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Complementary information on the ecology and conservation of Malagasy skinks, with notes on the colouration of some recently described species

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THE Madagascan herpetofauna is particularly rich and diverse. Many new species have been described recently as a result of intensive surveys in remote areas and the application of innovative methods, such as karyology and biomolecular analyses. Nevertheless, some groups remain poorly known, for a number of reasons, including their secretive habits and general difficulties of observation. Typical species associated with such problems are the skinks, which live in most of Malagasy rain and deciduous forests, but for which information on natural history remains almost completey lacking.

An example of this situation is the recent contribution by Andreone & Greer (2002), in which nine new species were described, and the collection held at the Museo Regionale di Scienze Naturali in Torino (Italy) was revised. In this paper five species belonging to the genus *Amphiglossus* (*A. mandady*, *A. nanus*, *A. spilostichus*, *A. stylus*, *A. tanysoma*) were described, together with three of the genus *Paracontias* (*P. hafa*, *P. manify*, and *P. tsararano*), and one species of the enigmatic genus *Pseudoacontias* (*P. menamainty*). This contribution suggests that many more undetected skink species still await description in Madagascar. Indeed, the use of pitfall traps and drift-fence systems have allowed ourselves and other recent authors (e.g., Raxworthy & Nussbaum, 1994; Ramanamanjato et al., 1999) to describe many new species in the last few years, and to increase the number of specimens of little known species.

Skinks are elusive lizards usually tied to pristine or semi-pristine forests, and have a variable range of adaptations to subterranean life. For example, in the long-bodied *Amphiglossus crenni* (until recently known as *Androngo crenni*), the degree of limb reduction and body elongation are particularly accentuated and represent specialisations for living within the forest leaf litter. As a consequence, this species is difficult to detect and observe. As pointed out by Andreone & Greer (2002), the collection of this species was until then limited, and only in recent surveys have there been opportunities to increase the number of observations. The same situation applies to many other *Amphiglossus* species, which were found occasionally using opportunistic research. From an ecological perspective it would be interesting to establish whether the rainforests of Madagascar sustain a more or less stable number of skinks, or if there are areas and forests which show conspicuous diversity.

In this paper I provide complementary information on diversity and abundance in Malagasy skinks, based on reviews of previously published contributions and additional field data collected at a number of localities. The composition of ecological and body size guilds at some of these localities is also discussed. Furthmore, an updated set of photographs is provided of eight species described recently in Andreone & Greer (2002) (Plate 1-6, see also front cover), together with a summary of their colour pattern features.

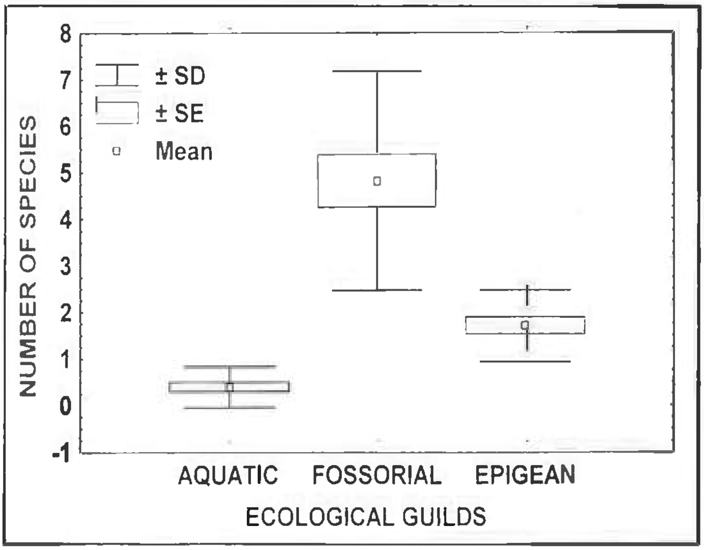

Figure 1. Box plots of the number of skink species per site (rainforests and transitional forests only), belonging to the three ecological guilds in the areas examined.

