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IDENTITY AND CALL OF THE FROG, *LEPTODACTYLUS STENODEMA*.—The acquisition of recent material from Colombia and the examination of specimens from Ecuador indicate that *Leptodactylus stenodema* Jiménez de la Espada, 1875, is a valid species. The purposes of this note are to discuss the allocation of the name *Leptodactylus stenodema*, diagnose the species from its close relatives, describe the call and appearance in life, and comment on the ecology of this form.

Leptodactylus stenodema is a member of the Pentadactylus species group characterized by large size and broad head (Fig. 1). Within the Pentadactylus group, *L. stenodema* is unique in having the combination of 1) moderate size, males to 90 mm, females to 105 mm; 2) dark-outlined dorsolateral folds; 3) no cross bars between the eyes or dorsolateral folds; 4) no spots or dark markings on posterior surface of



Fig. 1. *Leptodactylus stenodema*, adult male, Wacar, Vaups, Colombia. Photograph by Harry W. Greene.

the thigh; 5) males lacking thumb spines; 6) sharp warts on the exposed shank surface.

The 105 mm lectotype of *Leptodactylus stenodema* (Museo Nacional de Ciencias Naturales, Madrid, jar no. 190, also see Heyer and Peters, 1971) is almost completely faded except for the posterior face of the thigh, which is uniform brown. Our examination of many *Leptodactylus pentadactylus* indicates that the posterior face of the thigh is never uniformly colored. In the original description, Espada indicated that the specimens had faded but certain marks were still distinguishable: dark triangles under the nostril, front and back of the eye and parotoid region; dark round spots in the groin region and sides of the body; and (specifically stated) the posterior face of the thigh did not have sinuous markings or small, light round spots. All of these patterns agree with recent specimens. It seems reasonable that as the type specimens had some dark markings when Espada described them, they also lacked dark inter-orbital and inter-dorsal fold bars or else traces of them would still have been apparent. The locality data for the lectotype and the recent Ecuadorian specimens also agree. The type specimens (lectotype and paralectotype) are from Napo, San Jos de Moti. The recent Ecuadorian specimens are from Pastaza, Puyo. The recent Colombian specimens are from Vaups, Wacar. The distribution is thus upper Amazonian in Colombia and Ecuador. All evidence leads to the conclusion that the recent specimens are conspecific with the types of *L. stenodema* and represent a valid species.

In the same region, the following members of the Pentadactylus group are known: *L.*

knudseni, *L. pentadactylus* and *L. rhodomystax*. The uniform posterior face of the thigh will distinguish *L. stenodema* from *pentadactylus* and *rhodomystax*, the prominent cross bars between the dorsolateral folds in *knudseni* will distinguish it from *stenodema*. Another member of the group, *L. rhodonotus*, known at present only from Peru, has a mottled pattern on the posterior face of the thigh.

In life the dorsum and upper sides of *L. stenodema* are medium yellowish-brown becoming gradually darker posteriorly. There is a large dull-yellow gland extending from about mid-side to upper groin. A dark brown spot covers each nostril and about four dark brown bars cross the upper lip, one of which enters the orbit. The light yellowish-brown of the lores grades into cream yellow behind the jaw angle. A broad dark band borders the supratympanic fold from the posterior edge of the eye backward over the tympanum and downward to a point above the base of the arm. There are narrow dark stripes along the edge of each dorsolateral fold, dark spots scattered over the back and sides and about three narrow bands across the front of the lower arm. The upper surface of the thigh is reddish-orange with a few indistinct narrow bands above the knee. The posterior thigh is purplish gray with an elongate reddish gland extending diagonally from near the vent to near the knee. Exposed surfaces of the shank and foot are brown, there being a reddish edge to the brown area where the foot folds against the shank. Numerous sharp warts cover the exposed surface of the shank and parts of the thigh and tarsus. Several dark bars coalesce along the edge of the lower jaw; the gula is dark purplish gray; the ventral body and thighs are smoke gray with numerous light spots. Lower surfaces of the hands and feet are dark purplish gray.

In the valley of the Vaups River *Leptodactylus stenodema* lives in burrows in upland forest. The burrow is a branching system of tunnels, probably not excavated by the frog, that may pass 1 m or more below the surface and have several entrances. At Wacar we attempted to capture a frog that had been calling by digging out its burrow, but could not because the frog retreated into a tunnel that passed beneath roots and large stones. The frog stopped calling during the excavation work but resumed within five min after digging was stopped. It was captured later when it came out of the burrow to feed.

