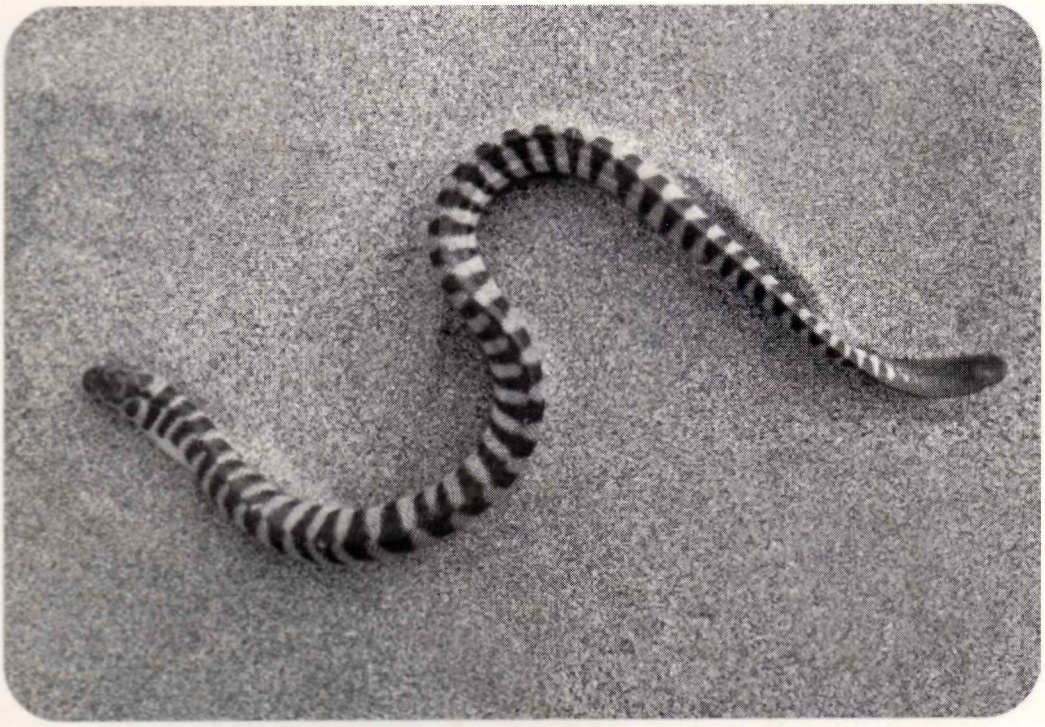
Cobra

Vol.-II Issue - 3 July - September 2008



CHENNAI SNAKE PARK TRUST

Quarterly Journal of the Chennai Snake Park Trust

Annual subscription : Individual – Rs. 75/-. Institution – Rs.150/-.

Cover

Short sea snake (*Lapemis curtus*)

Seen in the coastal waters on the West and east-coast and also elsewhere in the Indian ocean. Maximum length : 34". Shorter than many other species of sea snakes. Stout body. Human fatalities reported from bite. See also Page — 23

Photo : **M.Rameswaran**

Chennai Snake Park Trust, Rajbhavan Post, Chennai – 600 022. India.
Ph: 91-044-22353623 E-mail: cspt1972@bsnl.in / cspt1972@gmail.com

"Naturalists are among the most fortunate people in the world for they have a never-ending source of wonder and delight... It makes no difference what their field of interest – from the lowliest amateur to the most specialized worker in the biological sciences – a spirit of kinship prevails, a mystique exists which binds them together in a brotherhood that seeks closer contact with nature. Old or young, scientific or non-scientific, they share an awe of nature, a reverence for life..."

Carl Kauffeld
(In *Snakes: The keeper and the kept* (1969)

Cobra

Volume : II Issue 3 July - September 2008

CONTENTS PAGE

REPTILES RECORDED FROM TAMIL NADU PARTS OF THE WESTERN GHATS WITH REFERENCE TO THEIR MICROHABITAT USAGE.

P. Kannan

Salim Ali Centre for Ornithology and Natural History, Anaikatty (Post), Coimbatore 641108, Tamil Nadu, India.

Present Address:

Chennai Snake Park, Rajbhavan (Post), Chennai 600 022, Tamil Nadu, India. Email: perukannan@gmail.com

Abstract

Data on reptiles, their distribution and micro habitat usage were collected while conducting Agamid Lizard survey from January to December 1995 in the Western Ghats of Tamil Nadu covering the Nilgiri Biosphere Reserve, Indira Gandhi Wildlife Sanctuary, Srivilliputthur Grizzled Giant Squirrel Wildlife Sanctuary, and Kalakkad-Mundanthurai Tiger Reserve. Two methods- visual encounter survey and quadrate sampling-were used for data collection. Surveys were conducted in various localities and a checklist of reptiles was prepared from different habitats. On locating reptiles, parameters such as species, area, forest types, altitude, location of the reptiles above the ground and substratum were recorded. Field surveys were carried out for 1500 man-hours covering all seasons and major forest types. A total of Sixty two species of reptile were recorded of which 17 (27%) are endemic to the Western Ghats.

