

## Rediscovery and redescription of the holotype of *Mantella manery*

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**The Malagasy poison frog *Mantella manery* Vences, Glaw & Böhme, 1999 was described on the basis of color slides of a specimen deposited in the collection of the Département de Biologie Animale, Université d'Antananarivo, which is the only voucher of this species known to date. The holotype of this species was not available for morphological examination at the time of the description but has been rediscovered by us in 2004. Its catalogue number is UADBA 7273 and its snout-vent length is 22.7 mm. We here provide an updated description of *Mantella manery*, based on morphological examination of the holotype.**

### INTRODUCTION

The genus *Mantella* Boulenger, 1882 is composed of 15 species currently recognized (GLAW & VENCES, 2003). These colorful diurnal animals are usually named Malagasy poison frogs (DALY et al., 1996) and are important for the pet trade, ecotourism, and as flagship species for conservation (BEHRA, 1993; ZIMMERMANN, 1996; VENCES et al., 2004). After GLAW & VENCES (1994) first mentioned and figured an unnamed species of *Mantella* from the Marojejy Massif in north-eastern Madagascar, hobbyists have used various invalid (conditional) names to refer to this species, such as “*Mantella marojezyi*” or “*Mantella marojezy*”. To avoid an accidental description similar to the case of *Mantella milotympanum* Staniszewski, 1996, the species was described as *Mantella manery* by VENCES et al. (1999), based on photographs and field data only. The holotype was said to be “a single specimen of this species (...) in the herpetological collection of the Zoological Institute of the Antananarivo University, Madagascar”. Because this specimen was not found in the Antananarivo collection, the original description of *Mantella manery* was based “on color slides of this specimen” alone (VENCES et al., 1999).

In a recent effort of contributing to the inventory of the herpetological collection in the Département de Biologie Animale, Université d'Antananarivo, Madagascar (UADBA), we

rediscovered the holotype of *Mantella manery* in February 2004. In the following we provide a redescription of this species and focus on the previously unavailable morphological features of the holotype. Terminology follows VENCES et al. (1999).

***Mantella manery* Vences, Glaw & Böhme, 1999**

*Mantella manery* Vences, Glaw & Böhme, 1999. – *Name-bearing type*: holotype by original designation (VENCES et al. 1999: 15), its catalogue number here first reported as UADBA 7273.

Usage of the name subsequent to the original description:

*Mantella manery*: VENCES et al., 1999; GLAW & VENCES, 2000, 2003; SCHAEFER et al., 2002; VENCES & GLAW, 2003.

*Mantella manery* n. sp. (1999): STANISZEWSKI, 2001.

*Morphology of holotype*. – Adult specimen in moderate state of preservation. Several cuts through ventral skin for gonad examination. Some tissue removed from left femur for DNA extraction. Probably a male, but gonads not sufficiently recognizable due to poor preservation and dark color of inner organs. Body relatively stout for a *Mantella*; head clearly longer than wide, slightly narrower than body; snout rounded in dorsal and lateral views; nostrils directed laterally, very slightly protuberant; canthus rostralis distinct, concave; loreal region slightly concave; tympanum distinct, rounded, its diameter 57 % of eye diameter; supratympanic fold distinct, slightly curved; tongue narrow and longish-ovoid, very slightly notched posteriorly; vomerine and maxillary teeth absent. Forelimbs slender; subarticular tubercles single; inner and outer metacarpal tubercles distinct; fingers without webbing; comparative finger length  $1 < 2 \leq 4 < 3$ ; finger discs moderately enlarged; nuptial pads absent. Hindlimbs slender; when hindlimbs are adpressed along body, the tibiotarsal articulation reaches the posterior eye corner; lateral (outer) metatarsalia strongly connected; a large inner and a distinct outer metatarsal tubercles; webbing between toes absent; comparative toe length  $1 < 2 < 5 < 3 < 4$ , third toe clearly longer than fifth toe. Skin on dorsal surface, throat and chest smooth; slightly granular on venter; shanks ventrally granular, possibly marking an area of indistinct and not sharply delimited femoral glands.

*Measurements of holotype*. – All in mm. Snout-vent length, 22.7 (estimated as 25 mm by VENCES et al. 1999); maximum head-width, 7.7; head length from tip of snout to maxillary articulation, 9.0; horizontal eye diameter, 2.8; horizontal tympanum diameter, 1.6; distance from anterior edge of eye to center of nostril, 1.9; distance from center of nostril to snout tip, 1.1; distance between centers of nostrils, 2.6; hand length, 6.0; forelimb length, 14.4; hindlimb length, 33.8; foot length including tarsus, 14.9; foot length, 9.6; tibia length, 10.4.

*Color of holotype in life*. – See VENCES et al. (1999). Figure 320 in GLAW & VENCES (1994) shows the ventral side of the holotype but is mirrored horizontally.

*Color of holotype in preservative*. – After almost 10 years, the pattern of the holotype is still fully recognizable (fig. 1). The greenish dorsal and blue ventral color has partly faded and is much less vivid than in life.



Fig. 1. – Holotype of *Mantella manery* (UADBA 7273) in ventral and dorsal view, as photographed in February 2004, before the application of ventral cuts for gonad examination and tissue removal from shank muscle. The scale bar represents 10 mm.

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#### LITERATURE CITED

- BEHRA, O., 1993. – The export of reptiles and amphibians from Madagascar. *Traffic Bull.*, **13** (3): 115-116.
- DALY, J. W., ANDRIAMAHARAVO, N. R., ANDRIANTSIFERANA, M. & MYERS, C. W., 1996. – Madagascar poison frogs (*Mantella*) and their skin alkaloids. *Am. Mus. Novit.*, **3177**: 1-34.
- GLAW, F. & VENCES, M., 1994. – *A fieldguide to the amphibians and reptiles of Madagascar*. 2<sup>nd</sup> edition. Köln, Vences & Glaw Verlag: 1-480, 48 pl.
- 2000. – *Mantella manery*, *M. nigricans* und *M. milotympanum*. *Aquarien- & Terrarien-Z.*, **5** (7): 36-39.
- 2003. – Introduction to Amphibians. In: S. M. GOODMAN & J. P. BENSTEAD (ed.), *The Natural History of Madagascar*, Chicago & London, The University of Chicago Press: 883-898.
- SCHAEFER, H.-C., VENCES, M. & VEITH, M., 2002. – Molecular phylogeny of Malagasy poison frogs, genus *Mantella* (Anura: Mantellidae): homoplastic evolution of colour pattern in aposomatic amphibians. *Org. Divers. Evol.*, **2**: 97-105.
- STANISZEWSKI, M. S., 2001. – *Mantellas*. Frankfurt, Edition Chimaira, 1-229.

- VENCES, M., CHIARI, Y., RAHARIVOLOLONIANA, L. & MEYER, A., 2004. – High mitochondrial diversity within and among populations of Malagasy poison frogs. *Mol. Phylogenet. Evol.*, **30**: 295-307.
- VENCES, M. & GLAW, F., 2003. – *Mantella*. In: S. M. GOODMAN & J. P. BENSTEAD (ed.), *The Natural History of Madagascar*, Chicago & London, The University of Chicago Press: 913-916.
- VENCES, M., GLAW, F. & BÖHME, W., 1999. – A review of the genus *Mantella* (Anura, Ranidae, Mantellinae): taxonomy, distribution and conservation of Malagasy poison frogs. *Alytes*, **17**: 3-72.
- ZIMMERMANN, H., 1996. – Der Schutz des tropischen Regenwaldes und ein kleines Fröschen in Ost-Madagaskar. *Stapfia*, **47**: 189-218.

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