ECOLOGICAL NOTES

The composition of skink faunas in terms of species richness at several protected and unprotected localities is analysed in Appendix 1 page 15). This includes most rainforest and Sambirano sites (Manongarivo, Nosy Be, Montagne d'Ambre, Anjanaharibe-Sud, Ambolokopatrika, Marojejy, Tsararano, Masoala, Anjozorobe, Pic d'Ivohibe, Andringitra), dry-deciduous forest sites (Zombitse, Andohahela, Kirindy), one littoral forest (Tampolo), one transitional dry forest – Sambirano (Sahamalaza), and one transitional dry-rainforest (Malahelo).

Within the general species assemblage, three principal ecological guilds may be distinguished: (1) aquatic, (2) epigean, and (3) fossorial and semi-fossorial species (Fig. 1). The first includes the large aquatic *Amphiglossus* species: *A. astrolabi*, *A. waterloti*, and *A. reticulatus*. *Amphiglossus mandokava* is not included in this guild, since observations do not confirm its aquatic habits (Nussbaum & Raxworthy, 1994).

The second guild includes all of the *Mabuya* species. These lizards, are active on the ground surface and are conspicuous in rocky and grassy areas. They are able to colonise degraded and anthropogenic habitats, such as urban gardens, and grassy areas along roads. Almost all the other skinks are more closely associated with natural habitats. Within the genus *Amphiglossus,* only *A. melanopleura* appears to show a similarly epigean-oriented activity pattern (e.g., Andreone & Randriamahazo, 1997). For this reason it is considered here as a unique epigean-oriented *Amphiglossus*, although it also shows certain tendencies to fossoriality and lives within the forest leaf litter. During the surveys I did not find any other *Amphiglossus* species active during the day, although one species, *A. macrocercus*, was found under stones and boulders in its natural habitat, the altitude forests, as at Ankaratra (Vences et al., 2002). Indeed, *A. tanysoma* was found in a coffee cultivation next to Ambanja. However, this kind of cultivation represents (as do a few other types) an ecological replacement for the natural rainforest, especially where coffee is not cultivated intensively and the plants intergrade with secondary rainforest (Andreone et al., in press).

The other scincid species of Madagascar show a tendency to fossorial life. Among rainforest species, this underground existence is probably restricted mostly to the thin forest litter, composed by dead leaves and other organic debris. It is likely that none of the species dig in the often hard underlying lateritic soil. Instead, they move under (or within) the forest litter during the day but become more active and evidently epigean during the night. Furthermore, some of them show marked adaptations to fossoriality, such as reduced or missing limbs. This is evident with *Paracontias* species and also *Amphiglossus stylus* and *A. crenni*. The recently described *Pseudoacontias menamainty*, as well as the other species of this genus, show a reduction of fore and hind-legs, and the head is pointed with reduced eyes (Nussbaum & Raxworthy, 1995). Similarly, fossorial adaptations are also evident in the genus *Voeltzkowia*, which is more typical of sandy areas

Amphiglossus spilostichus, holotype: MRSN R1737, from Tsararano Forest, Campsite 2 (Andatony Anivo). All photographs by the author.

Amphiglossus tanysoma, paratype: MRSN R1865, from Antsirasira.

Paracontias tsararano, holotype: MRSN R1787, from Tsararano Forest, Campsite 1 (Antsarahan'ny Tsararano).

Amphiglossus stylus, holotype: MRSN R1732, from Masoala Peninsula, Campsite 5 (Menamalona).

Paracontias manify, holotype: MRSN R1887, from Antsahamanara, Manarikoba Forest, RNI de Tsaratanana.

Pseudoacontias menamainty, holotype: MRSN R1826, from Berara Forest, Sahamalaza Peninsula.

