

## New locality records of *Chamaeleo zeylanicus* (Laurenti) from certain semi arid areas of the Thar Desert of Rajasthan, India

Sharma Vivek<sup>1</sup>, Sharma Neha<sup>1</sup>, Kishore Jugal<sup>1</sup>, Jangir Bhanwar Lal<sup>1</sup> and Sharma Krishan Kumar<sup>1\*</sup>

The Thar Desert is known for its extreme environmental conditions, including a high range of temperature fluctuations, very low precipitation and scanty rains, and xerophytic vegetation types. Despite such extreme conditions many species find it suitable for their survival. On the Indian subcontinent, the Thar Desert extends westward from the western flank of the Aravalli mountain range, and continues into the adjoining parts of Pakistan in the west, and Kachchh in the south. The total area of this desert is around 200,000 km<sup>2</sup> of which almost two-thirds lies in the Rajasthan Province of India (Roy and Jakhar, 2002). Very few studies have been carried out on the herpetofaunal diversity of the Thar Desert. (Sharma, 1996; Daniel, 2002; Das, 2007). In earlier reports, the saurian species *Chamaeleo zeylanicus* has been mentioned mainly from the peninsular parts of India and Sri Lanka (Trench, 1912; Biswas and Acharjyo, 1977; Singh, 1986). Later on,

other investigators made recordings of this species from other areas outside of peninsular India (Deraniyagala, 1953; Singh et al., 1984; Vyas, 2002).

This article deals with new locality records of *C. zeylanicus* from certain semiarid areas of the Thar Desert (Fig. 1 and 2). The study area in the Thar Desert lies in between 26° 25' and 27° 40' North and 73° 10' and 75° 15' East, with an average elevation of 400m above sea level. This site is known as the 'Nagaur Upland' geomorphologically, or the 'Nagaur District' politically, and is partly constituted of horizontally bedded sandstones and partly of a large Pendi plains and an admixture of undulating sandy terrain of longitudinal sand dunes, interdunal flats and isolated low lying hills with fringing pediments. The Nagaur Upland has semiarid conditions when compared with the extreme xeric conditions of other parts of the Thar Desert. *C. zeylanicus* is commonly known as the Indian Chameleon or the Sri Lankan Chameleon, and is also known as a peninsular element of south Asia. This species has a fragmented or patchy distribution pattern in south Asia (Boulenger, 1890; Parshad, 1914; Smith, 1935; Deraniyagala, 1953; Vyas, 2002). The distribution

<sup>1</sup> Biodiversity Research Laboratory, Zoology Department, Maharshi Dayanand Saraswati University, Ajmer-305009, Rajasthan, India; e-mail: kksmds@gmail.com

\* Corresponding author.



Figure 1. Adult individual of *C. zeylanicus* at the study area.

**Table 1.** Distribution of *Chamaeleo zeylanicus* from certain semiarid areas (Nagaur Upland) of the Thar Desert, Rajasthan, India.

Name of Study Area (Locally known)	Coordinates of study sites	Occurrence of <i>Chamaeleo zeylanicus</i> (2007-2010)
Didwana	27°23'58.36" N 74°34'32.19" E	Present
Nava	27°01'12.13" N 75°00'00.00" E	Present (*)
Parbatsar	26°53'00.26" N 74°45'58.81" E	Absent
Makrana	27°02'34.14" N 74°43'26.82" E	Absent
Nagaur	27°11'55.99" N 73°44'04.98" E	Present (*)
Khinvsar	26°58'37.14" N 73°23'51.14" E	Absent
Jayal	27°13'20.60" N 74°11'03.30" E	Absent
Merta	26°59'03.80" N 74°01'34.52" E	Present (*)
Degana	26°53'23.10" N 74°19'45.34" E	Absent
Ladnun	27°39'00.20" N 74°24'00.00" E	Absent

(\*) Less than ten individuals per site.

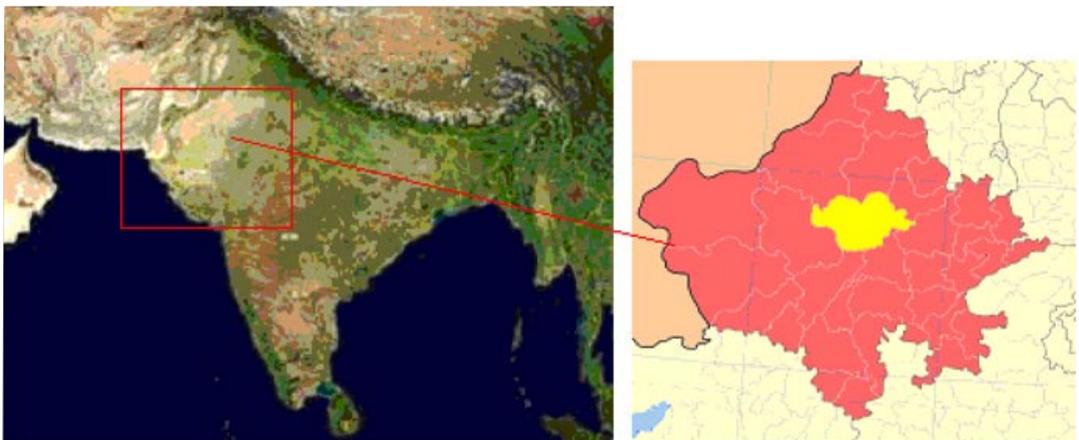
of *C. zeylanicus* with further range extensions has been described by Singh (1986), and includes areas to the south and west of the Gangaic plains in north India.