Key words: Tamilnadu, western ghats, reptiles, microhabitats, altitude, latitude.

Introduction

Available studies on reptiles from the Western Ghats were of specific nature or about particular group of reptiles. (Bhupathy & Kannan, 1997; Inger *et al.* 1987; Ishwar *et al.* 2001; Kannan & Venkatraman, 1998; Murthy, 2001; Kannan, 2005; Mukherjee, 2007). The reptilian diversity of the Western Ghats is under threat. Out of 500 species of reptiles known from India, 168 (33.6%) occur in the Western Ghats, 91 (54.2%) are endemic to this region.

The main aim of the present study was to list out the reptilian fauna from Tamil Nadu parts of the Western Ghats.

Study Area

The mountain range of the Western Ghats (22°-8°N) runs for approximately 1500 km along the western edge of the Indian peninsula. Tamil Nadu part of Western Ghats extends from Mudumalai Wildlife Sanctuary in the north to Kothaiyar- Kaliyal reserve Forests (RF) in the south. In addition to several Reserve Forests, Tamil Nadu part of the Western Ghats has four protected areas, namely part of tri state Nilgiri Biosphere Reserve, Indira Gandhi Wildlife Sanctuary, Srivilliputtur Grizzled Giant Squirrel Sanctuary and Kalakad – Mundanthurai Tiger Reserve. The present study was conducted in these four protected areas and in a few Reserve forests such as Moyar, Sathyamangalam, Siruvani in Nilgiri Biosphere Reserve, Ayyanarkoil near Srivilliputtur Grizzled Giant Squirrel Sanctuary, and Kadayam and Nambikoil near Kalakad – Mundanthurai Tiger Reserve.

Methodology

Visual encounter surveys

From January to December 1995, three surveys were carried out in each locality; February – May, June – September and October – December. During each survey, fifteen to twenty days of fieldwork was conducted in each locality. Field surveys were conducted from 0060 – 1000 hrs and from 1600 hrs to 1900 hrs. Visual encounter survey method was used for data collection which involves searching for reptiles in a locality or vegetation types recording all visible animals on the surface (Campbell and Christman 1982, Corn and Bury 1990). While walking, we scanned the vegetation, path, and other possible places for reptiles, recording the species observed within a 3 m distance from the path. Often, we searched the leaf litter as semi fossorial species emerge when slightly disturbed, which allowed them to be recorded.

Ecological information gathered included sex, age class, colour variations, height from ground upon sighting, microhabitat, injuries, defects, presence of ecto-parasites, threats (presence of predators, habitat change etc.). Road kills and other dead specimens were examined for eggs. The sampling duration in each locality was largely depending up on the size of the area.

Results

A total of 62 species of reptiles were recorded in the Western Ghats of Tamil Nadu which belongs to 16 families of which 17 species are endemic* (Table 1). There was 1 (2%) species of crocodile, 6 (10%) turtles and tortoises, 6 (10%) geckos, 11 (18%) agamid lizards, 4 (6%) skinks, 1 (1.5%) each chamaeleon and monitor lizard, snakes are representing 32 (51%), of these 17 species are non-venomous 4 species are mildly venomous (1 cat snake and 3 vine snakes) and 11 species are venomous snakes. Among the non-venomous snakes the family pythonidae comprises of 1 sp, Typhlopidae 1 sp, Uropeltidae 2 sp, boidae, 2 sp and Colubridae 15 sp. In venomous snakes, family viperidae and elapidae constituted 7 (64%) and 4 (36%) respectively.

Microhabitat usage of reptiles

The reptiles were located during the study, the microhabitat in which they were seen were categorized in to 9 types; ground, rock,herb,creeper, shrub,tree trunk, water, near stream and holes. The species such as Western Ghats flying lizard *Draco dussumieri* ,Nilgiri forest lizard *Calotes nemoricola*, large-scaled forest lizard *C. grandisquamis* occurred only on the tree trunk, while all other lizard species except fan-throated lizard *Sitana ponticeriana,* green forest lizard *Calotes calotes,* Anaimalai spiny lizard *Salea anamalayana* showed a preference for tree trunks. *S. ponticeriana* occurred only on the ground. *Calotes calotes* is a generalist species being found in all the microhabitats except rock. On one occasion it was noticed on a tall tree and mostly it prefers wooded groves. Horsfield's spiny lizard *Salea horsfieldi* showed high preference to the tree trunk and were sighted in other microhabitats less frequently.