The stomach of a juvenile female (SVL, 78

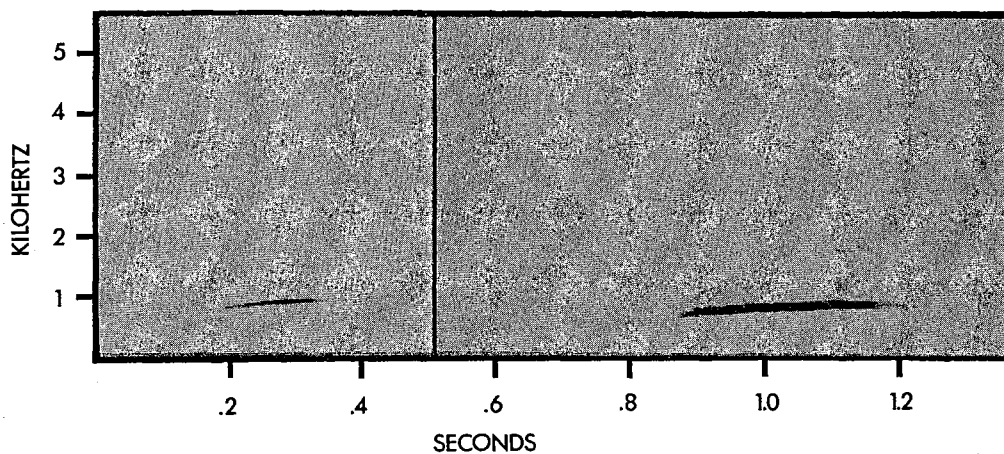


Fig. 2. Sound spectrograms of calls of *Leptodactylus stenodema*, narrow band filter (45 Hz). Left, note of frog calling from armadillo burrow; right, note of captive frog calling from damp sack.

mm) preserved soon after capture contained a hemipteran, a curculionid beetle and remains of another beetle, probably a tenebrionid.

The call (Fig. 2) is a "whoop," emitted while the frog sits in a burrow somewhat removed from the entrance. Calling begins about 1500 h and continues until dark. Sound spectrograms of seven calls in two series are available to us. Calls in the first series were recorded at 1700 h, 6 June 1973, at Wacar , at an air temperature of 26.5 C. Each call has a duration of about 0.16 sec and a dominant frequency band that rises from 760 Hz to 900 Hz from beginning to end. Twenty-five calls timed with a stopwatch had a call repetition rate of 8.7 notes per min. Calls in the second series, recorded 14 June 1973, air temperature 24.4 C, were made by a captive animal in a damp sack. The sack contained a leafy branch that prevented it from collapsing. Calls of the second series were louder than those of the first series and the call duration, about 0.36 sec, was twice that of the first. The dominant frequency band rises from about 640 Hz to 860 Hz, and there are two weak harmonics above the dominant at about 1640 and 2500 Hz. Fifty-six calls timed with a stopwatch had a call repetition rate of 35.4 calls per min.

Differences between calls in the two series in loudness, duration and call repetition rate were probably due to differences in circumstances under which the calls were given. The frog of the first series called from an armadillo burrow, sitting back from the entrance, but probably close enough to the entrance to see the microphone and observer. It may also have been

disturbed by our movements before recording was begun. The frog of the second series could not see the observer and was not disturbed while it called. Thus the second series of calls, although made by a captive frog, is probably more representative of the natural call of *L. stenodema* than are those of the first series.

The Cacua Indian name for *Leptodactylus stenodema* is "popoco."

Specimens of *L. stenodema* in the United States National Museum examined by us are: USNM-GOV 7244, 7923, USNM-JAP 2032; specimens in the University of Texas at Arlington Collection of Vertebrates are: UTA A-3722, A-3833, A-3834, A-3835 and A-4007.

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- WILLIAM F. PYBURN, *Department of Biology, University of Texas at Arlington, Arlington, Texas 76010*, and W. RONALD HEYER, *Amphibians and Reptiles, National Museum of Natural History, Smithsonian Institution, Washington, D. C. 20560*.