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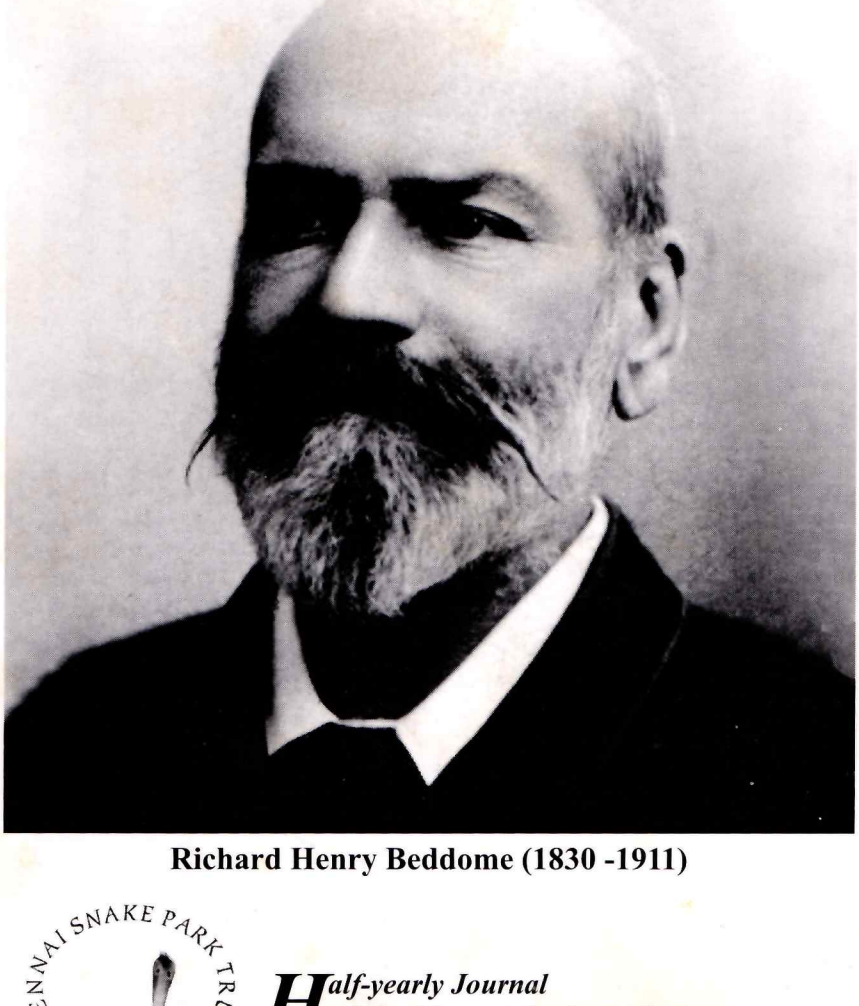

Richard Henry Beddome (1830 -1911)

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Cover

Photo: Richard Henry Beddome (1830 -1911). See pages 1-11

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The journal explains … "Kraig Adler, professor of biology (neurobiology and behavior) at Cornell University, shared with us an undated portrait [of Beddome] for which he has been searching for over 20 years and which he ultimately found in the Department of Mollusks, Australian Museum, Sydney".

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... " On came the mighty snake,
And twined, in many a wreath, round Neolin,
Darting aright, aleft, his sinuous neck,
With seraching eye, and lifted jaw and tongue
Quivering, and hiss as of a heavy shower
Upon the summer woods. The Bristons stood
Astounded at the powerful reptile's bulk,
And that strange sight. His girth was as of a man,
But easliy could he have overtopped
Goliath's helméd head, or that huge king
Of Basan, hugest of the Anakim :
What then was human strength if once involved
Within those dreadful coils ? ... The multitude
Fell prone, and worshipped ."

- Robert Southey (1774-1843)
(*Madoc* Book VII)

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RICHARD HENRY BEDDOME AND SOUTH INDIA'S HERPETOFAUNA — A TRIBUTE ON HIS CENTENNIAL DEATH ANNIVERSARY

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One name that stands out in the early decades of systematic herpetology of south India is Richard Henry Beddome (11th May 1830 – 23rd February 1911). Biographic sketches of his life and work are available in Godwin-Austen (1912), Smith (1931), Das (2003) and Vijayaraghavan (2005). For the immediate interest of the readers these are summarized here.

Beddome was the eldest son of Richard Boswell Brandon Beddome, solicitor, of Clapham Common, S.W. He was educated at Charterhouse School in Surrey, U.K. He first studied for the legal profession, but he could not get interested in it and preferred a life abroad. He entered the Army, obtaining a direct cadetship in 1848 in the East India Company's service, and was sent to India. He was posted to the 42nd Madras Native Infantry. He was with that Regiment at Jabalpur in 1856, serving as Quartermaster and Interpreter of the regiment and from there he went to Secunderabad. Soon after his arrival in Madras, at the end of 1856, he was appointed to the Madras Forest Department, and never rejoined his regiment. In 1857, due to his profound fascination for natural history, was selected as an assistant to Dr. Hugh Cleghorn, the first Conservator of Forests of the then – Madras Presidency. In 1859, he succeeded Dr. Cleghorn to become the Chief Conservator of Forests in which position he continued until 1882. Meanwhile, in 1880, due to his scholarly contributions to the natural history of southern India, he became a "member" of the University of Madras. Aside from botany, he is best known for his herpetological studies in southern India. His most outstanding contribution is the

series of collections and descriptions that he made in the Eastern and Western Ghats, which forms part of a global biodiversity hotspot rich in endemism (Myers et al., 2000). His herpetological collections, most of which he described, were deposited in the Natural History Museum in London and the Indian Museum, Calcutta (now Zoological Survey of India, Kolkata, West Bengal, India). He retired from service in 1892 and died at Wandsworth, United Kingdom in 1911.

His name has been immortalized by his superb contributions to south India's herpetology which are of itnerests to the student of Indian herpetology even today after a lapse of a century. By summarizing and presenting his contributions to the herpetology of south India, this paper pays a tribute to his memory on the occasion of the centennial of his death aniversary.

During the period of 24 years from 1862 to1886 Beddome had published 15 papers on the subject, most of which contained description of at least one new species.

(a) List of Beddome's herpetological publications:

1) 1862. Notes upon the land and freshwater snakes of the Madras Presidency. *Madras Quart. J. Med. Sci.* v. pp. 1-32, pl-2.

2) 1863 a. Further notes upon the Snakes of the Madras Presidency; with descriptions of new species. *Madras Quart. J. Med. Sci.* vi. pp. 41-8, pls. i & ii.

3) 1863 b. Descriptions of new species of the family Uropeltidae from Southern India, with notes on other little-known species. *Proc. Zool. Soc. London*, pp. 225—9, 3 coloured pls.

4) 1864. Descriptions of new species of *Elaps* from Malabar. *Proc. Zool. Soc. London*, pp. 179-80.

5) 1866. Notes upon the Snakes of the Madras Presidency. Description and plate of a new species of Snake of the family Uropeltidae from the Pulney Mountains. *Madras Quart. J. Med. Sci.* ix. pp. 207-8, pl.

6) 1867. Descriptions and figures of five new Snakes from the Madras Presidency. *Madras Quart. J. Med. Sci.* xi. pp. 14-16, pls. i & ii.

7) 1870 a. Descriptions of some new Lizards from the Madras Presidency. *Madras Month. J. Med. Sci.* i. pp. 30-5, 2 pls.

8) 1870 b. Descriptions of new Reptiles from the Madras Presidency. *Madras Month. J. Med. Sci.* ii, pp. 169-76.

9) 1871. Descriptions of new Reptiles from the Madras Presidency. *Madras Month. J. Med. Sci.* iv. pp. 401-4, pls. i & ii.

10) 1876. Description of three new species of Indian Snake of the genus *Platyplectrurus* from the Wynad. *Proc. Zool. Soc. London*, p. 701.

11) 1877 a. Descriptions of new Reptiles from the Madras Presidency. *Proc. Zool. Soc. London*, pp. 685-6.

12) 1877 b. Descriptions of three new Snakes of the family Uropeltidae from Southern India. *Proc. Zool. Soc. London*, pp. 167-8.

13) 1878 a. Descriptions of new Genus of Tree-Lizards from the higher Ranges of the Anamallays. *Ibid.* p. 153, pl. xiv.

14) 1878 b. Descriptions of Uropeltidae from Southern India, with remarks on some previously described species. *Proc. Zool. Soc. London*, pp. 154-5.

15) 1886. An account of the Earth-snakes of the Peninsula of India and Ceylon. *Ann. Mag. Nat. Hist.* (5) xvii, pp. 3-33.

The above list reflects the sheer number of new taxa that it collectively contains. Several dozens of new herpetological taxa that are still valid today were collected and described by Beddome. Although his contribution to systematic research on amphibians is minor, his reptile descriptions are numerous. Chief among them are the uropeltid snakes and several geckoes and skinks from both the Eastern and Western Ghats mountain ranges. Particularly notworthy are his contributions to our knowledge of the uropeltids since even a century after his death, very little has been added to what we know of this elusive group of snakes endemic to south-west India and Sri Lanka, barring the work of M.V. Rajendran (1916-1993). Some of his important descriptions include enigmatic species such as *Sepsophis punctatus* and *Chalcides pentadactylus* (Reptilia: Scincidae). Some valid genera, endemic to the Western Ghats, like *Melanobatrachus* (Amphibia: Anura) and *Xylophis* (Reptilia: Serpentes) were those described by Beddome. The exhaustive list of his new herpetological taxon descriptions is as follows.