The present study shows that seven agamid lizards occur mainly on tree trunks and this shows that disturbance or clear felling of forests will be detrimental to the survival of many species of agamids. It is to be noted that all agamids species would come down to ground for egg-laying. The height, from the ground at which each lizard was sighted was recorded. All but two species, namely the Western Ghats flying lizard *D.dussumieri* and Indian garden lizard *C.versicolor*, were sighted at less than 10 m. height. Mean height of occurrence of seven species of agamid lizards was less than 5 m. Fan throated lizard *Sitana ponticeriana* and south Indian rock agama *Psammophilus dorsalis* were found only on the ground in normal circumstances.

However, when the rocks get heated during midday, *P.dorsalis* may use nearby trees up to 5 m from the ground level. *D.dussumieri* occurred in a wide range of height, from 2 to 20 m with a mean of 9 m. It may also use higher stratum. Large trees are required for the conservation of agamid species especially *D.dussumieri.* The present study shows that most of the agamid lizards restrict to the lower strata (less than five meter) of the forest cover, indicating that they could be affected in case of forest fire. During the study road kills and other dead specimens were also examined and noted the presence of eggs in green forest lizard *Calotes calotes,* elliot's forest lizard *C.elliotti,* roux's forest lizard *C.rouxii,* south Indian rock agama *P.dorsalis* horsfield's lizard *S.horsfieldii.*

Geckos were mainly seen under stones and rocks, the arboreal species were noticed mostly on tree trunks, under bark or in holes. Skinks were mostly seen on the ground and under leaf litter. Marsh crocodile *Crocodylus paluster*, which was mostly sighted in the water as well as in the banks of Moyar river. The Indian star tortoise *Geochelone elegans* was noticed in the dry scrub jungle forest under rocky boulders where as Travancore tortoise *Indotestudo travancorica* preferred to stay under fallen trees. The Cochin forest cane turtle *Geoemyda silvatica* mostly recorded under rock, which had a hide place, to take rest during day time. All along the river sides and edges of the ponds Indian black turtle *Melanochelys trijuga* and Indian flapshell turtle *Lissemys punctata* are seen frequently when they are basking, where as the leith's softshell turtle *Aspideretes leithii* mostly sighted in the flowing water of Moyar river in the Nilgiri plateau.

Among snakes, the horseshoe pit viper *Trimeresursu strigatus* was sighted on a barren rock surrounded by boulders at Mukkuruthi National park and the ambient temperature was less than 12° C. The area was wet as there was a stream close by. Five developing eggs were felt by palpation. Indian rock python *Python molurus* was noticed under thick bushes. The hump nosed pit viper *Hypnale hypnale* was noticed on the root of a fallen tree near to a stream and above the leaf litter in the moist deciduous and evergreen forests. The malabar pit viper *Trimeresurus malabaricus* was found on a twig close by a stream. Various colour patterns in Malabar pit viper *T. malabaricus* ranging from quite light with taint markings, very dark, sometime greenish with some black spots were noticed. The large-scaled pit viper *T. macrolepis* was found in the edges of the evergreen patches near grass land. The area

was wet and open. It was coiling around a herb and the head was protruding towards sun light.

Three species of vine snakes were recorded during the study period. The common vine snake *Ahaetulla nasuta* was recorded all along the green vegetation, bushes and shrubs of dry to moist deciduous forests. *A. perroteti* an endemic to the Western Ghats was recorded on the grasses and on the ground near the montane shola grass land patches of Western catchment areas of Mukkuruthi National Park at an elevation of 2000m. The brown vine snake *A.pulverulenta* was sighted in moist deciduous forest at Siruvani hills. Green keelback *Macropisthodon plumbicolor* were recorded in low terrestrial vegetation as well as on the grasses near river. Among the 62 species of reptiles encountered during the present study , more species sighted in the Nilgiri Biosphere reserve particularly the endemic species followed by Indira Gandhi Wildlife Sanctuary Kalakkad-Mundanthurai Tiger Reserve and Srivilliputthur Grizzled Giant Squirrel sanctuary.

Distribution in various vegetation types

According to the recent classification, six major vegetation types are recognized in the Western Ghats. They are, 1) tropical thorn (TTF), 2) dry deciduous (TDD), 3) moist deciduous (TMD), 4) semi evergreen (TSE), 5) wet evergreen (TWE) Puri *et al.* 1983) and 6 shola and montane grassland (SMG), (Meher-Homji 1985). TSE is poorly represented in the Western Ghats of Tamil Nadu. Hence, this was not included in the analysis.

