

## The Malagasy snake *Pseudoxyrhopus ambreensis* preys upon chameleon eggs by shell slitting

Angelika Knoll<sup>1</sup>, Frank Glaw<sup>2</sup> and Jörn Köhler\*<sup>1</sup>

**Abstract.** We report on two individuals of the Malagasy lamprophiid snake *Pseudoxyrhopus ambreensis* from Montagne d'Ambre National Park which had ingested three and four chameleon eggs, respectively. The chameleon eggs most probably correspond to *Calumma boettgeri* and showed slit marks apparently engendered by the posterior snake fangs, supporting the idea that reptile eggs may be difficult to digest for snakes without slitting the shells. Our observations indicate that *P. ambreensis* at least is an opportunistic egg eater, most probably obtaining its diet by digging in the soil for freshly laid clutches.

**Keywords.** Squamata, Serpentes, *Pseudoxyrhopus*, diet, *Calumma boettgeri* eggs, Madagascar.

*Pseudoxyrhopus ambreensis* (Fig. 1) is a small-sized snake (total length up to 423 mm), known only from the rainforests of Montagne d'Ambre National Park and the Tsaratanana massif in northern Madagascar (Andreone et al. 2009). Its activity is mainly nocturnal and it has an obvious tendency to burrow (Glaw & Vences 2007). Only four food records are available for the eleven species recognised in the genus *Pseudoxyrhopus*: Raxworthy & Nussbaum (1994) reported a specimen of *P. kely* that contained an adult skink (*Madascincus melanopleura*). Remains of a rodent, probably *Nesomys rufus*, were found in the intestine of an adult *P. tritaeniatus* by Cadle (1999). A juvenile of *P. oblectator* had eaten five eggs of the skink *Madascincus melanopleura* (Cadle 1999). Finally, a female of *P. imerinae* was found while preying upon ten eggs laid by a lizard, presumably the iguanid *Oplurus quadrimaculatus* (Andreone et al. 2007).

Based on his single observation on egg predation in *Pseudoxyrhopus oblectator*, Cadle (1999) already suggested that the posterior fangs in some *Pseudoxyrhopus* may play a more important role in egg

predation than in subduing active prey. We here add two additional observations of reptile egg predation in *Pseudoxyrhopus ambreensis*, confirming Cadle's (1999) speculation that egg predation is frequent in this genus (four out of six available food records within the genus including those described in the following).

On 11 March 2007, two males and two females of *P. ambreensis* (field numbers FGZC 1362-1365) were collected in Montagne d'Ambre National Park, 12°31'00" S, 49°10'36" E, 1050 m a.s.l. Dissection of one female (Zoologische Staatssammlung München, ZSM 2064/2007 = FGZC 1363) revealed 3 chameleon eggs inside its stomach. One male specimen (field number FGZC 1362, now deposited in the Université Antananarivo Département de Biologie Animale, UADBA) had noticeable bulges in the stomach area and gentle pushing of these bulges towards the head released four eggs from the snake's mouth. Based upon external examination, the two other snakes, the male ZSM 2065/2007 (= FGZC 1364) and the female UADBA (FGZC 1365), had no recognizable prey items ingested. The four eggs from the male specimen are strongly concave on one side, indicating that the egg content was already digested whereas the three other eggs from the female still have their natural form. All seven eggs (preserved in 70% ethanol in ZSM) had a distinct single slit on one of their two poles although this slit is less obvious in the three normal-shaped eggs. These observations confirm those of

1 Hessisches Landesmuseum Darmstadt, Friedensplatz 1, 64283 Darmstadt, Germany; e-mail: gelihome@gmx.de; joern.koehler@hlmd.de

2 Zoologische Staatssammlung München, Münchenhausenstr. 21, 81247 München, Germany; e-mail: Frank.Glaw@zsm.mwn.de

\* corresponding author



**Figure 1.** Specimen of *Pseudoxyrhopus ambreensis* from Montagne d'Ambre National Park.

Cadle (1999) who found one or two slits in the eggs obtained from *Pseudoxyrhopus oblectator* and support the idea that reptile eggs may be difficult to digest for snakes without slitting the shells (Cadle 1999).

The seven eggs measured 9.17-9.93 mm in length and the three intact eggs had a width of 5.33-5.52 mm. Obvious traces of embryonic development were not recognizable. However, the eggs most probably belong to *Calumma boettgeri*, a small and common species in the area, with females reaching a maximum snout-vent length of 51 mm and a total length up to 108 mm. Comparative eggs laid by a *C. boettgeri* female on 11 March 2007 within a plastic bag had similar size and mass. All other chameleon species known in the area have either larger (*Furcifer* spp., *Calumma* spp.) or smaller (*Brookesia* spp.) eggs. Eggs of other lizard species occurring in the area differ by shape or/and surface structure. Our observations therefore indicate that *P. ambreensis* at least is an opportunistic egg eater, most probably obtaining its diet by digging in the soil for freshly laid clutches.

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