(b) List of herpetological species described by Beddome (* indicates species currently valid with Beddome's own specific epithets)

AMPHIBIA De Blainville, 1816

GYMNOPHIONA Rafinesque-Schmaltz, 1814

1. *Cecilia malabarica* Beddome, 1870 (now *Uraeotyphlus malabaricus*)*
2. *Epicrium carnosum* Beddome, 1870 (now *Gegeneophis carnosus*)*

ANURA Duméril, 1806

BUFONIDAE Gray, 1825

3. *Bufo travancoricus* Beddome, 1877 (synonym of *Bufo beddomei* Günther, 1876)

MICROHYLIDAE Günther, 1858

4. *Melanobatrachus indicus* Beddome, 1878*

REPTILIA Laurenti, 1768

SQUAMATA Oppel, 1811

SAURIA Gauthier, 1984

GEKKONIDAE Gray, 1825

5. *Gymnodactylus nebulosus* Beddome, 1870 (now *Geckoella nebulosa*)*
6. *Gymnodactylus collegalensis* Beddome, 1870 (now *Geckoella collegalensis*)*
7. *Gymnodactylus specisosus* Beddome, 1870 (subspecies of the former species)
8. *Gymnodactylus deccanensis* (not of Günther, 1864) Beddome, 1870 (now known as *Geckoella albofasciata* (Boulenger, 1885))
9. *Gymnodactylus wynadensis* Beddome, 1870 (now *Cnemaspis wynadensis*)*
10. *Gymnodactylus maculatus* (not of Steindachner, 1867) Beddome, 1870 (now known as *Cnemaspis sisparensis* (Theobald, 1876) [replacement name])

11. *Gymnodactylus ornatus* Beddome, 1870 (now *Cnemaspis ornata*)*
12. *Gymnodactylus mormoratus* (not of Duméril & Bibron, 1836) Beddome, 1870 (now known as *Cnemaspis beddomei* (Theobald, 1876) [replacement name])
13. *Gymnodactylus gracilis* Beddome, 1870 (now *Cnemaspis gracilis*)*
14. *Gymnodactylus planipes* Beddome, 1870 (putatively a synonym of *Cnemaspis littoralis*)
15. *Calodactylus aureus* Beddome, 1870 (now *Calodactylodes aureus*)*
16. *Hemidactylus reticulatus* Beddome, 1870*

AGAMIDAE Gray, 1827

17. *Lophosalea anamallayana* Beddome, 1878 (now *Salea anamallayana*)*

SCINCIDAE Gray, 1825

18. *Mocoa travancorica* (in part) Beddome, 1870 (now *Kaestlea travancorica*)*
19. *Mocoa travancorica* (in part) Beddome, 1870 (now *Kaestlea beddomii* (Boulenger,1887))
20. *Ateuchosaurus travancoricus* (in part) Beddome, 1870 (now *Ristella travancorica*)*
21. *Ateuchosaurus travancoricus* (in part) Beddome, 1870 (now *Ristella rurkii* Gray, 1839)
22. *Sphenocephalus pentadactylus* Beddome, 1870 (now *Chalcides pentadactylus*)*
23. *Sepsophis punctatus* Beddome, 1870*

LACERTIDAE Gray, 1825

24. *Cabrita jerdoni* Beddome, 1870*
25. *Pseudophiops monticola* Beddome, 1870 (synonym of *Ophisops beddomei* (Jerdon 1870))*

SERPENTES Linnaeus, 1758

UROPELTIDAE Müller, 1832

26. *Melanophidium punctatum* Beddome, 1871*

27. *Melanophidium bilineatum* Beddome, 1870*
28. *Plectrurus wynandensis* Beddome, 1863 (now *Melanophidium wynaudense*)*
29. *Plectrurus trilineatus* Beddome, 1867 (now *Platyplectrurus trilieatus*)*
30. *Platyplectrurus bilineatus* Beddome, 1886 (synonym of the former species)
31. *Platyplectrurus madurensis* Beddome, 1877*
32. *Plectrurus sanguineus* Beddome, 1867 (now T*eretrurus sanguineus*)*
33. *Platyplectrurus hewstoni* Beddome, 1876 (synonym of the former species)
34. *Teretrurus travancoricus* Beddome, 1886 (synonym of *T. sanguineus*)
35. *Plectrurus davidsoni* Beddome, 1886 (synonym of *P. perroteti* Duméril et al., 1854)
36. *Plectrurus guentheri* Beddome, 1863*
37. *Plectrurus aureus* Beddome, 1880*
38. *Silybura canarica* Beddome, 1870 (now *Plectrurus canaricus*)*
39. *Silybura nitida* Beddome, 1878 (now *Uropeltis nitidus*)*
40. *Silybura ocellata* Beddome, 1863 (now *Uropeltis ocellatus*)*
41. *Silybura ochracea* Beddome, 1878 (synonym of the former species)
42. *Silybura dupeni* Beddome, 1878 (synonym of *Uropeltis ocellatus*)
43. *Silybura dindigalensis* Beddome,1877 (now *Uropeltis dindigalensis*)*
44. *Silybura macrorhyncha* Beddome, 1877 (now *Urppeltis macrorhynchus*)*
45. *Silybura nigra* Beddome, 1886 (synonym of *Uropeltis woodmasoni* (Theobald, 1876))
46. *Silybura shortii* Beddome, 1863 (synonym of *Uropeltis ceylanicus* Cuvier, 1829)
47. *Silybura nilgherriensis* Beddome, 1863 (synonym of the former species)
48. *Silybura nilgherriensis* var. *annulata* Beddome, 1886 (synonym of *U. ceylanicus*)
49. *Silybura madurensis* Beddome, 1878 (now *Uropeltis arcticeps madurensis*)
50. *Silybura nilgherriensis* var. *picta* Beddome, 1886 (synonym of the former species)

51. *Silybura rubromaculata* Beddome, 1867 (now *Uropeltis rubromaculatus*)*
52. *Silybura nilgherriensis* var. *myhendrae* Beddome, 1886 (now *Uropeltis myhendrae*)*
53. *Silybura broughami* Beddome, 1878 (now *Uropeltis broughami*)*
54. *Silybura levingii* Beddome, 1878 (synonym of the former species)
55. *Silybura maculata* Beddome, 1878 (now *Uropeltis maculatus*)*
56. *Silybura petersi* Beddome, 1878 (now *Uropeltis petersi*)*
57. *Plectrurus pulneyensis* Beddome, 1863 (now *Uropeltis pulneyensis*)*
58. *Rhinophis grandis* Beddome, 1867 (now *Uropeltis grandis*)*
59. *Rhinophis sanguineus* Beddome, 1863*
60. *Rhinophis microlepis* Beddome, 1863 (synonym of the former species)

COLUBRIDAE Oppel, 1811

61. *Oligodon travancoricum* Beddome, 1877*
62. *Cercaspis travancoricus* Beddome, 1870 (now *Lycodon travancoricus*)*
63. *Spilotes vittatus* Beddome, 1863 (now *Amphiesma beddomei* (Günther, 1864) [replacement name])
64. *Ablabes olivaceus* Beddome, 1863 (now *Rhabdops olivaceus*)*
65. *Xylophis indicus* Beddome, 1878 (putatively a synonym of *Xylophis stenorynchus* (Günther, 1875))
66. *Psammophis indicus* Beddome, 1863 (synonym of *P. condanarus* (Merrem, 1820))

ELAPIDAE Boie, 1827

67. *Callophis concinnus* Beddome, 1863 (synonym of *Calliophis nigrescens* Günther, 1862)
68. *Callophis pentalineatus* Beddome, 1871 (synonym of *C. nigrescens*)
69. *Elaps cerasinus* Beddome, 1864 (synonym of *Calliophis bibroni* Jan, 1858)

VIPERIDAE Boie, 1827

70. T*rimeresurus macrolepis* Beddome, 1862*

For his extensive contributions to Indian herpetology, Beddome has been lauded by many of his contemporaries, peers and even some of the more recent workers in the field. Given below are a few examples of such tributes, one each from the 19th, 20th and 21st centuries so as to highlight this fact.

"Lieut.-Col. Beddome's collection contains all the specimens obtained by him during his residence in India, more especially the types of the numerous interesting forms discovered and described by him. Perhaps there is now no other part of India, the reptilian fauna of which is better known than the district explored by this indefatigable collector."

- Günther (1875).

"....[Colonel Beddome]... exploited the South Indian Hills, including the Palni Hills, to such purpose in the seventies and eighties of the last century, that he has hardly left a snake for any later enthusiast to discover."

- Wall (1921).

