

Rediscovery and redescription of the Malagasy dwarf gecko *Lygodactylus klemmeri*

MARTA PUENTE*, ACHILLE P. RASELIMANANA** & MIGUEL VENCES***

*Laboratorio de Anatomía Animal, Facultad de Ciencias, Universidade de Vigo, E-36200 Vigo, Spain;

** WWF-Antsakaviro BP 738, Antananarivo 101, Madagascar; araselimanana@wwf.mg

*** Institute for Biodiversity and Ecosystem Dynamics (IBED), Zoological Museum, University of Amsterdam, Mauritskade 61, 1092 AD Amsterdam, The Netherlands; vences@science.uva.nl

Corresponding author: Marta Puente, martapuate@gmail.com

Abstract

Lygodactylus klemmeri Pasteur, 1964 is a small diurnal gekkonid lizard described on the basis of a single male specimen from Antsingy forest in western Madagascar, deposited in the Paris museum. This specimen could not be retrieved during recent years in the Paris collection and might be lost. Hence, the only existing information on this gecko is the original description and some subsequent remarks on the holotype by G. Pasteur. We here report on new material of *L. klemmeri* from the collection of the University of Antananarivo, Madagascar, and provide a comparison to published morphological data of the holotype.

Key words: Squamata, Gekkonidae, *Lygodactylus*, *Lygodactylus klemmeri*, Madagascar, taxonomy

Introduction

Lygodactylus are dwarf lizards from the southern hemisphere, occurring with highest diversity in subsaharan Africa and Madagascar, and with two species in South America (sometimes considered as own genus, *Vanzoia*). In addition, the genus *Microscalabotes* is closely related to *Lygodactylus* (Puente *et al.* 2005). The systematics and phylogenetic relationships of these diurnal geckos are still largely uncharted.

Lygodactylus klemmeri Pasteur 1964, has been described on the basis of an adult male specimen from Antsingy forest in western Madagascar. No further data on this species has become available since, except some morphological comparisons based on the holotype (Pasteur 1965), except some morphological comparisons based on the holotype (Pasteur 1965), and a short mention in a species inventory list (Emanueli & Jesu 1995). Since 1992 we have been unable to retrieve the holotype in the collection of the Paris museum, where it had originally been deposited, and it might be lost (G. Pasteur, pers. comm. in 2001). The species has been assigned to the *Lygodactylus verticillatus* group within the occidental

lineage of Malagasy *Lygodactylus* (Pasteur 1964). This lineage was considered as basal and closely related to African forms; it includes the *L. verticillatus*-group (*L. arnoulti*, *L. decaryi*, *L. heterurus*, *L. klemmeri*, *L. praecox*, *L. verticillatus*), the *L. tolampyae* group (only containing *L. tolampyae*), and two intermediate species (*L. ornatus* and *L. pauliani*) (Pasteur 1964, 1995; Pasteur & Blanc 1991).

Here we report on the rediscovery of the species during recent inventory work in western Madagascar, and provide morphological data on the four newly collected specimens.

Materials and Methods

Newly collected specimens were deposited in the collection of the Université d'Antananarivo, Département de Biologie Animale: one male (UADBA 17821) and three females (UADBA 17819–17820, 17822). All specimens were collected by A. P. Raselimanana at a site close to Bekopaka, Bemaraha National Park, western Madagascar, 19°08'09"S / 44°49'07"E, 100–150 m above sea level. Collecting dates were 24 November 2001 (UADBA 17819–17820), 30 November 2001 (UADBA 17821) and 3 December 2001 (UADBA 17822); original field numbers were APR 1064, 1065, 1142 and 1193. Comparative data on the holotype (Muséum National d'Histoire Naturelle: MNHN 1950.259) were taken from the literature (Pasteur 1964, 1965).

Results and Discussion

The new specimens are medium-sized for *Lygodactylus* (23.9–25.2 mm snout-vent-length [SVL]); dorsal scales granular; first finger with claw; three pairs of lamellae on the fourth toe; a mental scale divided into three parts by sutures. A faint contact may be present between infralabial and mental scale. Three bisymmetrical postmental scales; five postpostmental scales except UADBA 17822 that has six; 5–6 infralabial scales; seven supralabial scales except UADBA 17822 that has six; one internasal scale; the male (UADBA 17821) has nine preanal pores, with non-pigmented enlarged scales in the cloacal and femoral area. The tail is verticillated, with 11 distinct verticiles; dorsolateral tubercles absent; the general dorsal color in preservative is brownish and grey-olive, the head can be greenish; ventral side with light color and distinct throat lines, gular yellow.