During the survey of herpetofauna in the Thar Desert from June 2007-2010, we encountered *C. zeylanicus* in a semiarid zone of the Thar Desert, which had not been reported by any earlier worker. Initially the objective of this study was to locate the species in the Thar Desert and, subsequently, to evaluate its distribution pattern within the area. For the evaluation of its distribution range several transects were conducted, but due to this species' effective camouflage and long periods of motionlessness, it took a long time to confirm its presence in the transects. For this reason each transect was conducted three times. Local people were also questioned, using photographs and videos of this lizard

to suggest any nearby locations. We divided the study area (Nagaur Upland) into ten zones (locally known as tehsils) for thorough exploration of this lizard's presence. The distribution of this lizard was highly fragmented, leading to high randomness of encounters. We found it at only four zones (Parbatsar, Makrana, Nagaur and Merta tehsils) out of ten (Table 1). When per site encounters were less than ten, the species' abundance was designated as very thin. Unfortunately deforestation and uncontrolled urbanization has resulted in habitat loss and indiscriminate use of pesticides and road mortalities, has reduced abundance of this lizard particularly in this area of the Thar Desert. Studies are in progress on biosystematics of this species using molecular tools (conserved sequences), to assess the possibility of any microevolution from the peninsular species.

It is interesting to note that the patchy distribution of this lizard is associated with the distribution of some desert plants such as *Capparis deciduas*, *Prosopis juliflora* and *Cucumis pubescens*. *C. deciduas* and *P. juliflora* are typical xerophytic plants found in semiarid zones of the Thar Desert, which can provide safe shelter to this lizard due to their dense thorny texture, and simultaneously offer a good source of food from the many insects that dwell both on and around these plants. *C. pubescens* not only helps in camouflage to this species but its flowers also attract many insect species which serve as food for *C. zeylanicus*.

**Acknowledgement.** We are very thankful to Department of Science and Technology Government of India for the financial assistance as a Major Research Project to KKS.



**Figure 2.** Satellite image of the Indian subcontinent (A) and Rajasthan state of western India with study areas highlighted (B).

## References

- Biswas, S., Acharjyo, L.N. (1977): Notes on ecology and biology of some reptiles occurring in and around Nandankanan Biological park, Orissa. *Records of Zool. Survey of India* **73**: 95-19.
- Boulenger, G. A. (1890): *The Fauna of British India including Ceylon and Burma: Reptilia and Batrachia*. Taylor and Francis, London. xviii + 541 pp.
- Daniel, J. C. (2002): *The Book of Indian Reptiles and Amphibians*. Bombay Natural History Society and Oxford University Press, Mumbai.
- Das, S. K. (2007): Checklist and Distribution of Saurian Fauna in the Thar Desert of Rajasthan. *Tigerpaper* **34(2)**: 20-23.
- Deraniyagala, P.E.P. (1953): A colored atlas of some vertebrates from Ceylon. Vol. II: Terapod Reptilia. Ceylon National museum Publication the Ceylon Government Press.
- Parshad, B. (1914): Extension of range of the Chameleon. *J. Bombay Nat. Hist. Soc.* **23**: 370.
- Roy, A.B., Jakhar, S.R. (2002): *Geology of Rajasthan (Northwest India) Pre Cambrian to recent*. Scientific publishers, Jodhpur.
- Singh, L.A.K. (1986): The Indian chameleon *Chamaeleo zeylanicus* (Laurenti) in Satkoshia Gorge Sanctuary, Orissa: Notes on availability, growth and biometrics. *Ibid* **83**: 111-119.
- Singh, L.A.K., Acharjyo, L.N., Bustard, H.R. (1984): Observation on the reproductive biology of the Indian Chameleon *Chamaeleo zeylanicus* (Laurenti). *Ibid* **81**: 86-93.
- Sharma, R.C. (1996): Herpetology of the Thar Desert. In: *Faunal Diversity in Thar Desert: Gaps in Research*, p. 297-306. Ghosh, A.K., Baqri Q.H., Prakash, I.T., Eds., Scientific Publishers, Jodhpur.
- Smith, M. (1935): *The Fauna of British India, including Ceylon and Burma. Reptilia and Amphibia. II. Sauria*. Taylor and Francis, London.
- Trench, C.C. (1912): Notes on the Indian Chameleon (*Chamaeleo calcaratus*). *J. Bombay Nat. Hist. Soc.* **21**: 687-689.
- Vyas, R. (2002): Preliminary survey of Herpetofauna of Narayan Sarovar Sanctuary, Gujarat. *Zoo's Print Journal* **17(6)**: 812-814.