"He described the new genus Melanobatrachus *and four other species. From the remarkable collections he made, Albert Günther and George Albert Boulenger could describe about 20 new species. The fact that six Western Ghats amphibians were named after him shows how amphibian specialists have accepted him as a recognized herpetologist."*

- Biju (2001).

Some south Indian herpetological taxa described by his peers belong to his collections. Furthermore, and as can be expected, many of his peers named new south Indian herpetological taxa honouring him. These are listed below.

(c) List of herpetological species named in honour of Beddome (* indicates species currently valid as Beddome's eponym)

AMPHIBIA De Blainville, 1816

GYMNOPHIONA Rafinesque-Schmaltz, 1814

1) *Ichthyophis beddomei* Peters, 1879*

ANURA Duméril, 1806

BUFONIDAE Gray, 1825

2) *Bufo beddomei* Günther, 1876*

RHACOPHORIDAE Hoffman, 1932

3) *Philautus beddomei* (Günther, 1875)*

4) *Rhacophorus beddomii* Boulenger, 1882 ((preoccupied); now known as *Rhacophorus calcadensis* Ahl, 1927 [replacement name])

PETROPEDETIDAE Noble, 1931

5) *Indirana beddomei* (Günther, 1875)*

NYCTIBATRACHIDAE Blommers-Schlösser, 1993

6) *Nyctibatrachus beddomii* (Boulenger, 1882)*

REPTILIA Laurenti, 1768

SQUAMATA Oppel, 1811

SAURIA Gauthier, 1984

GEKKONIDAE Gray, 1825

7) *Cnemaspis beddomei* (Theobald, 1876)*

AGAMIDAE Gray, 1827

8) *Otocryptis beddomii* Boulenger, 1885*

SCINCIDAE Gray, 1825

9) *Eutropis beddomii* (Jerdon, 1870)*

10) *Kaestlea beddomii* (Boulenger, 1887)*

11) *Ristella beddomii* Boulenger, 1887*

LACERTIDAE Gray, 1825

12) *Ophisops beddomei* (Jerdon, 1870)*

SERPENTES Linnaeus, 1758

TYPHLOPIDAE Merrem, 1820

13) *Typhlops beddomii* Boulenger, 1890*

14) *Typhlops beddomei* (not of Boulenger, 1890) Wall, 1919 ((preoccupied); now *Typhlops tindalli* Smith, 1943)

UROPELTIDAE Müller, 1832

15) *Uropeltis beddomii* (Günther, 1862)*

COLUBRIDAE Oppel, 1811

16) *Amphiesma beddomei* (Günther, 1864)*

17) *Boiga beddomei* (Wall, 1909)*

ELAPIDAE Boie, 1827

18) *Calliophis beddomei* Smith, 1943*

This list shows that many of his peers such as Wilhelm Peters, Malcom Arthur Smith, William Theobald each (1/18 spp.=5.5%), Thomas Claverhill Jerdon, Frank Wall each (2/18 spp.=11.1%), Albert C.L.G. Günther (5/18 spp.=27.7%) and George Albert Boulenger (6/18 spp.=33.3%) have regarded Beddome as one of the foremost authorities on south India's herpetology. From as early as 1862 to as late as 1943, for over eight decades, several leading herpetologists have named new south Indian herpetological taxa after him which speak to the high regard in which they held him. The type localities of all the species listed above (in both lists b & c) are in peninsular India.

Beddome's legacy will not be forgotten but will continue to inspire present and future herpetologists to explore the diversity hidden within the last remaining forest patches of southern India.

Acknowledgements

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References

Biju, S.D. 2001. *A synopsis to the frog fauna of Western Ghats, India.* Occasional Publication, ISCB, pp 24.

Das, I. 2003. Herpetology of an Antique Land: The History of Herpetological Explorations and Knowledge in India and South Asia. *Bonner zoologische Beiträge* 52: 215-229.

Godwin-Austen, H. H. 1912. The death of Colonel Richard Henry Beddome. *Journal of Molluscan. Studies*. 10(2): 51-52.

Günther, A.C.L.G. 1875. Second report on Collection of Indian Reptiles obtained by the British Museum. *Proceedings of the Zoological Society of London* pp 224-234 + 4 pls.

Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca, and J. Kent. 2000. Biodiversity hotspots for conservation priorities. *Nature* 403: 853-858.

Smith, M.A. 1931. *Fauna of British India. Vol-I. Loricata and Testudines*. Taylor & Francis, London, 231 pp.

Vijayaraghavan, B. 2005. *Snake Studies: India*. Occasional Publications, Chennai Snake Park Trust, Chennai, India, 30 pp.

Wall, F. 1921. Acquisition of four more specimens of the snake *Brachyophidium rhodogaster* Wall. *Journal of the Bombay natural History Society* 28: 536-537.

BREEDING SEASON AND OVIPOSITION SITES OF COMMON HOUSE GECKO *HEMIDACTYLUS FRENATUS* IN FORESTS OF SRIHARIKOTA, ANDHRA PRADESH, INDIA

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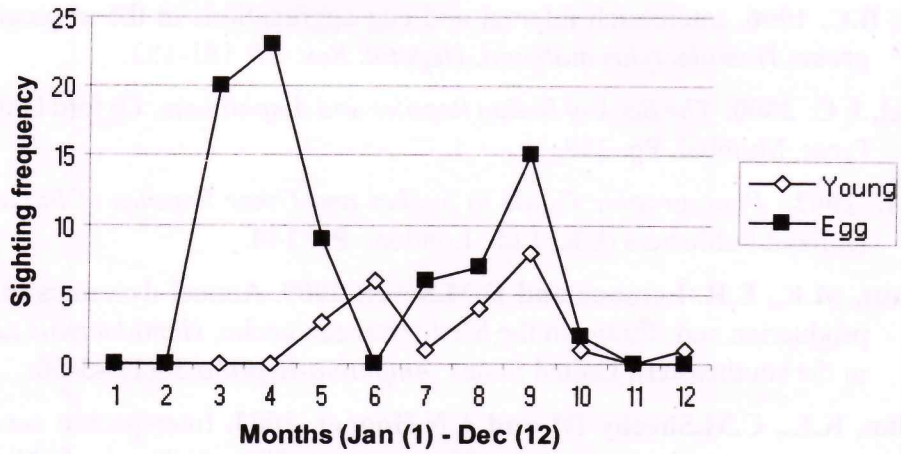
The common house gecko *Hemidactylus frenatus* is one among the three species (others are Brook's gecko *H. brooki*, and bark gecko *H. leschenaulti*) recorded in Sriharikota (Sivakumar and Manakadan 2004). Among these, *H. frenatus* was the most common species in the forests of the island. During the present study, there was no record of *H. brooki* and only two records of *H. leschenaulti* in the forests of Sriharikota as against 504 sightings of *H. frenatus*. Minton Jr. (1996) stated that although *H. frenatus* is characteristically domestic, it was not recorded from houses in Karachi, but was plentiful in nursery gardens. *H. brooki* and *H. leshenaulti* were commonly seen in human habitation in Sriharikota. Hence, the gecko eggs sighted during this study in forest areas are concluded as eggs of *H. frenatus*. We report our observations on some breeding aspects of this species here. This is the result obtained from searches made in 372 quadrats of 25m X 5m size in different habitats during 2002-2004.

All possible microhabitats such as loose barks on vegetation (below 3m ht.), leaf-litter, crevices and holes on plants (below 3m ht.) and logs were searched carefully to note the presence of eggs. Whenever gecko eggs were seen, details such as number of eggs, condition, and microhabitat details were noted down.

Two peak periods of egg-laying have been noticed, one in April (before the onset of the Southwest monsoon) and another in September (between Southwest and Northeast monsoons). Young ones were mostly seen between April and October (Fig-1). Minimum clutch size of one egg (n=15) to maximum of three eggs (n=1) were recorded. Clutch of two eggs (n=42) was the commonest. Mostly eggs were seen under litter cover on ground (n=44; 76%). Records from other oviposition sites such as under litter on tree (n=4; 7%), under log (n=6; 10%) and in soil (n=4; 7%) were comparatively very less.

Daniel (2002) has reported that this species lays eggs in April-May and hatch after 42 days. Our observations in the present study have some similarities as above. The eggs seen under soil were probably old, rotten or unhatched eggs gradually covered with soil due to wind movement and other changes on the forest floor. However, Krysko et al. (2003) also observed *Hemidactylus* eggs in soil at the base of the *Casuarina equissetifolia* tree. Though Krysko et al. (2003) mentioned that *Hemidactylus* eggs under litter on crotch of trees are safer than oviposition sites on the ground, sightings of eggs on trees in present study was only 7% against 93% on ground. Some sites had many hatched eggshells together. We are not certain whether a particular female used such sites repeatedly or many females laid in the sites as reported by different authors (e. g. Bock 1996, Daniel 2002, Krysko et al. 2003, Pope 1957).

Fig. 1. Pattern of egg laying and hatching in Common House Gecko in Sriharikota during 2002-2004.



