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## REVALIDATION OF *LEPTODACTYLUS PLAUMANNI* (AMPHIBIA: LEPTODACTYLIDAE)

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### INTRODUCTION

The *fuscus* group of *Leptodactylus* contains several morphologically similar species with diversity of vocalizations (Heyer, 1978). The revalidation of *L. plaumanni*, proposed here, shows that a knowledge of proper phylogenetic relationships and taxonomic "status" of the striped species in this group require detailed examination of collections and extensive complementary information on behavior, bioacoustics and cytogenetics.

*Leptodactylus plaumanni* Ahl, 1936, a species in the *fuscus* group, was described from a unique specimen from Nova Teutônia, Santa Catarina State, Brasil (27°17'S; 52°20'W) and contrasted, in the original description, with *Leptodactylus mystaceus* (Spix), a very different species.

Afterward, *L. plaumanni* was considered a junior synonym of *L. sibilatrix* (Wied) (= *L. fuscus* (Schneider) by Cochran (1955), Bokermann (1966) and Mertens (1967). Recently, in an extensive revision of the *fuscus* group, Heyer (1978) considered *L. plaumanni* as a junior synonym of *L. gracilis* (Dumeril & Bibron) and pointed out a possible relationship between these species and *L. geminus* Barrio and *L. gracilis delattini* Müller, striped species of the same group described from type localities near Nova Teutônia.

As part of a project involving collection trips to type localities of Brazilian anurans, I collected and recorded in the vicinity of Mr. Fritz Plaumann's house at Nova Teutônia a *Leptodactylus* that corresponds to the description of *L. plaumanni*. The collected individuals were distinguishable from *L. fuscus* and *L. gracilis* by several morphological and behavioral features.

### DISCUSSION

Although the description by Ahl (1936) is detailed and accurate, it is based on a preserved individual and lacks some absolute measurements. To complement information given by Ahl, measurements are presented for additional specimens of *L. plaumanni* from the type locality (Table 1) and the coloration of living animals is described.

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TABLE 1. Main measurements of *Leptodactylus plaumanni*, from type locality

Character (in mm)	Individual measurement		
	JJ 6061	MZUSP 8712	ZUEC 5321
1. total length	41,2	42,6	42,0
2. head width	14,4	13,8	14,3
3. femur	20,2	20,2	21,4
4. tibia	24,8	25,4	26,4
5. foot	26,2	26,4	28,0
6. interocular distance	0,3	3,7	0,3
7. tympanum	0,3	0,3	0,3

The abbreviations as used in the text are: JJ (Jorge Jim collection deposited in the Universidade Estadual Paulista, "campus" of Botucatu), MZUSP (Museum of Zoology of the Universidade de São Paulo) and ZUEC (Department of Zoology, Universidade Estadual de Campinas).

In life, *L. plaumanni* (Fig. 1) presents a brown-olivaceous dorsum with a white mid-dorsal line and dark areas between the lateral glandular lines beginning at the tip of snout. The venter is white, immaculate, except for some irregular dark blotches in the palmar region and regular dark blotches on the feet and toes. The lumbar and concealed regions have discrete yellow hues that usually disappear shortly after death.

The males of *L. plaumanni* vocalize in a relatively large subterranean nest chamber with a short exit tunnel excavated in the vicinity of running water.

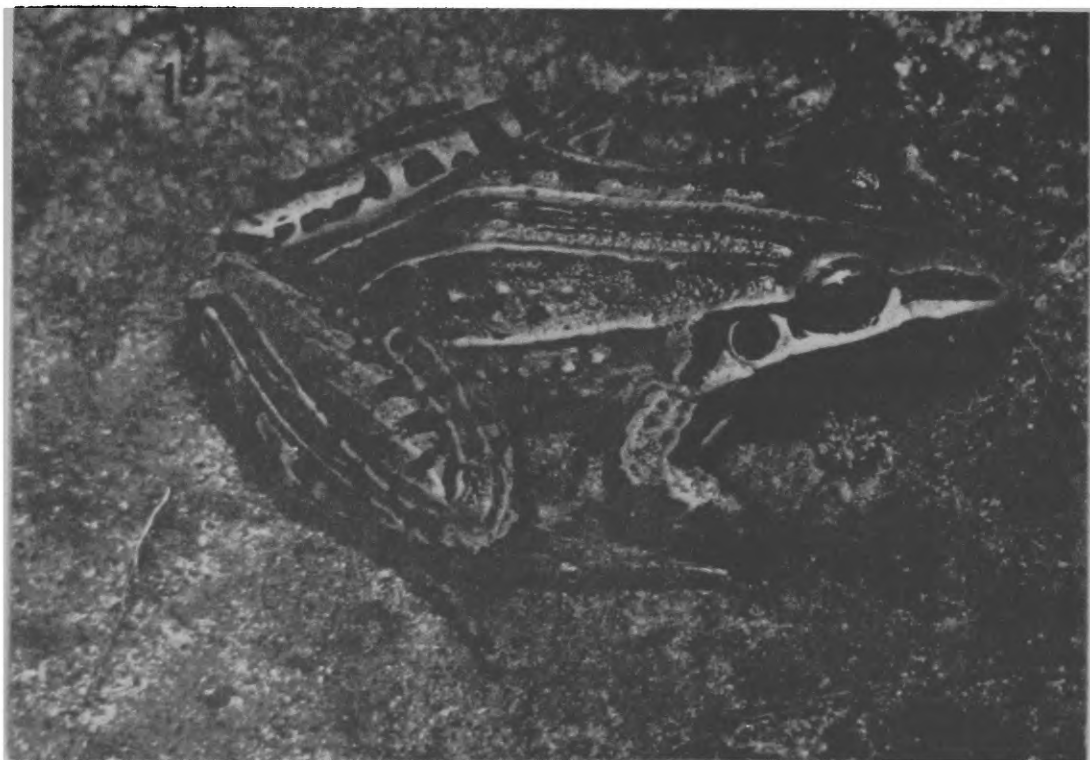


Fig. 1. Male *Leptodactylus plaumanni*, SVL 42 mm, ZUEC 5321.