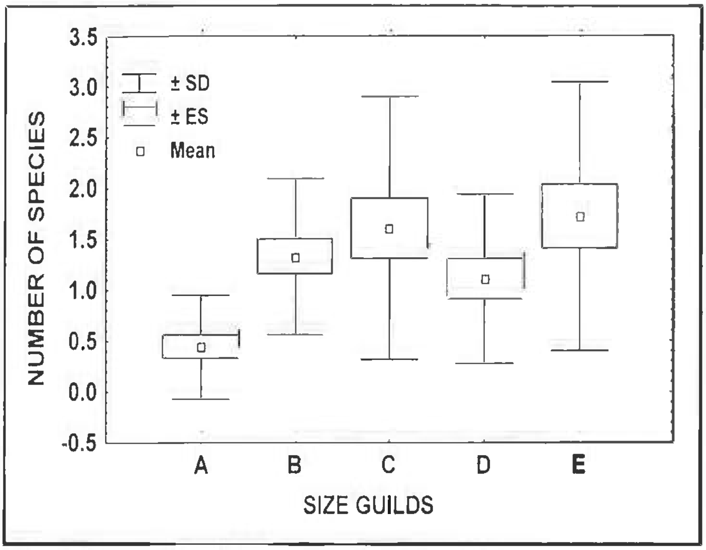

Figure 2. Box plots of the number of skink species per studied rainforest and transitional forest sites in relation to their snout-vent length (A, SVL < 40 mm; B, SVL = 40-60 mm; C, SVL = 60-80 mm; D, SVL = 80-100 mm; E, SVL > 100 mm).

of southern and western Madagascar but not unknown in rainforest. The other species of *Amphiglossus* have a more typical lizard morphology, with legs varying from moderate to well developed. They all are very difficult to observe during the day and become active (or more active) at night. This is confirmed by the rate of capture using pitfall traps: all of the specimens belonging to the genus *Amphiglossus* and reported by Andreone & Greer (2002) were captured at night.

The number of fossorial and semifossorial species at the localities studied (excluding the species from dry forests, clearly representing a different community type) ranged from 1 to 10, with a mean value of 4.82 (SD= ± 2.35). The epigean species varied from 0 to 3 (1.71 ± 0.77). In terms of aquatic only one species is likely typical of each forest site. It does not seem that there are cases of syntopy of two (or more) species. Of the sites reported in Table 1, an aquatic *Amphiglossus* was found at four sites only. It cannot be excluded that one aquatic species is usually present at (almost) all the sites. The 'absence' at some places, such as Manongarivo, Anjanaharibe-Sud, and Andringitra can be interpreted as an objective difficulty to observe in nature this species. In fact, the species in the group are closely tied to the aquatic environment (where they often move and search for preys) aquatic, and mostly nocturnal. Further surveys will likely demonstrate the presence of at least an aquatic species for each forest block.

The species were also divided according to their body size (snout-vent length). Those from dry-forests were excluded. The box-plot graphics are given in Fig. 2, from which it is evident that the most represented species are included in category C (60-80 mm). Another well represented guild is the 'D', which corresponds to 'giant' species. These ecological and size distributions are likely the result of a resource partitioning (Toft, 1995).

The total number of species per site ranged from 3 (Ambolokopatrika, Anjozorobe, Ankaratra) to 13 (Marojejy) for rainforest and transitional sites, and from 4 to 7 for dry-forest sites. The high scincid diversity at Marojejy can be explained by the fact that this massif is a 'megadiversity' hotspot in Madagascar, and the survey work here led to the discovery of a very high number reptiles. This diversity has not yet been matched at other sites (with the possible exception of the hyper-studied Périnet-Andasibe area). The other main north-eastern massif, the Anjanaharibe-Sud (which also makes part - together with Marojejy - of the articulated Andapa montane system), which has a lower altitudinal range, had nine species. The low number of species found at Ambolokopatrika (3) is quite 'anomalous', since at this forest the survey period was relatively long (17 days in June, and 22 days in November-December 1997). Three explanations may be proposed to account for this situation: (1) a less favourable ecological status for Ambolokopatrika, (e.g. greater humidity or rainfall, and a lower mean temperature), (2) an unfavourable temporary (climatic) regime, due to the heavy rainfalls and low temperature, that did not favour the activity of lizards and other reptiles, (3) a different general situation due to human alteration. I cannot, however, exclude the possibility that the low diversity is due to past forest exploitation, with a consequent loss of biological diversity (not yet recovered).