Available literature shows that clutch size of this species consists a maximum of two eggs (e.g. Daniel 2002, Das 2002, Krysko et al. 2003, Murphy-Walker 1994). Hence, our observation of three eggs may be an exceptional case or the site was used by more than one female. Female *H. frenatus* are known to store sperm up to nine months and their oviducts are active year-round (Eckstut et al. 2009, Murphy-Walker 1994). So, they lay eggs at variable interval throughout the year (Murphy-Walker 1994). The two peaks of egg laying in *H. frenatus* noted in the present study resemble that of *Agama agama*, a diurnal, insectivorous lizard species from Ghana, Africa, where each peak was reported to be preceded by a rainy season, when there will be a great increase in the abundance of invertebrates, presumably, the hatchlings' main prey (Spellerberg 1982).

Acknowledgements

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References

Bock, B.C. 1996. Interclutch interval and egg aggregations in the tropical house gecko, *Hemidactylus mabouia. Hepetol. Rev.* 27: 181-183.

Daniel, J. C. 2000. *The Book of Indian Reptiles and Amphibians.* Oxford University Press, Mumbai. Pp. 238.

Das, I. 2002. *Photographic Guide to Snakes and Other Reptiles of India.* New Holland Publishers (UK) Ltd., London. Pp. 144.

Eckstut, M.E., E.R. Lemons and D.M.Sever. 2009. Annual dynamics of sperm production and storage in the Mediterranean gecko, *Hemidactylus turcicus*, in the southeastern United States. *Amphibia-Reptilia* 30(1):45-56.

Krysko, K.L., C.M.Sheehy III and A.N.Hooper. 2003. Interspecific communal oviposition and reproduction of four species of lizards (Sauria: Gekkonidae) in the lower Florida Keys. *Amphibia-Reptilia* 24:390-396.

Minton, S. A. Jr. 1996. A contribution to the herpetofauna of west Pakistan. *Bulletin of the American Museum of Natural History*, Vol. 134(2): 184.

Murphy-Walker, S.G. 1994. Functional long-term storage of spermatozoa in oviducts of the common house gecko, *Hemidactylus frenatus*. Ph.D. Thesis submitted to University of Hawaii. 99p.

Pope, C. H. 1957. *The Reptile World.* Routledge & Kegan Paul Ltd., London.

Sivakumar, S. and R. Manakadan. 2004. An ecological account of the faunal diversity of Sriharikota Island and its environs. Final Report: Part II – Herpetofauna. *Bombay Natural History Society*, Mumbai. 44p.

Spellerberg, I. F. 1982. *Biology of Reptiles an Ecological Approach.* Blackie & Son Ltd., London.

AN ANNOTATED CHECKLIST OF REPTILIAN FAUNA OF SITAMATA WILDLIFE SANCTUARY, RAJASTHAN, INDIA

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Sitamata Wildlife Sanctuary (74°25 - 74°40′E 24°04 - 24°23′N) is situated in the southern region of Rajasthan in Pratapgarh and Udaipur where three ancient mountain ranges of Central India namely the Aravallis, the Vindhayas and Malva plateau meet together forming the northwestern limits of teak forest. It is the most unique ecosystem with the second richest biodiversity (after Mt. Abu Wildlife Sanctuary amongst protected areas of Rajasthan). The sanctuary covers an area of about 422.95 sq km.

It has a unique biodiversity and many species are yet to be discovered and identified from this area. The configuration of land is hilly and rugged with high altitude which varies from 280 to 600 m. The climate of this region is quite pleasant with subtropical features and characterized by distinct winter, summer and rainy seasons. Average rainfall is 756 mm and mercury seldom falls below 6° C in winter and never rises above 45° C in summer.

Survey was conducted for the last five years, i.e., from 2004 to 2009. Reptiles were identified using literature. Earlier, some studies were carried out to explore reptilian fauna in southern Rajasthan (Bhatanagar and Mahur, 2009; Shalini and Pandey, 2007; Sharma, 1995; Sharma, 1997 Sharma, 2001; Sharma, 2003; Sharma, 2007) but none of the above studies included reptilian fauna of Sitamata Wildlife Sanctuary. This is the first reptile checklist for the sanctuary. During the study period one species of turtle, 12 species of lizards and 18 species of snakes were recorded (Table 1).

Table 1. Reptiles of Sitamata wildlife sanctuary

Sl. No.	Species	Common Name	Local Name	Local Status*	Ven-om
1	*Lissemys punctata* (Lacèpéde)	Indian Mud or flap-Shell Turtle	Kachhwa	R	NA
2	*Hemidactylus flavi-viridis* Ruppell	Northern House Gecko	Bashumra	C	NA
3	*Hemidactylus brookii* Gray	Brook's Gecko	Bashumra	L	NA
4	*Hemidactylus triedrus* (Daudin)	Termite Hill Gecko	Bashumra	R	NA
5	*Eublepharis macu-larius* (Blyth)	Leopard or Fat-tailed Gecko	Bashumra	R	NA
6	*Calotes versicolor* (Daudin)	Common Garden lizard	Kangatia	VC	NA
7	*Sitana ponticeriana* Cuvier	Fan-throated lizard	Pankha	LC	NA
8	*Chamaeleo zeylani-cus* Laurenti	Indian Chameleon	Halanmeha, Leela	R	NA
9	*Eutropis carinata* (Schneider)	Common or Brah-miny Skink	Nagarbamni	VC	NA
10	*Eutropis macularia* (Blyth)	Little Skink	Nagarbamni	LC	NA
11	*Lygosoma punctatus* (Gmelin)	Snake Skink	Nagarbamni	R	NA
12	*Ophisops minor nictans* Arnold	Jerdon's Snake-eye	Bashumra	LC	NA
13	*Varanus bengalensis* (Daudin)	Common Indian Monitor	Goyara, Gho	C	NA
14	*Ramphotyphlops braminus* (Daudin)	Brahminy Worm Snake	Andha samp, Kana samp	C	NV
15	*Gongylophis conicus* (Schneider)	Common Sand Boa	-	LC	NV
16	*Eryx johnii* (Russell)	Red Sand Boa	Dumbi	LC	NV

17	*Python molurus molurus* (Linnaeus)	Indian Rock Python	Ajgar	R	NV
18	*Coelognathus helena helana* (Daudin)	Common Trinket Snake	-	LC	NV
19	*Ptyas mucosa* (Linnaeus)	Common Rat Snake	Dhamniya	LC	NV
20	*Oligodon arnensis* (Shaw)	Common Kukri Snake	-	LC	NV
21	*Oligodon taeniolatus* (Jerdon)	Russell's Kukri Snake	-	LC	NV
22	*Dendrelaphis tristis* (Daudin)	Common Indian Bronzeback or Tree Snake	-	R	NV
23	*Lycodon aulicus* (Linnaeus)	Common Wolf Snake	-	C	NV
24	*Lycodon striatus* (Shaw)	Barred Wolf Snake	-	C	NV
25	*Xenochrophis piscator* (Schneider)	Checkered Keelback	Diwat, Hilluka	C	NV
26	*Amphiesma stolata* (Linnaeus)	Buffstriped Keelback	-	R	NV
27	*Boiga trigonata* (Daudin)	Common Cat Snake	-	LC	MV
28	*Bungarus caeruleus* (Schneider)	Common Indian Krait	-	C	V
29	*Naja naja* (Linnaeus)	Indian Cobra	Kala samp, Hamp, Gogagi	C	V
30	*Daboia russelii* (Shaw and Nodder)	Russell's Viper	Badi Chitti	LC	V
31	*Echis carinata* (Schneider)	Saw Scaled Viper	Chhoti Chitti	LC	V

*Venomous (V), Mildly venomous (MV), Not applicable (NA), Non-venomous (NV), R (Rare), LC (Less Common), C (Common), VC (Very Common).

From the above study, it is observed that the sanctuary supports a good diversity of reptiles. The habitat of the sanctuary is congenial and steps can be taken to improve the existing conditions for diversity and conservation of its fauna.

References

Bhatnagar, C. & Mahur, M. 2009. Reptilian fauna of Baghdarrah Nature Park, Udaipur Wildlife Division, Udaipur, Rajasthan, India. *Cobra*, 3(2):18-20.

Daniel, J. C. 2002. *The book of Indian Reptiles and Amphibians*. Bombay Natural History Society and Oxford University Press.

Shalini, G. & Pandey, V. K. 2007. Ecological notes on the herpetological fauna of Kumbhalgarh Wildlife Sanctuary, Rajasthan, India. *Cobra*, 1(3): 4-7.

Sharma, S. K. 1995. Presence of common green whip snake *Ahaetulla nasutus* at Phulwari ki Nal Wildlife Sanctuary, Rajasthan. *J. Bombay Nat. Hist. Soc.* 92 (1): 127.

Sharma, S. K. 1997. Herpetofauna of Phulwari ki Nal Wildlife Sanctuary, Rajasthan State. *J. Bombay Nat. Hist. Soc.* 94 (3): 573-575.

Sharma, S. K. 2001. Preliminary survey of the reptilian fauna of Mount Abu Wildlife Sanctuary and snake conservation efforts in Mount Abu town. *Cobra*, 44: 5-10.

Sharma, S. K. 2003. Presence of Dumeril's Black-headed Snake (*Sibynophis subpunctatus*) in Kumbhalgarh Wildlife Sanctuary, Rajasthan, India. *Cobra*, 53: 17.

