

## A new locality for the endangered day gecko *Phelsuma klemmeri* from western Madagascar

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**Abstract.** The endemic and endangered *Phelsuma klemmeri* (Gekkonidae) is one of the most colorful day geckos and was recently described in 1991 (Seipp 1991). It is known only from a small restricted coastal area on Ampasindava Peninsula, Sambirano region in northwestern Madagascar. In March 2008, this conspicuous gecko was discovered in a small bamboo microhabitat within the dry deciduous forest of Mandrozo of western Madagascar. The discovery of this gecko in the Mandrozo forest extends its southern distribution by 600 km and is only the second known locality for it. Currently, the Mandrozo site is in the process to be included within Madagascar's Protected Areas System (SAPM-Système des Aires Protégées de Madagascar) and if it becomes a SAPM site it will be a permanent protected site for the preservation of this endangered species and other biodiversity.

**Keywords.** Mandrozo site, Gekkonidae, new distribution, western Madagascar, SAPM site.

The genus *Phelsuma* are day geckos consisting of 44 recognized species (Rocha et al., 2010). Biogeographically, most *Phelsuma* species occur on the islands located in the southwestern Indian Ocean (Austin, Arnold and Jones, 2004; Glaw and Vences, 2007; Rocha et al., 2007). Due to its size and the variety of ecological niches, Madagascar holds the richest *Phelsuma* fauna and is considered the center of diversity for this group of diurnal lizards with around 30 described species (Glaw and Vences, 2007; Rocha et al., 2009, 2010). *Phelsuma klemmeri* was described in 1991 (Seipp, 1991), and it is only known to occur at its type locality in the coastal area on Ampasindava Peninsula and is absent from the nearby small islands and Nosy Be of northwestern Madagascar (Andreone et al., 2003, Van Heygen, 2004). *P. klemmeri* is known only from bamboo patches and secondary bamboo forests within

or on the edge of primary forests (Van Heygen, 2004).

It is endangered owing to its known distribution area is extremely restricted to the Ampasindava Peninsula (Glaw and Vences, 2007). Therefore, *P. klemmeri* is listed in Annex II of CITES (CITES 2010). Herein, we report on the discovery of the endangered *Phelsuma klemmeri* from a new locality in the dry deciduous fragmented forest at the Mandrozo wetland site in western Madagascar.

Herpetological surveys were conducted from 19 March to 13 April 2008 in the dry deciduous forest surrounding Mandrozo Lake (17°32'S; 44°05'E and altitude 73 m asl., see Fig. 1), located in western Madagascar. This wetland is one of the new proposed sites for Madagascar's protected areas network (SAPM-Système des Aires Protégées de Madagascar). The climate is characterized by a dry season from May to October and a rainy season from October to April. Rainfall data are lacking for this site, but due to similar seasonal variations should be similar to the Manambolomaty site (500-1,200 mm) 280 km south (pers. obs.). The surveys coincided with the end of rainy season and when most of the herpetological fauna is still active. Opportunistic, non-systematic diurnal and nocturnal searches were carried out along transects (paths) in different forest microhabitats and in open areas. Two sites were surveyed: Antsakoamalinika (17°33'35 S - 44°10'23 E) and Analalava (17°30'05 S

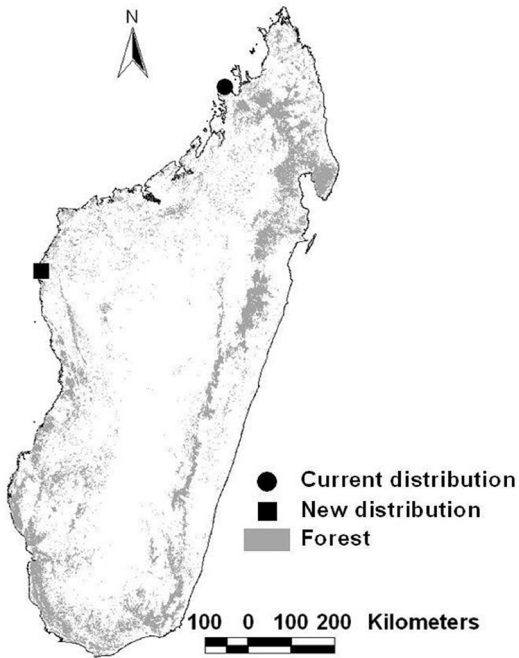
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**Figure 1.** Map showing the current known distribution and the new distribution locality for *Phelsuma klemmeri* at the Mandrozo site in western Madagascar during 2008.

- 44°03'53 E). In the Antsakoamalinka fragmented dry deciduous forest, a small bamboo patch was identified and surveyed during two days from 08:00 - 12:00 and from 15:00 - 18:00.

Two separate individuals of *Phelsuma klemmeri* were observed on 30 March 2008 in the Antsakoamalinka bamboo patch (17°33'55"S - 44°11'09"E). The first individual was found basking on a bamboo tree (*Dendrocalamus* sp.) about 2.5 m above ground at 10:20 am (see Fig. 2), and a second individual was found also on a bamboo tree at 1.5 m above ground at 11:15 am and approximately 500 m from the first individual. These two *P. klemmeri* were in a small patch of bamboo approximately 2 ha in size and near the edge of the main deciduous dry forest. We did not find *P. klemmeri* at Analalava, the second surveyed site.