CONSERVATION CONSIDERATIONS

Looking at the number and composition of species in the areas studied it is evident that the greater majority of species is represented by fossorial and semifossorial species, which mostly depend on the presence of a rather thick forest litter. This is much the same for other forest and fossorial species, such as some cophyline microhylid amphibians (e.g. *Rhombophryne*, *Plethodontohyla* spp.), and typhlopid snakes. The forest alteration is followed by the disappearance of such forest litter, and denudation of the soil, with the well known erosive phenomena (Andreone, 1991). This causes the decline or even local extinction of species living in the forest litter, which are usually sensitive to habitat alteration (Andreone & Luiselli, in press). Thus, the forest alteration may lead to significant impoverishment of the scincid diversity. This was confirmed during the study at two forest corridors in the Masoala Peninsula (Andreone & Randrianirina, 2000). In the Ambatoledama and Ilampy corridors, the number of skinks captured with pitfalls was lower than in nearby areas where the forest was still mostly intact. In such degraded areas, the only skinks I found were species of *Mabuya*. These lizards can adapt to even small natural parcels or 'naturalised' habitats within towns. This ability is well known, for example, in *Mabuya gravenhorsti*, which is sometimes common even in urban gardens (Andreone, 1991). At Nosy Tanikely, the introduced population of *Mabuya comorensis* is now well established (Andreone et al., in press) and not affected by the presence of tourists, who often leave food debris. In this respect, they behave very similarly to the syntopic *Zonosaurus madagascariensis*.

The only other species found in open areas are the aquatic forms, such as *Amphiglossus astrolabi*. In some areas, e.g. Ranomafana, these can also be found near to urban settlements. Evidently – as with aquatic amphibians (e.g., *Mantidactylus lugubris, M. grandidieri*) – these reptiles are more resistant to habitat alteration, since their principal requirement for life is a suitable water course and nearby habitat (Andreone & Luiselli, in press).

Also, it must be stressed that our knowledge of natural history traits in Malagasy skinks is still in a preliminary phase, and that data on which to draw important conservation considerations are lacking. As pointed out on previous occasions, (Andreone, 1991; Andreone & Greer, 2002) only the conservation of rainforest and other original forest types can ensure their continued survival. Most of the newly-described species, and also many other skinks referred to in this paper, are restricted to unaltered habitats.

COLOURATION OF NEW SPECIES

Descriptions of the nine new taxa published by Andreone & Greer (2002) were based upon original information, drawings and black/white pictures of preserved specimens. At the time of publication it was not possible to include photographs of these species showing their colouration in life. Aside from morphometric data and scale counts, colour photographs are useful for an initial (although necessarily preliminary) taxonomic determination. For the purpose of complementing their formal description, colour photographs are therefore included here of all the new species except *Amphiglossus nanus* (Plates 1-6, see also front cover). A general colour description follows summarising information given in the full descriptive work.

Amphiglossus mandady – dark brown-reddish dorsally, with a small pale spot or dash in the centre of each scale; belly is likely pale yellowish.

Amphiglossus nanus – although there are no photographs of living specimens, the colouration of this species in preservative appears to be similar: the dorsum of head, body and tail medium brown, variegated with pale brown; dark brown on the body tending to aggregate in centres of scales;

underparts of head and body pale; venter of tail brown.

Amphiglossus spilostichus – ground colour of body dark brown dorsally grading to greyish brown on the flanks and dirty pale brown ventrally. Most dorsal and lateral scales with a pale brown central spot confined to base of each scale on dorsum, becoming a central dash on flanks, resulting overall in a pattern of longitudinal pale spots dorsally, transforming into a series of strong longitudinal dashes laterally. On head, scale edges are dark brown and scale centres tend to be medium to pale brown. Venter pale and without markings.