Sharma, S. K. 2007. *Study of biodiversity and ethnobiology of Phulwari Wildlife Sanctuary, Udaipur (Rajasthan)*. Ph. D. Thesis. M L S University, Udaipur, Rajasthan.

LONGEVITY OF THE YELLOW MONITOR LIZARD *VARANUS FLAVESCENS* (HARDWICKE AND GRAY, 1827) IN CAPTIVITY

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Yellow Monitor *Varanus flavescens* (Hardwicke and Gray, 1827) is native to Bangladesh, India, Nepal and Pakistan. In India, this species has been recorded from Assam, West Bengal, Orissa, Bihar, Uttar Pradesh and Haryana states (Auffenberg *et al.* 1989, Daniel 2002). This is primarily a species of marshlands in low-lying, sandy areas bordering large rivers that are subject to annual flooding (Das 2002, ZSIENVIS). Some basic information on this poorly studied species in the wild is available in Whitaker (1981), Auffenberg *et al.* (1989), Daniel (2002), Khatiwada and Ghimire (2009). The lizard has been widely hunted throughout its geographic range for its skin (Das 1989) and other purposes (Chakraborty and Chakraborty 1987). Hence, the species is under severe threat and has been listed in Schedule I of Indian Wildlife (Protection) Act 1972, Appendix I of CITES (Molur and Walker 1998), and Lower risk/Least concern of IUCN (IUCN).

Literature on captive yellow monitors is scarce. Auffenberg *et al.* (1989) and Visser (1985) reported their observations on captive yellow monitor lizards from U.S.A. and Rotterdam Zoo in Europe respectively. *Varanus flavescens* was kept on display in Indian zoos only in Chennai Snake Park (n=1), Alipore Zoological Garden (n=1), Kolkata and Culcutta Snake Park (n=28), Badu (CZA inventory 2008-2009).

Considering the general paucity of published information about this species, we share some information here on captive *Varanus flavescens*, especially its longevity recorded in the Chennai Snake Park. Three adult yellow monitor lizards, one male and two females were received from the Calcutta (now Kolkata) Snake Park, Badu, under an animal exchange programme on 8th Aug. 1996. The animals were kept for display in an open enclosure measuring c. 10 X 11 feet. Rats, mice, frogs and bird eggs (Japanese Quail) were offered to the lizards in regular intervals and consumed by them.

Out of these three monitor lizards, a female died on 5th Jan. 2000 and the male died on 25th Nov. 2004. The above lizards lived in the park for 3 years 5 months and 8 years 3 months respectively. The post-mortem observation revealed that the female had ulceration in gastro-intestinal tract and the male had symptoms of kidney problem.

The third one, i.e. another female, was healthy and never developed any health problem, except an eye infection once in September 2004. It was treated with Soframycine eye drop for four times from 9th to 16th Sep. 2004 in alternative days and recovered completely. This individual died on 18th Sep. 2010. It did not show any sign of health problem. It took a normal amount of feed even on the day prior to its death. It survived 14 years 41 days in the Park. This span of 14 years, 41 days is the maximum longevity recorded for this species, even without taking into account its age when received in the Park, which is not known. The previously published maximum longevity of the species is 10 years 6 months (King and Green 1993). Bowler (1977) also reported the longevity of this species, where the individual lived only for 4 years and 6 months.

The total length of the reptile was 79cm with a snout-vent length of 36cm in death.

The Savannah monitor lizard *Varanus exanthematicus* of Africa, which grows to more or less similar size to the yellow monitor lizard has lived more than 17 years in captivity (King and Green 1993). Mader (1996) mentions that lizards are relatively long-lived animals and listed longevity records of few species, where the longest value of longevity of almost 34 years for a Mexican beaded lizard *Heloderma horridum* has been reported.

References

Auffenerg, W., H. Rahman and F. Iffat 1989. A study of *Varanus flavescens* (Hardwicke & gray) (Sauria: Varanidae). J. *Bombay Nat. Hist. Soc.* 86(3): 286-307.

Bowler, J.K. 1977. *Longevity of Reptiles and Amphibians*. Society for the Study of Amphibians and Reptiles. 32pp.

CZA: 2008-2009. Inventory of Animals and Animal Profiles of Identified Individuals of the Selected Endangered Wild Animal Species in Indian Zoos. Central Zoo Authority, New Delhi. 500 pp.

Chakraborty, S. and Chakraborty, R. 1987. Killing of the Yellow monitor, *Varanus flavescens* (Gray, 1827) (Squamata: Sauria) in some villages of Birbhum district, West Bengal, India. *J. Bombay nat. Hist. Soc.*, 84 (2): 450-452.

Daniel, J. C. 2002. *The Book of Indian Reptiles and Amphibians*. Bombay Natural History Society. 238pp.

Das, I. 1989. Indian Monitor Lizards: A review of human utilization pattern. *Hamadryad*, 14 (1): 16-19.

Das, I. 2002. *Photographic Guide to Snakes and Other Reptiles of India.* New Holland Publishers, London. 144pp.

IUCN: http://www.iucnredlist.org/apps/redlist/details/22872/0

Khatiwada, J.R. and B.C. Ghirmire 2009. Conservation status of *Varanus flavescens* in Chitwan, Nepal. *Biawak*, 3(4):100-105.

King, D. and B. Green. 1993. *Goannas: The Biology of Varanid Lizards*. New South Wales Univ. Press. 100pp.

Mader, D.R. 1996. *Reptile Medicine and Surgery*. W.B.Saunders Company. 512pp.

Molur, S. and S. Walker (Eds.). 1998. *Report of the workshop "Conservation Assessment and Management Plan for Reptiles of India"* (BCPP-Endangered Species project), Zoo Outreach Organisation, Conservation Breeding Specialist Group, India, Coimbatore, India. 175 pp.

Visser, G. J. 1985. Notice our Brut biology des Gelbwarans V*aranus (Empagusia) flavescens* (Hardwicke & Gray, 1827) in Zool Rotterdam. *Salamandra*, 22(2/3): 161-168.

Whitaker, R. 1981. Bangladesh - Monitors and turtles. *Hamadryad* 6 (3): 7-9.

ZSIENVIS: http://zsienvis.nic.in/endb/end_reptilia/reptilia_data/varanus_flavescens.htm

OBSERVATIONS ON SMOOTH RACER SNAKE *COLUBER VENTROMACULATUS* (SQUAMATA, COLUBRIDAE) AT CENTRAL ARAVALLI FOOTHILLS, AJMER, RAJASTHAN, INDIA

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Snakes are the less studied group of the class Reptilia particularly from the western India including the Thar Desert and the Aravalli mountain ranges. The study area was the foot hills of the Aravalli mountain ranges which are one of the oldest. The herpetofaunal composition of Aravalli mountain range and its foothills have great variations in occurrence and distribution, which is not documented properly till date. Very few or scattered information about the snakes of western India are available. Some earlier workers have listed out the snakes of western India in general i.e. Rajasthan state of India (Smith, 1943; Daniel, 2002; Das, 2002; Whitaker and Captain, 2004; Sharma, 2003; Sharma and Sharma, 2009). Its distribution is restricted to Jammu and Kashmir, Gujarat (Khandesh), Uttaranchal (Almora) and certain habitats of Rajasthan (Sikar). Outside India it has been documented at few sites in Pakistan, Uzbekistan, and Israel (Whitaker and Captain, 2004).

The present article documents our observations on smooth racer snake (*Coluber ventromaculatus*) from central Aravalli foothills, Ajmer, Rajasthan, India. This is a fast-moving, long and smooth-scaled snake species, which moves about during the dusk. It is terrestrial and prefers habitats with small patches of shrubs and grasslands mainly in the plains and fields or on the stony hillsides, open or cultivated lands, and sometimes also in urban areas.

During our general herpetofaunal surveys (2009-2010) in the study area, we documented this species. The individual sighted was photographed and identified as smooth racer snake *Coluber ventromaculatus* (Fig. 1). Subsequently, during our

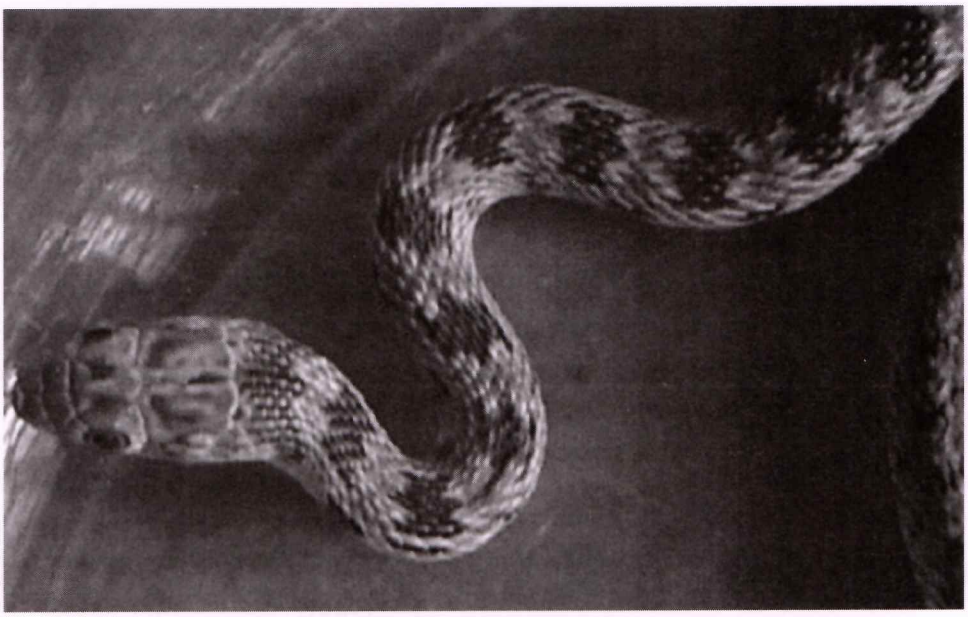

Figure 1. Adult Smooth Racer Snake (*Coluber ventromaculatus*)

recent explorations, we recorded three more individuals from the study area. This provides an additional locality for this species in Rajasthan. This species has been reported to be diurnal by earlier workers. But we found most of our individuals at dusk and, sometimes, also in the night. Certain recent threats are habitat loss, urbanization and road-kills.