These two day geckos were identified as *Phelsuma klemmeri* by their small size with a colorful yellow to orange head and neck, anterior back bluish and posterior brown with one light turquoise dorsolateral band, below one dark lateral band, and several white dorsal spots on hind legs. The tail was turquoise in both individuals (see Fig. 2). No tissue samples or specimens were collected. These two *P. klemmeri* were sympatric with *P. kochi* and *P. mutabilis*, but did not occupy the same microhabitat.



**Figure 2.** *Phelsuma klemmeri* found in the bamboo forest at Antsakoamalinka, western Madagascar.

*P. kochi* occurred in large trees mainly in open areas and plantations and on houses, and *P. mutabilis* was found on trees in the forest, in openings and plantations and on houses.

This new locality at Mandrozo extends its distribution to 600 km farther south (see Fig. 1). Moreover, there is no record on the presence of *P. klemmeri* between the species type locality on Ampasindava Peninsula and this new site at Mandrozo, even after several herpetological surveys, inventories and expeditions have been completed between these two sites at Belambo, Anjiamangirana, Ankarafantsika National Park, Namoroka National Park, Andranomanintsy, and Tsingy de Bemaraha National Park (Mori, Ikeuchi and Hasegawa, 2006; Raselimanana, 2008; Glaw, Köhler and Vences, 2009; Bora et al., 2010).

In northwestern Madagascar, *Phelsuma klemmeri* is found in humid forests or transitional forest only in the Sambirano region. This new locality for the species was low-altitude dry deciduous forest. In fact, the distribution of *P. klemmeri* seems not only to be affected by climate region or forest habitat, where it has been recorded in northwestern coastal rainforests and western dry deciduous forests. However, we note that this species was recorded only in a particular microhabitat, bamboo forests, and it seems to be highly specialized to this habitat type (Van Heygen, 2004; pers. obs.). It is important not only to enrich the knowledge on the distribution and habitat of this endangered gecko, but also for the conservation importance of this species to be included into the new Mandrozo SAPM wetland site, as a permanent protected area in Madagascar.

**Acknowledgments.** We thank especially Lily-Arison Rene de Roland, National Director of Peregrine Fund's Madagascar Project, the staff in Antananarivo and their biological technicians for their valuable assistance in the field. We also thank the Regional Technical Service of the Forest and Environment at Maintirano. Financial support was from The Peregrine Fund and Liz Claiborne and Art Ortenberg Foundation.

## References

- Andreone, F., Glaw, F., Nussbaum, R.A., Raxworthy, C.J., Vences, M., Randrianirina, J.E. (2003): The amphibians and reptiles of Nosy Be Island (NW Madagascar) and nearby islands: a case study of diversity and conservation of an insular fauna. *J. Nat. Hist.* **37**: 2119–2149.
- Austin, J.J., Arnold, E.N., Jones, C.G. (2004): Reconstructing an island radiation using ancient and recent DNA: the extinct and living day geckos (*Phelsuma*) of the Mascarene islands. *Mol. Phylo. Evol.* **31**: 102–109.
- Bora, P., Randrianantoandro, J.C., Randrianavelona, R., Hantalalaina, E.F., Andriantsimanarilafy, R.R., Rakotondravony, D., Ramilijaona, O.R., Vences, M., Jenkins, R.K.B., Glaw, F., Köhler, J. (2010): Amphibians and reptiles of the Tsingy de Bemaraha plateau, western Madagascar: checklist, biogeography and conservation. *Herp. Cons. and Bio.* **5**: 111–125.
- CITES. 2010. UNEP-WCMC. 20 May, 2010. UNEP-WCMC Species Database: CITES-Listed Species.
- Glaw, F., Vences, M. (2007): A Field Guide to the Amphibians and Reptiles of Madagascar. Third edition. Vences and Glaw Verlag, Köln.
- Glaw, F., J. Köhler, Vences, M. (2009): A new species of cryptically coloured day gecko (*Phelsuma*) from the Tsingy de Bemaraha National Park in western Madagascar. *Zootaxa* **2195**: 61–68.
- Mori, A., Ikeuchi, I., Hasegawa, M. (2006): Herpetofauna of Ampijoroa, Ankarafantsika Strict Nature Reserve, a dry forest in northwestern Madagascar. *Herp. Nat. Hist.* **10**: 31–60.
- Raselimanana, A.P. (2008): Herpétofaune des forêts sèches malgaches. *Malagasy Nature* **1**: 46–75.
- Rocha, S., Posada, D., Carretero, M.A., Harris, D.J. (2007): Phylogenetic affinities of Comoroan and East African day geckos (genus *Phelsuma*): multiple natural colonisations, introductions and island radiations. *Mol. Phylo. Evol.* **43**: 685–692.
- Rocha, S., Vences, M., Glaw, F., Posada, D., Harris, D.J. (2009): Multigene phylogeny of Malagasy day geckos of the genus *Phelsuma*. *Mol. Phylo. Evol.* **52**: 530–537.
- Rocha, S., Rösler, H., Gehring, P-S., Glaw, F., Posada, D., Harris, D.J., Vences, M. (2010): Phylogenetic systematics of day geckos, genus *Phelsuma*, based on molecular and morphological data (Squamata: Gekkonidae). *Zootaxa* **2429**: 1–28.
- Seipp, R. (1991): Eine neue Art der Gattung *Phelsuma* GRAY, 1825 von Madagaskar (Reptilia: Sauria: Gekkonidae). *Sencenb. Biol.* **71**: 11–14.
- Van Heygen, E. (2004): The genus *Phelsuma* GRAY, 1825 on the Ampasindava peninsula, Madagascar. *Phelsuma* **12**: 99–117.