Amphiglossus stylus – dorsum reddish-brownish, with small, rather indistinct dark spots, sometimes becoming almost iridescent. Venter much paler than dorsum and almost translucent.

Amphiglossus tanysoma – dorsal background brownish shading to pinkish. Flanks with background pale yellowish brown and darker brown speckling; belly almost whitish.

Paracontias hafa – ground colour of the dorsum reddish-copper, with small darker spots in the centre of each scale; anterior part of body paler than posterior part. Venter paler than dorsum and somewhat translucent.

Paracontias manify – dorsal colour brown-reddish, grading to copper, with a darker area in middle of each scale, producing impression of a reticulate network on the back and flanks. Head and posterior part of the body darker than rest of dorsum. Venter a little lighter than the back, and translucent.

Paracontias tsararano – dorsum almost reddish-copper, with a smaller darker area in centre of each scale, giving the impression of an ill-defined 'striped' pattern on back. Tail slightly darker than body. Venter paler than dorsum and translucent.

Pseudoacontias menamainty – reddish orange (venter paler than the back), with thin longitudinal black lines on the back, each running through centre of a longitudinal scale row, mid-lateral area unpatterned, but three or four poorly defined black lines through the centres of each longitudinal scale row on ventrolateral surface; venter without pattern; tail with black line through centre of each longitudinal scale row, dorsal-most lines most distinct; ocular region and front limb crease darkly pigmented.

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REFERENCES

Andreone, F. (1991). Reptile field records from Malagasy rainforests. *Boll. Mus. Reg. Sci. Nat. Torino* **9**, 437-460.

Andreone, F., Glaw, F., Nussbaum, R. A., Raxworthy, C. J., Vences, M. & Randrianirina, J.E. (in press). The amphibians and reptiles of Nosy Be (NW Madagascar) and nearby islands: a case study of diversity and conservation of an insular fauna. *J. Nat. Hist.*

Andreone, F. & Greer, A. (2002). Malagasy scincid lizards: descriptions of nine new species, with notes on the morphology, reproduction and taxonomy of some previously described species (Reptilia, Squamata, Scincidae). *J. Zool., Lond.*. **258**, 139-181.

Andreone, F. & Luiselli, L. (in press). Conservation priorities and potential threats affecting the hyper-diverse amphibians of Madagascar. *Ital. J. Zool.*

Andreone, F. & Randriamahazo, H. (1997). Ecological and taxonomic observations on the amphibians and reptiles of Andohahela low altitude rainforest, S. Madagascar. *Revue fr. Aquariol.* **3/4**, 95-128.

Andreone, F. & Randrianirina, J. E. (2000). Biodiversity, rainforests and herpetological communities in Madagascar: what about differences between amphibians and reptiles? In *Diversity and Endemism in Madagascar*, pp.

217-28. Lourenço W. & Goodman, S.M. (eds.). *Mém. Soc. Biogéogr.*

Andreone, F., Randrianirina, J. E., Jenkins, P. D. & Aprea, G. (2000). Species diversity of amphibia, Reptilia and Lipotyphla (Mammalia) at Ambolokopatrika, a rainforest between the Anjanaharibe-Sud and Marojejy massifs, NE Madagascar. *Biodiv. Conserv.* **9**, 1587-1622.

Andreone, F., Vences, M. & Randrianirina, J.E. (2001). Patterns of amphibian and reptile diversity at Berara Forest (Sahamalaza Peninsula), NW Madagascar. *Ital. J. Zool.* **68**, 235-241.

Bloxam, Q. M. C., Behler, J. L., Rakotovao, E. R., Randriamahazo, H. J. A. R., Hayes, K. T., Tonge, S. J. & Ganzhorn, J. U. (1996). Effects of logging on the reptile fauna of the Kirindy Forest with special emphasis on the flat-tailed tortoise (*Pyxis planicauda*). In *Ecology and Economy of a Tropical Dry Forest in Madagascar*, pp. 189-201. Ganzhorn J. U. & Sorg, J.-P. (eds.). *Primate Report* **46** (1).