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References

Daniel, J. C. (2002). *The book of Indian Reptiles and Amphibians*. Bombay Natural History Society. Oxford University Press 238 pp.

Das, I. (2002). *A photographic guide to snakes and other reptiles of India.* New Holland Publications U.K 154 pp.

Sharma, R. C. (2003). *Handbook- Indian Snakes*. Published by Director, Zoological Survey of India, Kolkata. 292 pp.

Sharma, K. K. and Sharma, V. (2009). Records of New locality of royal snake species in central semiarid region of Rajasthan (Ophidia: Colubridae; Colubrinae; *Spalerosophis diadema atriceps*). *Cobra*, 3 (3): 16-18.

Smith M. A. (1943). *The Fauna of British India, including Ceylon and Burma. Reptilia and Amphibia.* Vol. III. *Serpentes*, Taylor and Francis, London. xii + 583 pp.

Whitaker R. and Captain A. (2004). *Snakes of India-The Field Guide*, Draco Books, Chennai, 481 pp.

OBSERVATIONS ON THE DESERT MONITOR LIZARD (*VARANUS GRISEUS*) IN THE THAR DESERT, RAJASTHAN, INDIA AND RECENT THREATS TO ITS POPULATION

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The family Varanidae is represented by four species from the Indian subcontinent (Boulenger, 1890; Smith, 1935; Sharma, 1996; Daniel, 2002). Varanids, collectively referred to as monitor lizards, inhabit all major habitats of the Indian subcontinent. They share some characters such as large and heavy body, bifurcated tongue, large tail and ability to produce loud hissing sound when disturbed.

The present article is a record of our observations on the desert monitor lizard *Varanus griseus* from Sri Ganganagar district of the Thar Desert, Rajasthan state, India. This species is reported to be distributed in northwestern India, westwards through south Asia to the Caspian Sea and North Africa (Smith, 1935). Sri Ganganagar district is situated at the extreme northern part of the Thar Desert. It comprises of an arid type of climate, with a large range of temperature fluctuation (4-48° C), very low precipitation and / or very scanty rainfall. Soil is characterized by sandy texture and very low water-holding capacity. The terrain is with sand dunes of scattered undulations and low heights.

During a general biodiversity survey from June 2007 to September 2010 we found *Varanus griseus* in Sri Ganganagar district (29°55′N 73°53′E / 29°92′N 73°88′E; 164 meters asl). *Varanus griseus* is locally known as "yellow desert monitor" or "Chandan gohera". It is characterized by snout depressed at the end; nostrils being an oblique slit, much nearer to the orbit than to the end of the snout;, yellowish-brown in color with smaller brown spots, with brown cross-bars on the back; tail characteristically rounded.

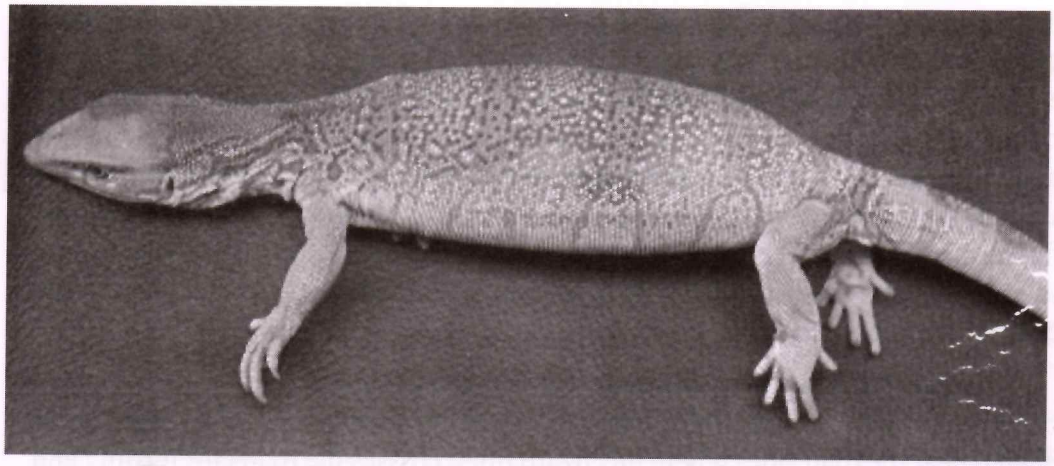

Figure 1. Adult desert monitor (*Varanus griseus*) – entire

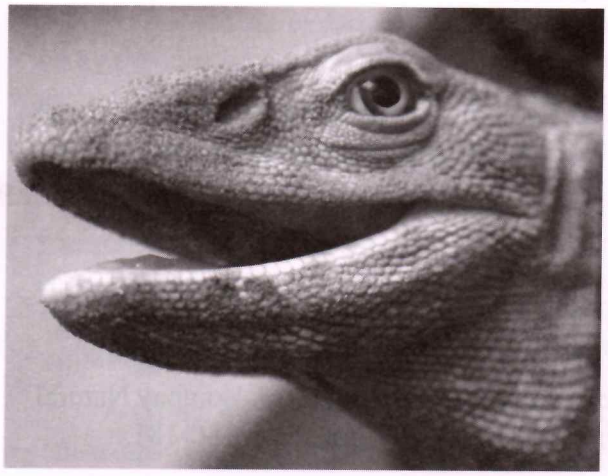

Figure 2. Adult desert monitor (*Varanus griseus*) - close-up of head

Habit and Habitat: It inhabits sandy places, usually with undulating sand dunes and sparse vegetation. It feeds mainly on small rodents, lizards, snakes and crickets. It lives in burrows, either dug by itself or other animals. It is diurnal but, during extreme hot noons it prefers to rest in burrows so as to maintain body temperature. Members of this family are well-known for their ability to climb and swim with ease but this species is perhaps the only member of this family which is less adept at swimming due to its rounded tail and it also shows an avoidance behavior towards deep water. Its limb-morphology is more adapted to running and digging than to climbing.

Recent Threats: During our study period we came across threats to the animal from the local population. The major reason is the increasing urbanization which leads to loss of habitat. Sri Ganganagar district has arid climatic conditions. But due to the Indira Gandhi Nahar Project (IGNP) the land characteristics have

drastically changed particularly near the IGNP canal system. In these areas, irrigation is possible throughout the year and field workers and farmers have occupied most of the land for farming and agricultural practices. These are the feeding and breeding grounds of this species, so the local population of this species sharply declines as narrated by the local inhabitants as well as according to our observation. People usually kill the monitor due to fear or some myths associated with its colouration, bifid tongue and ability to make loud hissing noise when disturbed. This species is also imperiled by road accidents while crossing the main roads situated in between the agriculture farms.

Suggestions for conservation: It is suggested that efforts should be made to protect the natural habitats of this lizard by spreading awareness and by signboards mounted near the road sides where this lizard often crosses the roads for feeding and breeding. The myths about the danger of this lizard to human have to be removed through education and awareness programmes.

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References

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. pp 180-181.

Sharma, R.C. (1996). *Herpetology of the Thar Desert,* 297-306 pp. *In* Ghosh *et al.*, (Eds). Faunal Diversity in Thar Desert: Gaps in Research Scientific Publishers, Jodhpur.

Smith, M. (1935). *The Fauna of British India, including Ceylon and Burma. Reptilia and Amphibia. II. Sauria.* Taylor and Francis, London.

A NOTE ON THE INTERPRETATION CENTRE IN THE CHENNAI SNAKE PARK

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One of the principal objectives of the Chennai Snake Park Trust is to promote knowledge among the public on snakes and other reptiles and dispel the widespread erroneous beliefs about them. In pursuance of this, the Chennai Snake Park has constructed an interpretation centre on snakes and crocodilians and it was thrown open to the public in January 2010. This has been constructed and equipped at a cost of ₹ 45.6 lakhs with part-assistance from the Central Zoo Authority, the major share having been met from the own funds of the Trust.