A comparison with published information on the holotype (Pasteur 1964, 1965) as summarized in Tab. 1 confirms the belonging of the new material of the new material to *L. klemmeri*. The male holotype was lightly larger (SVL 28 mm) than the new specimens (SVL 23.9–25.2 mm). The new male specimen (UADBA 17821) has nine preanal pores whereas the holotype was described as having 10. Also the locality of the new specimens (Tsingy de Bemaraha National Park) coincides with the type locality as the area known as

the Antsingy forest is located within this reserve. The specimens UADBA 17819, 17820 and 17822 were found active during the day on tree trunks in dry semi-deciduous forest, within a limestone area, whereas UADBA 17821 was found roosting at night on a leaf at 1 m perch height in semi-deciduous forest, within a limestone canyon.

TABLE 1. Comparison of morphological data of the newly collected specimens of *L. klemmeri* with literature data on the holotype (MNHN 1950.259). SVL, snout-vent length; TAL, tail-length; G, granular dorsal scales; +/-, present/absent; Finger I, presence/absence of first finger; Claw I, presence/absence of a claw on the first finger; N pairs lamellae, number of pairs lamellae on the 4th toe; Mental divided refers to a division of mental scale into three parts by sutures; * enlarged preanal-femoral scales.

Catalogue number	Holotype MNHN 1950.259	UADBA 17819	UADBA 17820	UADBA 17821	UADBA 17822
Sex	Male	Female	Female	Male	Female
SVL (mm)	28	23.9	24.3	25.2	24.6
TAL (mm)	No data	Broken	22.0	20.4 (broken)	Broken
Dorsal scales	G	G	G	G	G
Finger I	+	+	+	+	+
Claw I	+	+	+	+	+
N pairs lamellae	4	3+1	3	3	3+1
Mental	Divided	Divided	Divided	Divided	Divided
Contact mental/ infralabial	+	-	+	-	+
N postmentals	3	3	3	3	3
Shape postmentals	Bisymmetrical	Bisymmetrical	Bisymmetrical	Bisymmetrical	Bisymmetrical
N postpostmentals	5	5	5	5	6
N infralabials	6/3-4+1-2 labials	6	6	5	5
N supralabials	6/3-4+1-2 labials	6	7	7	7
N internasals	No data	1	1	1	1
N preanal pores	5+0+5	none	none	*9	none
Tail verticillated (+/ -) and N verticilles	+, 11	none (broken tail)	+, 11	+, 11 (broken tail)	+, 4 (broken tail)
Dorsal colour	Grey-olive	Grey-greenish, head dark green	Grey-greenish, head dark green	Grey-greenish, head dark green	Grey-greenish, head dark green
Ventral colour	Short conver- gent stripes formed by small spots	Gular stripes and yellow colour on throat			

