

First Record of The *Chamaeleo zeylanicus* Laurenti, 1768 (Reptilia: Chamaeleonidae) From The Nilgala Forest Reserve In Sri Lanka

D.M.S.S. Karunaratna^{1,3}; U.T.I. Abeywardena¹; M.D.C. Asela^{1,2}; D.M.G.N. Karunaratna¹; D.G.R. Sirimanna¹; A.A.T. Amarasinghe¹
¹Young Zoologists' Association of Sri Lanka, National Zoological Gardens, Dehiwala, Sri Lanka. ²Chandana_aseela@yahoo.com ³dmsameera@gmail.com

Introduction

The Sri Lankan Chameleon *Chamaeleo zeylanicus* belongs to the family Chamaeleonidae of the class reptilian (Das, 1994; Das & De Silva, 2005). This family contains over 90 species of which more than 50 belong to the genus *Chamaeleo* (Pough *et al.*, 2004). The genus *Chamaeleo* is restricted to the Old World and most of them are distributed over Madagascar and Africa. A single species inhabits the Indian sub-continent and Sri Lanka (Boulenger, 1890; Deraniyagala, 1953). *Chamaeleo zeylanicus* is not uncommon in India, particularly in Tamil Nadu, but it is rare in Sri Lanka (Pethiyagoda, 1997). This species is also listed as a nationally threatened species (IUCN Sri Lanka, 2000).

This chameleon is commonly known as “*Bodiliya*” or “*Bodilima*” in the Sinhala language and as “*Kombi* or “*Onthi*” in Tamil (Das & De Silva, 2005; Deraniyagala, 1931). This arboreal lizard has remarkable abilities of camouflage and is also able to exhibit extreme color changes. It clings to the branches of trees and bushes with the help of its prehensile tail (Plate 1) and opposable claws (Gaur, 2004; Acharya, 1933). Chameleons are mainly insectivorous but they also prey on small vertebrates such as small amphibians. Chameleons are generally slow moving and sluggish (Smith, 1935; Pethiyagoda, 1997). It captures its prey by springing out its sticky tongue. The prey becomes attached to the sticky surface of the tongue and it draws it back into the mouth with the help of the spoon-like anterior tip of the tongue (Trench, 1912). The Chameleon has large eyes covered by thick granular lids, except for the small transverse slit of the pupil. It can move its eyes independently and they have a greater range of movement than the eyes of other lizards (Deraniyagala, 1953; Wisumperuma, 2001).

In Sri Lanka, a fully-grown Chameleon can grow to about 375mm. Generally an adult female Chameleon lays about 10 - 31 eggs (Singh *et al.*, 1984). The eggs are elliptical and soft shelled. They are white in colour, about 15 - 22 mm in length and 9 - 12 mm in breadth (Deraniyagala, 1953; Whitaker, 1978). In Sri Lanka, *Chamaeleo zeylanicus* (Figure 2) has been recorded in the drier areas of the coastal plain, in several areas of the

Northern Dry Zone (Tennent, 1861; Deraniyagala, 1953; Pethiyagoda, 1997), and in the Southeastern Dry Zone (Wisumperuma, 2001). According to the published literature, their current ranges are

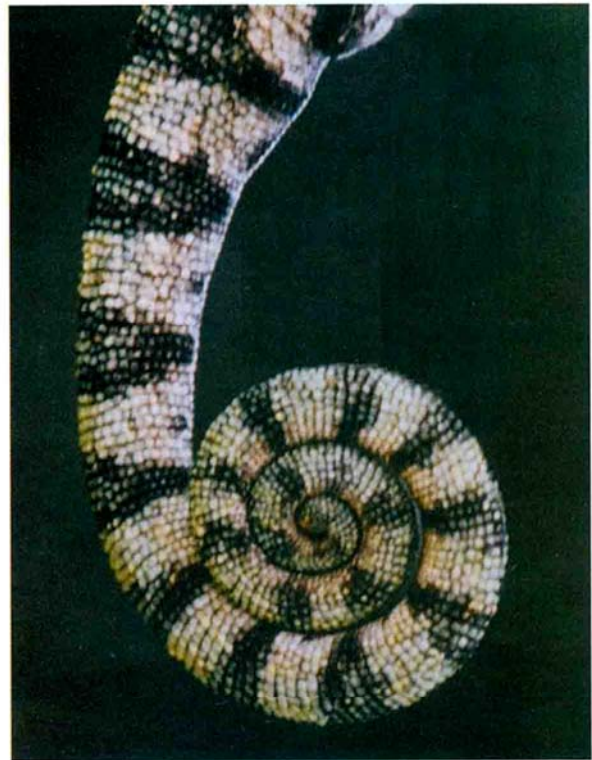


Plate 1: A prehensile tail of the *Chamaeleo zeylanicus*
Photograph: L. J. M. Wickramasinghe

Wilpattu, Anuradhapura (Anuradhapura District), Puttalam, Anavilundawa, Eluwankulam, Chilaw, Tabbowa (Puttalam District), Mankulam (Kilinochchi District), Marichchukatte (Mannar District), Mullative (Mullative District), Yala (Hambantota District) Jaffna (Jaffna District), and Colombo (Colombo District). However, the Colombo record may be an error.