The interpretation centre has the following facilities;

One hundred and thirty four back-lighted display boards (133 of which measure 24" x 18" and one 48" x 24"), showing blown-up photographs of snakes and crocodilians and giving salient information on them in English and Tamil. The 48" x 24" back-lighted display board gives an algorithm for identification of venomous and non-venomous snakes of India.

Of the 88 blown-up images of snakes, 55 are of less-known snakes of India. These are listed in the annexure. It has particularly to be mentioned that, out of these, seven (marked with an asterisk) have never appeared in photographs so far. The snake photographs have been supplied mostly by Ashok Captain, the well-known snake photographer and snake taxonomist and joint author of Snakes of India-The Field Guide and S.R. Ganesh, Research Scientist, Chennai Snake Park Trust.

Altogether, the Centre has pictures of 16 common Indian snakes, 55 uncommon Indian snakes, 12 exotic snakes and the three Indian crocodilians. A list of snakes and crocodiles whose images are displayed is annexed. Of these, seven photographs, all by S.R. Ganesh, are of Indian snakes whose photographs have never appeared anywhere before.

Further, there are back-lighted display boards, 45 of 24" x 18" size and one of 48" x 24" size giving a wealth of information in English and Tamil on the natural history and other relevant details about snakes and crocodilians including false beliefs about snakes and the truth.

Apart from the display boards in the static mode as detailed above, there are two scroll boards describing the natural history of snakes and showing some common Indian snakes.

In addition, there are six LCD displays with embedded software-based media players and content access servers continuously displaying video films on snakes by Romulus Whitaker and Shekar Dattatri and also information on snakes in a dynamic mode.

Attached to the interpretation centre is a lecture-room for conducting environmental awareness programmes for members of the public, particularly students. This has a ceiling-mounted projector, wall-mounted screen and a touch-screen kiosk, from which images can be projected on to the wall-mounted screen.

Also, mounted on the wall are photographs of 25 herpetologists, who, during the last 300 years, studied Indian snakes. Many of these photographs are not adequately known.

Four times a day, a few representative species of snakes are openly displayed in a designated area enclosed in a 9 ft. high cubicle covered by glass on three sides and located within the Interpretation Centre, with voice-over from a pre-recorded CD in English, Tamil and Hindi giving detailed information about each of the species.

Such a comprehensively-equipped interpretation centre for reptiles does not exist anywhere else in India.

Annexure

IMAGES DISPLAYED IN THE INTERPRETATION CENTRE

Common Indian snakes

1. Common worm snake (*Ramphotyphlops braminus*)
2. Common sand boa (*Gongylophis conicus*)
3. Red sand boa (*Eryx johnii*)
4. Indian python (*Python molurus*)
5. Bronzeback tree snake (*Dendrelaphis tristis*)
6. Rat snake (*Ptyas mucosa*)
7. Banded kukri snake (*Oligodon arnensis*)
8. Russell's kukri snake (*Oligodon taeniolatus*)
9. Checkered keelback (*Xenochrophis piscator*)
10. Striped keelback (*Amphiesma stolatum*)
11. Common cat snake (*Boiga trigonata*)
12. Green vine snake (*Ahaetulla nasuta*)
13. Common krait (*Bungarus caeruleus*)
14. Spectacled cobra (*Naja naja*)
15. Russell's viper (*Daboia russelii*)
16. Saw-scaled viper (*Echis carinatus*)

Uncommon Indian snakes

1. Wynad shield-tail (*Melanophidium wynaudense*) *
2. Perrotet's shield-tail (*Plectrurus perroteti*)
3. Ashambu shield-tail (*Uropeltis liura*)
4. Elliot's shield-tail (*Uropeltis ellioti*)
5. Madurai shield-tail (*Uropeltis arcticeps madurensis*)
6. Cuvier's shield-tail (*Uropeltis ceylanicus*) *
7. Red-bellied shield-tail (*Rhinophis sanguineus*) *
8. Beaked worm snake (*Grypotyphlops acutus*)
9. Whitaker's boa (*Eryx whitakeri*)
10. File snake (*Acrochordus granulatus*)
11. Dumèril's black headed snake (*Sibynophis subpunctatus*)

12. Slender racer snake (*Coluber gracilis*)
13. Indian smooth snake (*Coronella brachyura*)
14. Western kukri snake (*Oligodon affinis*)
15. Travancore kukri snake (*Oligodon travancoricus*) *
16. Black-spotted kukri snake (*Oligodon venustus*) *
17. Common bridal snake (*Dryocalamus nympha*)
18. Olive forest snake (*Rhabdops olivaceus*)
19. Travancore wolf snake (*Lycodon travancoricus*)
20. Yellow-spotted wolf snake (*Lycodon flavomaculatus*)
21. Copper-headed trinket snake (*Coelognathus radiata*)
22. Montane trinket snake (*Coelognthaus helena monticollaris*)
23. Banded racer (*Argyrogena fasciolata*)
24. Western Ghats bronzeback (*Dendrelaphis chairecacos*) *
25. Large-eyed bronzeback (*Dendrelaphis grandoculis*)
26. Beddome's keelback (*Amphiesma beddomei*)
27. Hill keelback (*Amphiesma monticola*)
28. Green keelback (*Macropisthodon plumbicolor*)
29. Ceylon cat snake (*Boiga ceylonensis*)
30. Collared cat snake (*Boiga nuchalis*)
31. Forsten's cat snake (*Boiga forsteni*)
32. Beddome's cat snake (*Boiga beddomei*)
33. Stout sand snake (*Psammophis longifrons*)
34. Leith's sand snake (*Psammophis leithi*)
35. Günther's vine snake (*Ahaetulla dispar*)
36. Bronze-headed vine snake (*Ahaetulla perroteti*) *
37. Brown vine snake (*Ahaetulla pulverulenta*)
38. Dog-faced water snake (*Cerberys rynchops*)
39. Glossy marsh snake (*Gerarda prevostiana*)
40. Dussumier's smooth water snake (*Enhydris dussumieri*)
41. Banded krait (*Bungarus fasciatus*)
42. Slender coral snake (*Calliophis melanurus*)
43. Striped coral snake (*Calliophis nigrescens*)
44. King cobra (*Ophiophagus hannah*)

45. Hook-nosed sea snake (*Enhydrina schistosa*)
46. Black and yellow sea snake (*Pelamis platura*)
47. Short sea snake (*Lapemis curtus*)
48. Annulated sea snake (*Hydrophis cynaocinctus*)
49. Banded sea snake (*Hydrophis fasciatus*)
50. Cochin-banded sea snake (*Hydrophis ornatus*)
51. Hump-nosed pit viper (*Hypnale hypnale*)
52. Bamboo pit viper (*Trimeresurus gramineus*)
53. Large-scaled pit viper (*Trimeresurus macrolepis*)
54. Malabar pit viper (*Trimeresurus malabaricus*)
55. Horse-shoe pit viper (*Trimeresurus strigatus*)

Exotic snakes

1. Spitting cobra (*Naja* spp.)
2. Black mamba (*Dendroaspis polylepis*)
3. Bushmaster (*Lachesis* spp.)
4. Anaconda (*Eunectes* spp.)
5. Egg-eater (*Dasypeltis* spp.)
6. Inland Taipan (*Oxyuranus microlepidotus*)
7. Boomslang (*Dispholidus typus*)
8. Sidewinder (*Bitis peringueyi*)
9. Rattle snake (*Crotalus* spp.)
10. Problem snake species – Brown tree snake (*Boiga irregularis*) & Okinawa Habu (*Trimeresurus flavoviridis*)
11. Convergent evolution – Emerald tree boa (*Corallus caninus*) & Green tree python (*Morelia viridis*)
12. Snake mimicry – Eastern coral snake (*Micrurus fulvis*) & Scarlet king snake (*Lampropeltis triangulum elapsoides*)

Crocodilians

1. Mugger or marsh crocodile (*Crocodylus palustris*)
2. Saltwater crocodile (*Crocodylus porosus*)
3. Gharial (*Gavialis gangeticus*)

* Photographs of species which have never been published anywhere before.

RANDOM HARVEST

Snake massage!

If you wish to have a massage with snakes, drop in at Barak's spa at Talmai Elazer, Israel. A report in the *Business World* July 12, 2010 says that six snakes – mercifully, all non-venomous – are used for this rub-down, with sizes varying according to the type of massage required. "The larger ones are employed to alleviate deeper muscle tensions – they don't include pythons, so don't worry about turning into dinner – and the smaller ones are left to crawl on your back to create a 'fluttering' sensation".

Charges: ₹ 3,300 . The report doesn't say whether the snakes expect any tips.

* * *

Pink iguanas

A team of Ecuadorian and Italian researchers have discovered a unique species of pink land iguana *Conolophus marthae* living on the Galapagos islands. The first pink iguanas were discovered in 1986, and after years of research, scientists have concluded that it is a unique species. Unlike the other land iguanas, it does not have a row of spines on its back.

Remarkably, this species was described not based on a preserved and deposited type specimen (which usually is the case) but the holotype is a live animal inserted with a PIT (passive integrated transponder) tag, enabling the animal to be radio-tracked and monitored. Subsequently (and as can be expected), the concept of "live holotype" was subjected to counter arguments, which, in turn, were answered. Despite these issues, this, new, pink land iguana is still considered valid. Because it is found only in a small group of islands, scientists are now assessing its conservation status.