The analysed vocalizations present call groups with about 30 (22-36) notes (Fig. 2). The call is pulsatile, with notes poorly modulated, emitted in the range of 1.9 to 3.1 kHz and greatest intensity between 2.5 and 3.0 kHz. The beginning notes of a call group occupy a smaller frequency band (2.0 to 2.7 kHz). The time gap between notes is about 0.05 s with 2 s between series and the note repetition rate is 22 per second.

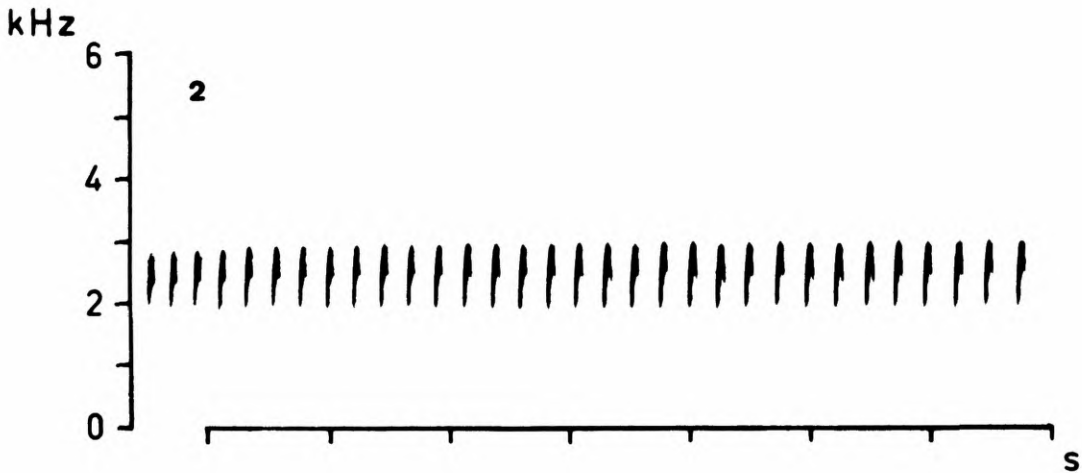


Fig. 2. Sonogram of an entire call group of *L. plaumanni*. Tape recorder control A/C 41/07. Nova Teutônia SC, Brasil. 20:00 h, air temperature 23°C. Horizontal scale mark at 0,2 s.

Sazima and Bokermann (1978) described some species of the *fuscus* group from southeastern and central Brasil; two of these species resemble *L. plaumanni*: *Leptodactylus furnarius* Sazima & Bokermann, a senior synonym of *L. laurae* Heyer (I. Sazima, pers. comm.) can be distinguished from *L. plaumanni* by the more acuminate snout, nose nearer to the tip of the snout, dorsal pattern and vocalization; *L. cunicularius* Sazima & Bokermann presents a similar vocalization, but is more robust and does not have the striped pattern.

In the *geminus-gracilis-marambaiae* complex recognized by Heyer (1978), *L. plaumanni* can be distinguished from *L. gracilis* and *L. marambaiae* by its vocalization and the habitat used for nest construction, i. e., in the vicinity of running water; in addition, it is distinguishable from *L. gracilis* by the slender body, longer fingers and more developed tarsal folds. From *L. fuscus* it can be separated by the medial location of the nose between the eye and snout, the more prolonged snout and by the longer fingers.

There are no perceptible morphological differences among *L. plaumanni*, *L. g. delattini* and *geminus*. The vocalization of *L. g. delattini* has not been

published. Barrio (1973) and Heyer (1978) reported considerable differences in vocalization between *L. geminus* and *L. gracilis*. However, the proximity of type localities, morphological appearance and the overlapping parameters in the vocalization of *L. plaumanni* and *L. geminus* present the possibility that *L. plaumanni* is a senior synonym of *L. geminus*. The available data, however, are confused and more bioacoustical data are needed to determine whether *L. plaumanni* and *L. geminus* represent the same species.

Another species that needs to be considered is *Leptodactylus gualambensis* Gallardo. This species was not compared with *L. plaumanni* in the original description of Gallardo (1964) and, afterwards, was considered a junior synonym of *L. sibilatrix* (= *L. fuscus*) by Barrio (1965). This entity is important owing to the morphological similarity, proximity of type localities and the priority of *L. gualambensis* over *L. geminus*. As this latter species was described only a few years after *L. gualambensis* and the interpopulational variability in their vocalizations is unknown, any revision must consider all possible implications in this complex. The relationship among these entities and *L. plaumanni* requires more studies.

The revalidation of *L. plaumanni* in such a complicated group is fundamental to a required systematic reevaluation. This recognition and the discovery of other sibling species complexes in the genus *Leptodactylus* made by Sazima and Bokermann (1978) reinforce the necessity of care in interpretation of phylogenetic relationships as well as emphasize the need for recognition of the reproductive mechanisms that have arisen in each cryptic species group.

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