The authors recorded this species in the Nilgala Forest Reserve in the Monaragala District in the intermediate zone. This is about 60 km inland from the nearest coast and at least 70 - 80 kms inland from its known previous recorded sighting in the Hambantota District.

New Location

The Nilgala Forest Reserve (NFR) covers an area of 12, 432 hectares within the Bibile Divisional Secretariat Division. It has a mix of several forest types including savanna grasslands, riverine forests and intermediate zone semi-evergreen forests. However, according to Gunatilleke & Gunatilleke (1990), its major vegetation is lowland tropical dry mixed evergreen forest. Its common trees are Aralu (*Terminalia chebula*), Bulu (*Terminalia bellirica*), and Nelli (*Phyllanthus emblica*). The average annual rainfall is 1, 750 mm, with most of the rainfall occurring from December to March, with occasional rains in the other months. From August to December the weather gradually becomes very dry with the highest temperatures recorded in August. The mean annual temperature in the NFR is 28° C with a maximum of 32° C and a minimum of 24° C.

Discussion

The new site recording was made on September 23, 2005 at 14.48 hrs. The observation was made near the Galkottae Monastery within the Nilgala Forest Reserve (05° 36' 109" N, 079° 58' 77" E), approximately 12 km from Bibile town. It was a very clear afternoon with normal wind condition. The area was covered with large stone boulders and was shady due to the high forest canopy. A single individual was observed on a rock surface covered with leaf litter. It was an adult male Chameleon, snout to vent length approximately 147 mm and vent to tail 169 mm

It was thought that the distribution of Chameleons was restricted to the coastal plains of the Southeastern and Northwestern parts of the country. Hence this record from the Monaragala District in the Uva Province is very significant. Several field trips were made afterwards to gather

further data and to locate other individuals but none of them were successful. Further investigation in the same site to locate this same individual was also a failure. Therefore, more research will have to be carried out in this location to gather added data on this species. According to a village woman, another individual had been seen at Karandugala, approximately 5 km north of our observation sight.

Threats

Forest fires are major decimating factors of the habitat of *C. zeylanicus*. Over 10 % of the forest areas in the NFR are burnt every year during the months of August to October. These habitats are also subjected to deforestation by logging. In several areas human settlements have invaded the forest. Therefore, domestic predators such as dogs and cats also hunt inside the forest. This may increase the predatory pressure on these slow moving lizards. Unplanned agricultural practices also destroy their habitats e.g. chena cultivation leads to the decimation of large forested areas.

Conclusions and Recommendations

Habitat degradation is a major threat to the fauna and flora in Nilgala. *C. zeylanicus* occurs in very small numbers in highly fragmented, scrub habitats where habitat loss is particularly critical. In addition, the lack of reliable scientific data on this species' habitat preferences, their relationships and interactions with co-occurring species is a major hindrance to its conservation. Priority has to be given for research to determine the distribution,



Plate 2: The lateral surface of the adult male *Chamaeleo zeylanicus* Photograph: L. J. M. Wickramasinghe

population structure and density of *C. zeylanicus* in Nilgala, as well as the effects of habitat and predator threats, status and abundance of prey population, etc., on it. This would help in the formulation of management plans for the proper conservation of this species.

In general, not only for the preservation of *C. zeylanicus*, but for all of the other fauna and flora of Nilgala, comprehensive programmes of environmental education must be facilitated for the local people to prevent their destruction of this precious habitat, particularly by fire.

Acknowledgements

The authors would like to thank Mr. Bhatthiya Kekulandala (IUCN - The World Conservation Union) for his encouragement in preparing this paper. We also wish to thank to Dr. Channa Bambaradeniya, Mr. Naalin Rerera, Mr. Sampath Goonatilleka, Mr. Dilup Chandranimal, Mr. Sarath Ekanayake, Mr. Roshan Rodrigo, Mr. Prasanna Samarawickrama, Mr. Pradeep Samarawickrama, Mr. Vimukthi Weerathunge and Mr. Mendis Wickramasinghe (IUCN - The World Conservation Union) for their valuable support. Our sincere appreciation to Mr. Panduka Silva, Mr. Toshan Peiris, Mr. Chamila Soysa, and Mr. Asanka Udayakumara (Young Zoologists' Association) for participating in field visits to survey sites. Finally we also thank to Mr. Kelum Manamendra-Arachchi (WHT - Wildlife Heritage Trust) for his valuable guidance.

REFERENCE

Acharya, H. N. G. (1933). The Occurrence of the Common Chameleon (*Chamaeleo calcarata*) in Gujarat. *J. Bombay Nat. Hist. Soc.*, 36: 513-514 pp.

Boulenger, G. A. (1890). *The Fauna of British India, including Ceylon and Burmah. Reptilia and Batrachia*. Taylor and Francis. London. 232 pp.

Das, I. (1994). The Reptiles of South Asia: Checklist and Distribution Summary. *Hamadryad*, 19: 15-40 pp.

Das, I. & De Silva, A. (2005). *Snakes and other Reptiles of Sri Lanka*. New Holland Publishers. 144 pp.