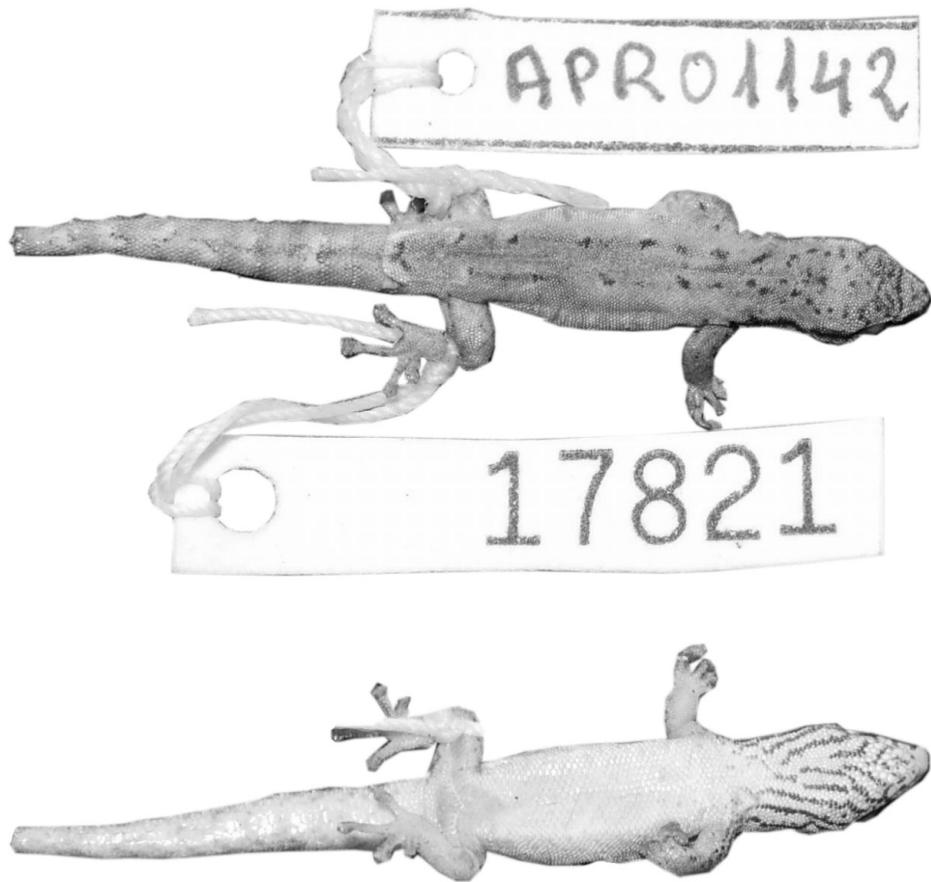


FIGURE 1. Dorsal and ventral views of a preserved male specimen of *Lygodactylus klemmeri* (UADBA 17821).

There are several species of *Lygodactylus* that have been described on the basis of a relatively low number of individuals. Because these lizards, in general, are morphologically rather uniform, some minute scale characters are often crucial to distinguish between closely related species. However, the intra- and interpopulational variation of these characters has often not been properly assessed. The new data provided here give us new insights into the color pattern of *Lygodactylus klemmeri* because the study was carried out based on specimens few years after their collection. Among the morphological data presented, we wish to stress the presence of only one internasal scale, a character not mentioned in the original description of the species and therefore unavailable so far. According to our extensive data set based on several hundreds of specimens, this character can be highly variable in some representatives of the *Lygodactylus verticillatus* group (*L. arnouliti*, *L. decaryi*, *L. blancae*, *L. verticillatus*) but

seems to be a stable character in other species like *L. heterurus*. Morphologically *L. klemmeri* shows close affinities to *L. heterurus* from northern Madagascar but the latter differs by having two internasal scales. In addition, there are some possible differences in number and pigmentation of preanal pores (11 pigmented pores in *L. heterurus* vs 9–10 unpigmented in *L. klemmeri*), in the pattern of ventral stripes (restricted to the throat in *L. klemmeri*), and the tail morphology (possibly less strongly verticillated in *L. klemmeri*) (Rösler 1998). These data provide evidence for the status of *L. klemmeri* as separate species. As far as known, this species is a local endemic of the Bemaraha area in western Madagascar. This emphasizes the importance of this area as a center of endemism and the conservational importance of Bemaraha National Park.

Acknowledgements

We are grateful to O. Ramilijaona (Antananarivo University) who allowed examination of specimens held in her care.

References

- Emanueli, L. & Jesu, R. (1995) The herpetofauna of the World Heritage Site "Tsingy de Bemaraha" (Western Madagascar). In: Llorente, G., Santos, X. & Carretero, M. A. (Eds.), *Scientia Herpetologica*. Proceedings of the 7th OGM of Societas Europaea Herpetologica, Barcelona, pp. 341–348.
- Pasteur, G. (1964) Notes préliminaires sur les Lygodactyles (Gekkonidés). IV Diagnoses de quelques formes africaines et malgaches. *Bulletin du Muséum national d'Histoire Naturelle*, (3), 311–314.
- Pasteur, G. (1965) *Recherches sur l'évolution des lygodactyles, lézards afro-malgaches actuels. Travaux de l'Institut Scientifique Chérifien. Série Zoologie*, 29, 1–132.
- Pasteur, G. (1995) Biodiversité et reptiles: diagnoses de sept nouvelles espèces fossiles et actuelles du genre de lézards *Lygodactylus* (Sauria, Gekkonidae). *Dumerilia*, 2, 1–21.
- Pasteur, G. & Blanc, C. P. (1991) Un lézard parthénogénétique à Madagascar? Description de *Lygodactylus pauliani* sp. nov. (Reptilia, Gekkonidae), *Bulletin du Muséum national d'Histoire Naturelle Paris (4ème série)*, 13 (A; 1–2), 209–215.
- Puente, M., Thomas, M. & Vences, M. (2005) Phylogeny and biogeography of Malagasy dwarf geckos, *Lygodactylus* Gray, 1864: preliminary data from mitochondrial DNA sequences (Squamata: Gekkonidae), *African Biodiversity: Molecules, Organisms, Ecosystems. Proc. 5th Intern. Symp. Trop. Biol., Museum Koenig, Bonn, Springer Verlag*, pp. 229–235.
- Rösler, H. (1998) Eine neue Unterart von *Lygodactylus heterurus* Boettger 1913 (Reptilia: Sauria: Gekkonidae). *Sauria, Berlin*, 20(4), 31–38.