Source : *Zootaxa*, vol.2201,18th Aug. 2010 and 2694, 2nd Dec.2010.

* * *

New species of wolf snake

Debanik Mukherjee and S. Bhupathy have published a paper in the *Russian Journal of Herpetology* vol.14, No.1, 2007 on the discovery of a new species of wolf snake from Anaikatti Hills, Western Ghats, Tamil Nadu, India. The snake has been named *Lycodon flavicollis*. This is an addition to the eleven Indian species of *Lycodon* listed by Whitaker and Captain in *Snakes of India – The Field Guide*, 2004.

* * *

Mud snake from Kerala

A report in *The Hindu* of May 8, 2010 refers to a study made by Ashok Captain, the well-known snake taxonomist and snake photographer, of the rare Kerala mud snake (*Enhydris dussumieri*). This is one of the four species of mud snakes found in India. Though included in the check-list in Whitaker and Captain's *Snakes of India – The Field Guide*, 2004, no details or photograph had been given in the book. It has now been studied and photographed for the first time. Bijukumar of the Dept. of Aquatic Biology and Fisheries, University of Kerala, who collected the snake from Kerala, sent the photographs to Captain who confirmed its identification and studied the snake in its habitat.

* * *

A new large monitor lizard

Rafe Brown of the University of Kansas has confirmed the discovery of a new species of a 2 metre long monitor lizard *Varanus bitatawa* on the northern Philippines islands of Luzon. He and his colleagues described and named the species in a paper published in *Biology Letters*. Somewhat resembling the famed Komodo dragon, it, however, does not get as large, weighing only 10 kg. Probably because, unlike the Komodo dragon, it lives on trees. It is said to be a fruit-eater.

Western scientists first glimpsed the big monitor in 2001, Brown says, when biologists exploring the forest happened on hunters carrying a large lizard home for dinner. His colleagues persisted in collecting photographs, local intelligence and

the occasional juvenile, but they could not secure a full-grown adult. Then, in the summer of 2009, one of his graduate students, Luke Welton, got his hands on an adult lizard and at last it was formally documented, named and described.

Source: *The Hindu Business Line* April 8, 2010; *The Monitor*, April, 2010

* * *

Insects find these frogs sticky

Australian frogs of the genus *Notaden* protect themselves from insect bites by secreting a glue that gums up the insect's mouth.

Source: *Times of India* Mar. 14, 2010

* * *

A new gecko from South India

In a paper published in the journal *Zootaxa* vol. 2765, Ishan Agarwal, Varad B. Giri and Aaron M. Bauer have described a new, cryptic, rock-dwelling gecko (*Hemidactylus graniticolus*) from hills near Haraholli, Bangalore rural district, Karnataka. Its name was coined in allusion to the distinctive granite rock hillocks that it inhabits. It was previously thought to be the spotted rock gecko (*H. maculatus*), which again was earlier considered as present also in the nearby island of Sri Lanka. Their study revealed the presence of three distinct species *H. maculatus* from Western Ghats, *H. hunae* from Sri Lanka and this new species from southern parts of Eastern Ghats. These findings are indicative of undocumented cryptic diversity within many of the widely distributed *Hemidactylus* geckos in India.

* * *

Giant snake-exhibit

The Monitor, the Newsletter of the Hoosier Herpetological Society vol.21 No.9 Sept. 2010 refers to the replica of a giant snake exhibited at the Geology Building of the Indiana University. This is a huge boa measuring 43 feet in length and weighing 2500 pounds. It is based on a cast of a 60 million years-old, foot-wide vertebra that was found in Columbia.

* * *

Antivenin on the streets!

The Monitor, the Newsletter of the Hoosier Herpetological Society, often comes out with interesting and generally reliable titbits about snakes. But vol.21 No.4. Apr.2010 issue of the newsletter carried something fanciful. Jim Horton quotes from a speech by Christen Wiley of the Kentucky Reptile Zoo to say that in India the victims of snakebite have "to locate antivenin themselves, often sold on the street". The claim that antivenin is often sold on the streets in India seems to be the latest addition to the many myths about Indian snakes and snake charmers once so popular in the West!

* * *

Frog species re-discovered

A team of scientists including those of the Delhi University have re-discovered five species of frogs believed for long to be extinct. According to a press release of the Delhi University, the findings have come as a result of the 'Lost Amphibians of India' initiative launched by it in Nov. 2010 to locate, if possible, 50 species not reported during the last over 18 years.

The Chalazodes bubble-nest frog (*Raorchestes chalazodes*), last reported in 1874 from the Kalakkad – Mundanthurai region was re-discovered after 137 years.

The Anamalai dot-frog (*Ramanella anamalaiensis*) has been re-discovered after 74 years.

The Dehradun stream frog (*Amolops chakratensis*), now re-discovered, was last seen 26 years ago.

The silent valley tropical frog (*Micrixalus thampii*) has been re-discovered after 31 years.

The elegant tropical frog (*Micrixalus elegans*), now re-discovered, was last seen 74 years ago.

Source : *The Hindu* Feb.17, 2011

* * *

Mysterious snake demystified

In the July-Sept.2010 issue of *Hornbill*, Ashok Captain narrates the story of his expedition as a member of a team to locate a mysterious gigantic highly venomous snake in Arunachal Pradesh which the locals called *Barta*. The team being shown an old smoke-blacked skin of a snake measuring seven feet even without the head and tail which were missing, and two fangs each nearly two inches long, only intensified the mystery. The condition of the skin made it impossible to take a scale-count to help identification.

After an intensive search, the team was able to catch a *Barta* live. Scalation data showed that the snake was Kaulback's pit viper *Protobothrops* (previously *Trimeresurus*) *kaulbacki*. The identification was confirmed by Andreas Gumprecht and Frank Tillack after comparing the data and images collected by the team with the type specimen (The measurements of the live snake and the fangs have not been given).

According to Wikipedia, the species is "found only in Burma". Malcolm Smith (*Fauna of British India* Vol.III – *Serpentes*) also says that it is known only from its type locality, namely Upper Burma. He gives its length as male 1340, tail 225; female 1410, tail 230 mm. Briefly, it means the length is about 60 inches. The longest pit viper described in Whitaker & Captain (*Snakes of India – The Field Guide*) is the Mountain pit viper 1250 mm (49 inch.) (Maximum).

Its present discovery in Arunachal Pradesh, India, is of great significance to its distribution.

— B. Vijayaraghavan

Our Publications

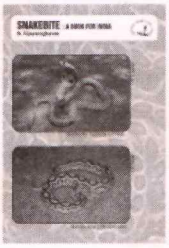
1. Snakes and other Reptiles (English and Tamil) (2000), by B. Vijayaraghavan
   Size: 13.5 x 21.5 cm, pp. 22, Price: ₹ 20 (English) ; ₹ 10 (Tamil)
   A useful compendium for beginners

2. Snake Studies: India (English) (2005), by B. Vijayaraghavan
   Size: 16.5 x 24 cm, pp. 30, Price: ₹ 25
   Containing a brief history of Indian ophiology and much else

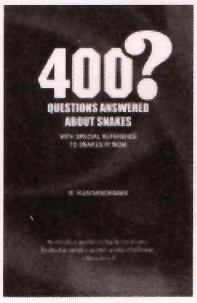
3. Snakes in the Bible (English) (2006), by B. Vijayaraghavan
   Size: 16.5 x 24 cm, pp. 24, Price: ₹ 25

4. Name - dropping — In Latin (English) (2007), by B. Vijayaraghavan
   Size: 17 x 24 cm, pp. 24, Price: ₹ 25
   An inquiry into the scientific names of Indian snakes.

5. Snakebite: A Book for India (English) (2008), by B. Vijayaraghavan
Size: 16.5 x 24 cm, pp. 96, Price: ₹ 65



6. 400 Questions Answered about Snakes – with special reference to snakes in India (English) (2010), by B. Vijayaraghavan
Size: 15.5 x 23 cm, pp. 232, Price: ₹ 120
All you wanted to know about snakes but didn't know whom to ask or where to search



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All manuscripts must be sent in hard copy or on CD-Rom to the Editor, *Cobra*, Chennai Snake Park Trust, Rajbhavan Post, Chennai – 600 022. Or through e-mail to cspt1972@gmail.com

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AIMS AND OBJECTIVES OF THE CHENNAI SNAKE PARK TRUST

i) To maintain and display a captive collection of snakes and other reptiles as a means of eliciting public interest in them and prompting the public to empathize with them.

ii) To promote knowledge among the public on reptiles and amphibians and dispel the widespread erroneous beliefs about snakes in particular and, to this end, conduct awareness programmes targeting school children primarily and bring out low-priced publications with technical, semi-technical and popular contents on reptiles and amphibians.

iii) To aid and assist research on reptiles and amphibians including the conduct of surveys to assess their status and distribution.

iv) To undertake captive breeding of endangered species of snakes and other reptiles.

v) To canvass public support for the protection and conservation of reptiles and amphibians.

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