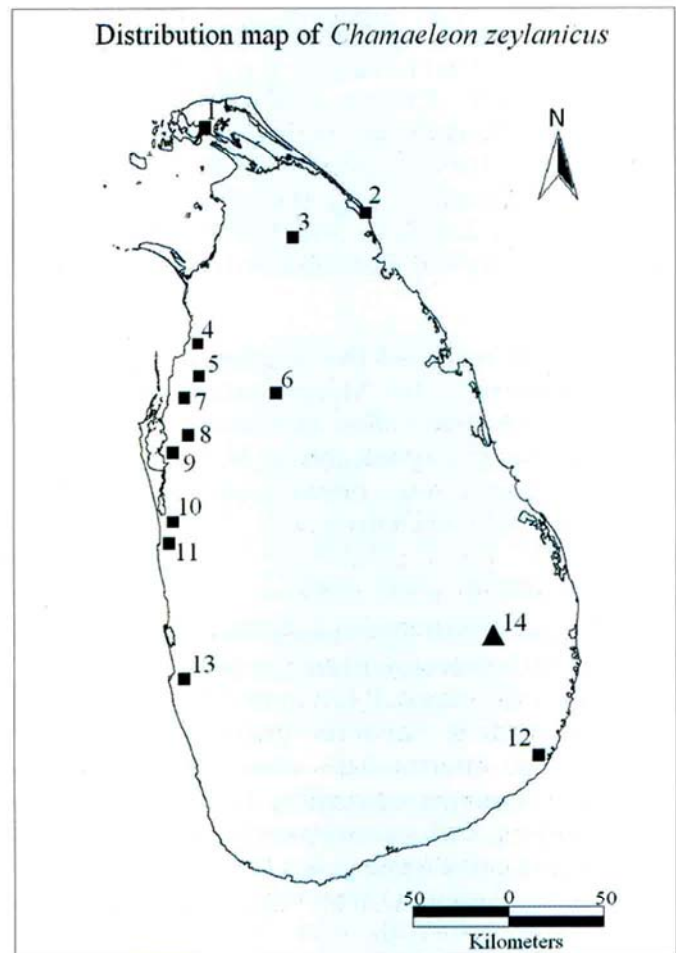
Deraniyagala, P. E. P. (1931). Some Ceylon Lizards. *Spolia Zelanica.*, 16(2): 155-156 pp.

Deraniyagala, P. E. P. (1953). *A Colored Atlas of some vertebrates from Ceylon, Tetrapod Reptilia*, National Museums of Sri Lanka, Colombo. Vol. 02, 101 pp.

Gaur, S. (2004). Discovery of the Indian Chameleon (*Chamaeleo zeylanicus* Laurenti) in the Aravalli Foothills of Rajasthan (India). *Tigerpaper.*, 31(3): 1-3 pp.

Gunatilleke, I. A. U. N. & Gunatilleke, C. V. S. (1990). Distribution of Floristic Richness and its Conservation in Sri Lanka. *Conservation Biology* 4(1): 21-31 pp.

IUCN Sri Lanka. (2000). *The 1999 Red List Threatened Fauna & Flora of Sri Lanka*. Colombo, IUCN Sri Lanka. 144 pp.



Map 1: Current distribution (1) Jaffna, (2) Mullative, (3) Mankulam, (4) Marichchukatte, (5) Wilpattu, (6) Anuradhapura, (7) Eluwankulam, (8) Tabbowa, (9) Puttalam, (10) Anavilundawa, (11) Chilaw, (12) Yala and (13) Colombo. However, Colombo record is doubtful. (14) Nilgala (New Record).

Pethiyagoda, R. (1997). The Elusive Chameleon. *Sri Lanka Nature.*, 1(1): 63 pp.

Pough, F. H.; Andrews, R. M.; Cadle, J. E.; Crump, M. L.; Savitzky, A. H. & Wells, K. D. (2004). *Herpetology*, Third Edition. Pearson Prentice Hall, USA. 726pp.

Singh, L. A. K.; Achariyo, L. N. & Bustard, H. R. (1984). Observation of the Reproductive Biology of the Indian Chameleon *Chamaeleo zeylanicus* (Laurenti). *J. Bombay Nat. Hist. Soc.*, 81: 86-92 pp.

Smith, M. A. (1935). *The Fauna of British India including Ceylon and Burma: Reptilia and Amphibia*, Vol. 1 - Sauria. Taylor and Francis, London. 249-253 pp.

Tennent, J. E. (1861). *Sketches of the Natural History of Ceylon, with Narratives and Anecdotes*. Longman and Roberts, London. 500 pp.

Trench, J. (1912). Notes on the Indian Chameleon. *J. Bombay Nat. Hist. Soc.*, 47: 623-627 pp.

Whitaker, R. (1978). Breeding record of the Indian Chameleon (*Chamaeleo zeylanicus*). *J. Bombay Nat. Hist. Soc.*, 75: 232 pp.

Wisumperuma, D. (2001). The Indian Chameleon (*Chamaeleo zeylanicus* Laurenti). *Loris* 22(5): 49-50 pp.