Girard (1859), in Baird's report of the survey of the U. S.-Mexican boundary. The description was terminated with, "Valley of Gila and Colorado. A. Schott." No types were designated, nor were any specific specimens cited. Cope (1889) later reported that the ". . . species is as yet known from a single specimen . . . in the National Museum." He listed the specimen, "No. 2572 . . . Fort Yuma, Cal.; A. Schott." This specimen would then seem to be the holotype. However, Kellogg (1932) pointed out that USNM No. 2572 was actually collected by Maj. G. H. Thomas, and that the entry for No. 2571 indicated two specimens of *Bufo alvarius* from "Sierra de la Union y Charcos de la Nariz," collected by A. Schott. He further noted that the drawings of *Bufo alvarius* which were reproduced in Baird's report had a notation in Baird's handwriting, "Sierra de la Union," which would seem to indicate one of the specimens No. 2571. Kellogg could not locate either of the specimens cataloged as No. 2571, but he designated all three specimens represented by Nos. 2571-2572 as co-types (in the sense of syntypes). Cochran (1961) listed only one specimen among the types in the National Museum, "Cotype: 2572, Fort Yuma (Imperial County), California. G. H. Thomas, 1855." James A. Peters (pers. comm., April 1968) confirms that the two specimens No. 2571 are still missing, and notes that it is unlikely that they will be found, as every bottle in the USNM collection was handled during the move into the new wing, and the two *Bufo* were not among them.

As Kellogg (1932) pointed out, the locality of the missing Schott specimens (2571) does not agree with the locality given by Girard, whereas the locality of the Thomas specimen (2572) does conform. Cope (1889) apparently was unaware of the 2571 catalog entry, and probably did not consult the catalog, listing Schott as collector by virtue of the information in Girard's (1859) description. Schmidt (1953) restricted the type locality to "Colorado River bottom lands below Yuma, Arizona," with no indication of his basis for this.

Although Girard (1859) did not designate a type specimen, it seems reasonable to assume that the type series consisted of USNM

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Nos. 2571 and 2572, in spite of certain inconsistencies. Kellogg (1932) made this assumption in designating these specimens as co-types (=syntypes). However, Cope (1889) preceded Kellogg in considering USNM No. 2572 as the holotype, by implication; i.e., he was the first to designate a particular specimen to the nominal species, and the specimen was from what must be assumed to be the type series, and assumed by Cope to be the only specimen. If we accept the series 2571-2572 as syntypes, then Cope (1889), in essence, designated USNM No. 2572 as the lectotype of *Bufo alvarius*, by implication, even though this was not his intent. Thus, I suggest that U. S. National Museum No. 2572 be recognized as the lectotype of *Bufo alvarius* Girard, in accordance with Article 74(a) of the International Code of Zoological Nomenclature (1964). The specimens represented by USNM No. 2571 become paralectotypes should they ever be located (Recommendation 74E). Should one not agree that Cope's work constitutes designation of a lectotype, then by provision of Article 74(a), I so designate USNM No. 2572, from among the syntypes designated by Kellogg (1932).

USNM No. 2572 is from old Fort Yuma, California, across the Colorado River from Yuma, Arizona, near the junction with the Gila River. Thus, the locality given by Girard (1859) seems clearly referable to this specimen. It would seem necessary to reject or modify Schmidt's (1953) restriction of the type locality, and restrict it instead to the locality of No. 2572; i.e., Fort Yuma, Imperial County, California (on the north bank of the Colorado River, opposite its junction with the Gila River).

I have examined USNM No. 2572, and it is a well-preserved, though bleached example of the species. Girard's (1859) type description is very brief and generalized. It says nothing that conflicts with USNM No. 2572. Likewise, the drawing (Plate 41, Fig. 1-6) agrees in all essentials with the specimen at hand. Cope (1889) described this specimen in detail, and provided good drawings of the head and feet. To Cope's description may be added the information that the specimen is female, with pigmented ovarian eggs. Some minor corrections might also be made. Cope described the tympanum as round, although his drawing clearly and correctly indicated that it is actually oval, distinctly higher (10.3 mm) than wide (9.2 mm). The length of the eye fissure is 14.8 mm, so that the greatest diameter is actually less than the three-fourths of the eye fissure length claimed by Cope. In describing the extent of the parotoid gland he noted that the gland reaches a position "... nearly on a level with the posterior border of the *membranam tympani*." This should read "... the ventral border of the *membranam*. . ." Cope also failed to note the distinctive long, narrow, oval gland occupying most of the upper surface of the forearm.

In re-measuring the specimen, I find that the total length given by Cope is also in error. He gives .165 M (=165 mm), whereas I measure 143 mm, snout to vent. His measurement undoubtedly was 145 mm and somehow this was transposed to 165 in print. My other measurements do not differ significantly from Cope's.

In comparing the type with more recent samples of female *Bufo alvarius* of the same and larger size, from the vicinities of Phoenix, Arizona, and Alamos, Sonora, it is obvious that the lectotype has a relatively much broader head than any of these. If samples from the vicinity of Yuma should show the same difference, this might suggest that perhaps there has been a tendency toward a narrower head in the intervening 100 years.

Thanks are due James A. Peters for the loan of the type-specimen in his care, and for the information on the other specimens as noted.

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