Glaw, F. & Vences, M. (1994). *A Field Guide to the Amphibians and Reptiles of Madagascar.* Second edition, including freshwater fish and mammals. Köln: Vences und Glaw Verlag.

Nussbaum, R. A., Raxworthy, C. J., Raselimanana, A. P. & Ramanamanjato, J.-B. (1999). Amphibians and reptiles of the Réserve Naturelle Intégrale d'Andohahela, Madagascar. Chapter 11 in *A Floral and Faunal Inventory of the Réserve Naturelle Intégrale d'Andohahela, Madagascar: with reference to elevational variation*, pp. 155-173. Goodman, S.M. (ed.), *Fieldiana Zool.* N.S. **94**.

Nussbaum, R.A. & Raxworthy, C. J. (1995). Review of the scincine genus *Pseudoacontias* Barboza du Bocage (Reptilia: Squamata: Scincidae) of Madagascar. *Herpetologica* **51**, 91-99.

Nussbaum, R.A., Raxworthy, C. J. & Ramanamanjato, J.B. (1999). Additional species of *Mabuya* Fitzinger (Reptilia: Squamata: Scincidae) from western Madagascar. *J. Herpetol.* **33**, 264-280.

Rakotomalala, D. (2002). Chapitre 10. Diversité des reptiles et amphibiens de la Réserve Spéciale de Manongarivo, Madagascar. In *Inventaire Floristique et Faunistique de la Réserve Spéciale de Manongarivo (NW Madagascar)*, pp. 339-359. Gautier L. & Goodman, S.M. (eds.). *Boissiera.*

Ramanamanjato, J. B., McIntyre, P. B. & Nussbaum, R. A. (2002). Reptile, amphibian, and lemur diversity of the Malahelo Forest, a biogeographical transition zone in southeastern Madagascar. *Biodiv. Conserv.* **11**, 1791-1807.

Ramanamanjato, J.B., Nussbaum, R.A. & Raxworthy, C.J. (1999). A new species of *Mabuya* Fitzinger (Squamata: Scincidae: Lygosominae) from northern Madagascar. *Occ. Pap. Mus. Zool. Univ. Mich.* **728**, 1-22.

Raselimanana, A. P. (1998). La diversité de la faune de reptiles et amphibiens. In *Inventaire Biologique Forêt d'Andranomay Anjozorobe*, pp. 43-59. Rakotondravony, D. & Goodman, S.M. (eds.). *Récherches pour le Développement, Série Sciences Biologiques*, **13**.

Raselimanana, A. P. (1999). Chapitre 4. Le herpétofaune. In *Inventaire biologique de la réserve spéciale du pic d'Ivohibe et du couloir forestier qui la relie au Parc national d'Andringitra*, pp. 81-98. Goodman, S. M. & Rasolonandrasana B. P. N. (eds.). *Récherches pour le Développement, Série Sciences Biologiques*, **15**.

Raselimanana, A. P., Rakotomalala, D. & Rakotondraparany, F. (1998). Les reptiles et amphibiens: diversité et conservation. Chapitre IX in *Inventaire Biologique de la Forêt littorale de Tampolo (Fenoarivo Antsinanana)*, pp. 183-196. Ratsirarson, J. & Goodman, S.M. (eds.). *Récherches pour le Développement, Série Sciences Biologiques*, **14**.

Raselimanana, A. P., Raxworthy, C. J. & Nussbaum, R. A. (2000). Herpetofaunal species diversity and elevational distribution within the Parc National de Marojejy, Madagascar. Chapter 9 in *A Floral and Faunal Inventory of the Parc National de Marojejy, Madagascar: with Reference to Elevational Variation*, pp. 157-174. Goodman, S.M. (ed.). *Fieldiana Zool.*, N.S. **97**.

