
An observation of *Calumma tigris* (Squamata: Chamaeleonidae) feeding on White-footed ants, *Technomyrmex albipes* complex, in the Seychelles

HENRIK BRINGSØE

Irisvej 8, DK-4600 Køge, Denmark. E-mail: bringsoe@email.dk

ABSTRACT – A sub-dult *Calumma tigris* was observed eating White-footed ants, *Technomyrmex albipes* complex, in the Vallée de Mai national park on Praslin (Seychelles). It is noteworthy that this species of ant is, as far as can be demonstrated, not eaten by any other predator in the Seychelles. Considering the restricted range and possibly low population densities of *C. tigris*, it will be relevant to investigate its natural diet. It will also be crucial to monitor the role of White-footed ants in Seychellois ecosystems which are fragile and very sensitive to allochthonous species.

THE biology of the Tiger chameleon, *Calumma tigris* (Kuhl, 1820), of the Seychelles is not well known. Merely a little anecdotal information has been published and some scattered reports on reproduction exist. Thus, until proper studies will be carried out, virtually any contribution to the biology of *C. tigris* may prove valuable.

Calumma tigris is a relatively small species which normally attains a total length of approx 16 cm. The SVL is slightly greater than the tail as it has been reported to constitute 51–53% of the total length (Bourgat & Domergue, 1971). Cheke (1984) mentioned an individual of 88 mm SVL which might well have corresponded to a total length of some 16.6–17.3 cm. However, the species may grow much bigger as Nečas (2004a, 2004b) recorded an exceptionally large individual of 23 cm total length. According to Nečas (pers. comm. 2007) it was kept in captivity and he personally measured it. A distinctive feature of *C. tigris* is the pointed projection on the chin which can be up to 3 mm long (resembling a goat's beard!). The head has a low casque without occipital lobes, slightly outgrowing the dorsal crest. The parietal crest is curved and bifurcated at about two thirds into two protrusions that extend up to each orbital crest. The gular crest consists of 9–15 enlarged conical scales. The dorsal crest consists of 14–23 isolated conical scales. The dorsal colouration is variable. It may be nearly uniform, i.e. from quiet light grey or light brown to yellow, yellow-orange, green or dark brown. This base colour may also have conspicuous black

spots or some brighter coloured markings. Generally a light coloured vertebral line is present. An interesting observation on colour change has been expressed by van Heygen & van Heygen (2004). They state that the colours of *C. tigris* depend on the environment, i.e. crypsis as the individuals resemble a random sample of the relevant aspects of their environment. That would be unusual for chameleons (Nečas, 2004a, 2004b)!

Calumma tigris is an endemic of the Seychelles and is distributed only on the three islands of Mahé, Praslin and Silhouette (Cheke, 1984). It is unclear how common and widespread the species may be on these three islands though it is generally considered comparatively uncommon, cf. Gardner (1986). This arboreal species is found in primary forest, secondary forest and upland rural gardens.

In April 2006 my wife (Aoi Bringsøe) and I spent two weeks on the granitic islands of the Seychelles. This paper deals with an observation made in the small national park Vallée de Mai on the island of Praslin. The park is a World Heritage Site and is home to the renowned coco-de-mer palm (*Lodoicea maldivica*) which produces the largest seed (a nut) in the plant kingdom. We had three day excursions and two night excursions in the small park. Each of the five excursions lasted for approx. 1½-2 hours.

We found three individuals of *Calumma tigris* in the primary forest of Vallée de Mai, two sleeping at night and one being active during the day. All were observed at least 50 metres away from streams though other observers have regularly



Figure 1. Microhabitat of *Calumma tigris* eating ants in a coco-de-mer palm. © H. Bringsøe.

recorded *C. tigris* in close proximity to streams and ponds (Neeas, 2004a, 2004b). Another three chameleons which we found on Mahé during the day, were also living well away from aquatic habitats.

At 11:15–11:30 h on 16th April 2006 we observed one chameleon in a coco-de-mer palm at a height of approximately 1 m (Fig. 1). The coco-de-mer was immature and not fully grown as it had not yet developed a pillar-like trunk. Its total height was estimated to 11–14 m. The microhabitat was shaded in the dense forest. Air temperature was 31°C. The altitude was approximately 350 m.

The individual remained undisturbed and continued its foraging activities. It was actively

Figure 2. *Calumma tigris* hunting ants. © H. Bringsøe.

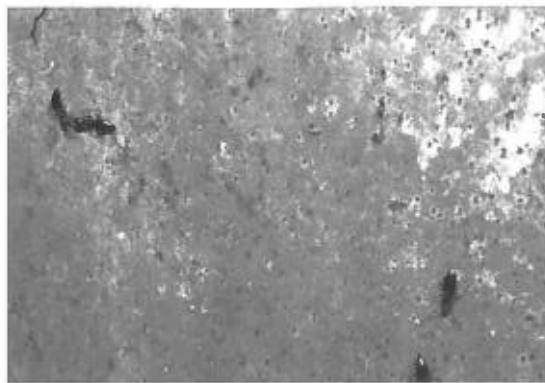


Figure 3. White-footed ants, *Technomyrmex* cf. *albipes*, on a coco-de-mer palm. © H. Bringsøe.

hunting small black ants, length approx. 2.0–2.5 mm (Figs. 2–3). In two cases we observed the chameleon ‘shooting’ ants which were swallowed quickly without any sign of distaste.