Rasolonandrasana, P. N. & Goodman, S. M. (2000). Importance du couloir forestier situé entre le Parc National d'Andringitra et la

Réserve Spéciale du Pic d'Ivohibe pour la conservation des vertébrés terrestres. In *Diversité et Endémisme à Madagascar. Actes du II Colloque International Biogéographie de Madagascar*, pp. 139-154. Lourenço W. R. & Goodman, S.M. (eds.). *Mémoires de la Societé de Biogéographie.*

Raxworthy, C. J., Andreone, F., Nussbaum, R. A., Rabibisoa, N. & Randriamahazo, H. (1998). Amphibians and reptiles of the Anjanaharibe-Sud Massif: elevational distributions and regional endemicity. In *A Floral and Faunal Inventory of the Réserve Spéciale d'Anjanaharibe-Sud,Madagascar: with Reference to Elevational variation*, pp. 79-92. Goodman, S.M. (ed.). *Fieldiana Zool.*, N.S. **90**.

Raxworthy, C. J. & Nussbaum, R. A. (1994). Four new species of *Amphiglossus* from Madagascar (Squamata: Scincidae). *Herpetologica* **49**, 326-341.

Raxworthy, C. J. & Nussbaum, R. A. (1996). A rainforest survey of amphibians, reptiles, and small mammals at Montagne d'Ambre, Madagascar. *Biol. Conserv.* **69**, 65-73.

Raxworthy, C. J. & Nussbaum, R. A. (1996). Amphibians and Reptiles of the Réserve Naturelle Intégrale d'Andringitra, Madagascar: a study of elevational distribution and local endemicity. In *A Floral and Faunal Inventory of the Eastern Slopes of the Réserve Naturelle Intégrale d'Andringitra, Madagascar: with Reference to Elevational Variation*, pp 158-170 Goodman, S.M. (ed.). *Fieldiana (Zoology)*, **85**.

Raxworthy, C. J., Ramanamanjato, J.-B. & Raselimanana, A. (1994). Les reptiles et les amphibiens. In *Inventaire Biologique Forêt de Zombitse*, pp. 41-57. Goodman, S.M. & Langrand, O. (eds.). *Récherches pour le Développement-Série Sciences biologiques.* Numéro Spécial.

Toft, C. A. (1985). Resource partitioning in Amphibians and Reptiles. *Copeia* **1985** (1), 1-21.

Vences, M., Andreone, F., Glaw, F., Raminosoa, N. & Randrianirina, J. E. (2002). Amphibians and reptiles of the Ankaratra Massif: reproductive diversity, biogeography and conservation of a montane fauna in Madagascar. *Ital. J. Zool.* **69**, 263-284.

Appendix 1.

Site-by-site listing of skink species found in Madagascar. Taxa given as 'sp.' may represent new species. PN = Parc National (National Park); RS = Réserve Spéciale (Special Reserve); RNI = Réserve Naturelle Integrale (Strict Nature Reserve). Sites listed between brackets without annotations refer to rainforests.

TOT. N	SITE	AQUATIC SPECIES	FOSSORIAL AND SEMIFOSSORIAL SPECIES	EPIGEAN SPECIES	REFERENCES
6	Berara (Sahamalaza) (transitional Sambirano-Dry)	*Amphiglossus reticulatus*	*Amphiglossus mandady, A. stumpffi, Pseudoacontias menamainty*	*Mabuya gravenhorsti, M. elegans*	Andreone et al., 2001
7	Manongarivo (Sambirano)		*Amphiglossus macrocercus, A. melanurus, A. minutus, A. mouroundavae, A. stumpffi*	*Amphiglossus melanopleura Mabuya gravenhorsti*	Rakotomalala, 2002
7	Nosy Be (Sambirano)		*Amphiglossus stumpffi, A. elongatus, A.* n.sp., *Paracontias hildebrandti*	*Mabuya gravenhorstii, M. lavarambo, Cryptoblepharus cognatus*	Andreone et al., 2003
7	PN de la Montagne d'Ambre		*Amphiglossus melanurus, A. mouroundavae, A. stumpffi, Paracontias brocchii, P. hildebrandtii*	*Amphiglossus melanopleura, Mabuya elegans*	Raxworthy & Nussbaum, 1994
9	RS d'Anjanaharibe-Sud		*A. crenni, A. melanurus, A. minutus, A. mouroundavae, A. punctatus, A. melanurus, Paracontias hafa*	*Amphiglossus melanopleura, Mabuya gravenhorstii*	Raxworthy et al., 1998
3	Ambolokopatrika		*Amphiglossus crenni, A. mouroundavae*	*Amphiglossus melanopleura,*	Andreone et al., 2000
13	PN de Marojejy	*Amphiglossus astrolabi*	*Amphiglossus macrocercus, A. mandokava, A. melanurus, A. minutus, A. mouroundavae, A. ornaticeps, A. praeornatus, A. punctatus, Paracontias holomelas, Pseudoacontias angelorum*	*Mabuya gravenhorstii A. melanopleura*	Raselimanana et al., 2000
9	Tsararano	*Amphiglossus astrolabi*	*Amphiglossus melanurus, A. mouroundavae, A. nanus, A. praeornatus, A. punctatus, A. spilostichus, Paracontias tsararano*	*Amphiglossus melanopleura*	Andreone et al., 2000; Andreone & Greer, 2002
9	Masoala	*Amphiglossus astrolabi*	*Amphiglossus crenni, A. mandady, A. melanurus, A. nanus, A. praeornatus, A. stylus, Paracontias holomelas*	*Amphiglossus melanopleura*	Andreone & Greer, 2002
4	Tampolo		*Amphiglossus frontoparietalis, A. ornaticeps, A.* sp.	*Mabuya gravenhorsti*	Raselimanana et al., 1998
3	Anjozorobe		*Amphiglossus crenni, A. macrocercus, A.* sp.		Raselimanana, 1998
3	Ankaratra		*Amphiglossus macrocercus*	*Mabuya boettgeri, M. madagascariensis*	Vences et al., 2002
9	PN d'Andringitra		*Amphiglossus anosyensis, A. melanurus, A. macrocercus, A. punctatus, A. frontoparietalis, A.* sp.1, *A.* sp.2	*A. melanopleura, Mabuya gravenhorsti*	Raxworthy & Nussbaum, 1996
6	Corridor Andringitra-Ivohibe		*Amphiglossus anosyensis, A. macrocercus, A. melanurus, A. minutus, A.* sp.	*Amphiglossus melanopleura*	Raselimanana, 1999; Rasolonandrasana & Goodman, 2000
8	RS Pic d'Ivohibe		*Amphiglossus anosyensis, A. frontoparietalis, A. macrocercus, A. melanurus, A. minutus, A.* sp.	*Mabuya gravenhorsti, Amphiglossus melanopleura,*	Raselimanana, 1999; Rasolonandrasana & Goodman, 2000
7	PN d'Andohahela		*Amphiglossus anosyensis, A. macrocercus, A. ornaticeps, A. punctatus, A.* sp.	*A. melanopleura, Mabuya gravenhorsti*	Nussbaum et al., 1999
5	Malahelo and nearby sites (transitional Dry-Rainforest)		*Amphiglossus ornaticeps, A. splendidus*	*Amphiglossus melanopleura, Mabuya gravenhorsti, M. vato*	Ramanamanjato et al., 2002
4	Kirindy (Dry)		*Amphiglossus mouroundavae*	*Mabuya aureopunctata, M. elegans, M. gravenhorsti*	Bloxam et al., 1996
7	PN d'Andohahela 2 (Dry)		*Amphiglossus igneocaudatus, A. ornaticeps*	*Mabuya aureopunctata, M. dumasi, M. elegans., M. gravenhorsti, M. vato*	Raxworthy & Nussbaum, 1994
5	PN de Zombitse (Dry)		*Amphiglossus macrocercus, Voeltzkowia rubricaudata*	*Mabuya elegans, M. gravenhorsti, M. vato*	Raxworthy et al., 1994