Afterwards, the sub-adult chameleon was measured (SVL 63 mm + tail 66 mm = total length 129 mm), and then released. Its dorsal and lateral colouration was light brown, nearly uniform with scattered dark brown, greenish and light markings.

Later the ants were identified on basis on the photograph (Fig. 3) by J. Gerlach (pers. comm.) as a member of the *Technomyrmex albipes* complex (White-footed ant). This group is at present being revised and it is expected that several closely related species may be recognised.

The natural diet of *C. tigris* has not been investigated; basically it is only known that *C. tigris* lives on insects (Cheke, 1984), like most other chameleons. Individuals in captivity have accepted a wide variety of insects. Fruit flies (*Drosophila*) were eaten according to Bourgat & Domergue (1971) whereas small grasshoppers were not accepted. Grimm & Grimm (1999) used soft-shelled insects up to a length of 10 mm and presented a photo of an individual shooting a cricket at nymph stage. van Heygen & van Heygen (2004) stated that various smaller insects including house flies are eaten.

Technomyrmex cf. *albipes* is a pantropical species of Indo-Pacific origin. It is abundant in all terrestrial habitats in the Seychelles. Dorow (1996) states that *T. albipes* was introduced into the Seychelles in the 18th or early 19th century (with reference to Dupont, 1937). However, according to Gerlach (pers. comm.) it is a tramp species well-adapted to both human-assisted dispersal and natural dispersal, and he considers that it is not clear whether the presence of *T. albipes* was introduced by man or not. This species is considered a pest and an invasive species in USA (Suarez *et al.*, 2005), however, its role in the Seychelles is not fully known. This type of ant possesses a sort of venom gland containing unsaturated secondary amines, and the ant also produces cyclopentanoid monoterpene alkaloids (Brophy *et al.*, 1993). The antipredator effect of these compounds has not been fully documented. This ant is considered relatively unaggressive by Pacinotti (pers. comm.) since it is eaten by Asian toads *Duttaphrynus* (former *Bufo*) *melanostictus* and various birds in the Danish tropical zoo Randers Regnskov where it has established a colony. In the Seychelles the endemic tree frog *Tachycnemis seychellensis* has been recorded preying on *T. albipes* (Gerlach & Rocamora, 2004).

Considering the restricted range and possibly low population densities of *Calumma tigris*, it will be relevant to carry out a detailed investigation of its natural diet. It will also be crucial to monitor the role of White-footed ants in Seychellois ecosystems which are fragile and very sensitive to the presence of allochthonous species.

ACKNOWLEDGEMENTS

I am grateful to Lindsay Chong-Seng (Seychelles Island Foundation) who helped us on our travels. Atterville Cedras and Wenner Anacoura (Seychelles Island Foundation, Vallée de Mai) facilitated our work in Vallée de Mai. Justin Gerlach (Nature Protection Trust of Seychelles) kindly identified the ants. Useful information on White-footed ants was provided by Philip S. Ward (University of California, Davis, California), Wolfgang H.O. Dorow (Projekt Hessische Naturwaldreservate, Forschungsinstitut Senckenberg, Frankfurt am Main) and Sergio Pacinotti (Randers Regnskov Tropical Zoo, Randers, Denmark).

REFERENCES

- Bourgat, R. M. & Domergue, C. A. (1971). Notes sur le *Chamaeleo tigris* Kuhl 1820 des Seychelles. *Ann. Univ. Madagascar; Sér. Sci. Nat. Math.* **8**, 235–244.
- Brophy, J.J., Clezy, P.S., Leung, C.W.F. & Robertson, P.L. (1993). Secondary amines isolated from venom gland of dolichoderine ant, *Technomyrmex albipes*. *J. Chem. Ecol.* **19**, 2183–2192.
- Cheke, A.S. (1984). Lizards of the Seychelles. In *Biogeography and ecology of the Seychelles Islands*, pp. 331–360. Stoddart, D. R. (ed.). The Hague: Dr. W. Junk Publ.
- Dorow, W.O. (1996). Review and bibliography of the ants of the Seychelles. *J. Afr. Zool.* **110**, 73–96.
- Gardner, A.S. (1986). The biogeography of the lizards of the Seychelles Islands. *J. Biogeogr.* **13**, 237–253.
- Gerlach, J. & Rocamora, G. (2004). On the diet of an anthropophilic population of Seychelles tree frog *Tachycnemis seychellensis* (Hyperoliidae). *Phelsuma* **12**, 149–150.
- Grimm, A. & Grimm, M. (1999). Das Tigerchamäleon (*Calumma tigris*). *Elaphe* **7**, 11–15.
- Neëas, P. (2004a). *Chamäleons. Bunte Juwelen der Natur*. Frankfurt am Main: Ed. Chimaira. 382 pp.
- Neëas, P. (2004b). *Chameleons. Nature's hidden jewels*. Frankfurt am Main: Ed. Chimaira. 380 pp.
- Suarez, A.V., Holway, D.A. & Ward, P.S. (2005). The role of opportunity in the unintentional introduction of nonnative ants. *Proc. Natl. Acad. Sci.* **102**, 17032–17035.
- van Heygen, G. & van Heygen, E. (2004). Eerste waarnemingen in de vrije natuur van het voortplantingsgedrag bij de tijgerkameleon *Calumma tigris* (KUHL, 1820). *Terra* **40**, 49–51. English web version: http://www.phelsumania.com/public/articles/fauna_tigris_1.html