Reptile composition in various vegetation types shows that the TTF and TDD in lower elevations and SMG in higher elevations were represented by a few species. The former vegetation types were dominated by Indian garden lizard *C. versicolor* and south Indian rock agama *P. dorsalis*, Indian star tortoise *Geochelone elegan,* spotted rock gecko *Hemidactylus maculatus,* Asian house gecko *H.frenatus,* fan throated lizard *S. ponticeriana,* south Asian chamaeleon *Chamaeleo zeylanicus,* Keeld Grass Skink *Mabuya carinata* Indian day gecko *Cnemaspis indica*, roux's forest lizard *C.rouxii*, Bengal monitor *Varanus bengalensis* and saw scaled viper *Echis carinatus* whereas the SMG by *Salea* spp and large-scaled pit viper *Trimeresurus macrolepis,* Bronze headed vine snake *Ahaetulla perroteti* and horse shoe pit viper *T. strigatus*. These species are endemic to the Western Ghats and their distribution is confined within this vegetation type TMD and TWE were represented by higher

number of species and all species of *Calotes*, snakes, turtles, geckos, skinks and monitor lizard were observed. The highest species diversity was recorded in TMD and lowest in SMG. Encounter rate of reptiles decreased considerably from dry to wet vegetation types.

Table 1. Reptiles recorded in the Western Ghats of Tamil Nadu.

Sl.No	Species	NBR	IGWLS	SGGSS	KMTR
	Class: Reptilia Order: Crocodilia Family: Crocodylidae				
1	Mugger Crocodile *Crocodylus paluster*,Lesson,1831	1	-	-	1
	Family: Bataguridae (Asian pond turtles)				
2	Cochin Forest Cane Turtle *Geoemyda silvatica* Henderson,1912 *	-	1	-	-
3	Indian Black Turtle *Melanochelys trijuga* (Schweigger,1812)	3	2	-	2
	Family: Testudinidae (Land tortoises)				
4	Indian Star Tortoise *Geochelone elegans* (Schoepff,1795)	5	-	-	-
5	Travancore Tortoise *Indotestudo travancorica* (Boulenger, 1907)*	-	1	-	-
	Family: Trionychidae (Softshell turtles)				
6	Indian Flapshell Turtle *Lissemys punctata* (Bonnaterre,1789)	2	-	-	-
7	Leith's Softshell Turtle, *Aspideretes leithii* (Gray, 1872)	1	-	-	-
	Order: Squamata Sub order: Sauria Family: Gekkonidae				
8	Nilgiri Day Gecko *Cnemaspis indica* (Gray,1846)*	3	4	-	1
9	Spotted Rock Gecko *Hemidactylus maculatus* (Dumeril&Bibron,1836)	1	1	-	1
10	Brook's House Gecko *Hemidactylus brookii* Gray,1845	1	1	1	1
11	Asian House Gecko *Hemidactylus frenatus* Schlegel in:Dumeril& Bibron,1836	1	1	1	1
12	Bark Gecko *Hemidactylus leschenaultii* Dumeril& Bibron,1836	-	-	5	2
13	Termite Hill Gecko *Hemidactylus triedrus* (Daudin,1802)	1	-	-	-
	Family: Agamidae				
14	Western Ghats Flying lizard *Draco dussumieri* Dumeril&Bibron,1836 *	59	26	4	24

Sl.No	Species	NBR	IGWLS	SGGSS	KMTR
15	Fan-throated Lizard *Sitana ponticeriana* Cuvier,1829	-	-	17	44
16	Horsfield's Spiny Lizard *Salea horsfieldii* Gray,1845 *	53	-	-	-
17	Anamalai Spiny Lizard *Salea anamallayana* (Beddome,1878)*	-	12	-	-
18	Indian Garden Lizard *Calotes versicolor* (Daudin,1802)	205	38	198	-
19	Green Forest Lizard *Calotes calotes* (Liinnaeus,1758)	4	11	26	38
20	Nilgiri Forest Lizard *Calotes nemoricola* Jerdon,1853*	15	4	-	-
21	Large-Scaled Forest Lizard *Calotes grandisquamis Gunther,1875* *	4	11	26	38
22	Roux's Forest Lizard *Calotes rouxii* Dumeril& Bibron,1836 *	46	191	-	-
23	Elliot's Forest Lizard *Calotes ellioti* Gunther,1864 *	14	66	-	58
24	South Indian Rock Agama *Psammophilus dorsalis* (Gray in:Griffiti & Pidgeon,1831)	72	173	200	248
	Family: Chamaeleonidae				
25	South Asian Chamaeleon *Chamaeleo zeylanicus* Laurenti,1768	1	1	-	1
	Family: Scincidae				
26	Keeld Grass Skink *Mabuya carinata* (Schneider,1801)	2	1	1	3
27	Beddome's Skink *Mabuya beddomii* (Jerdon,1870)	2	1	1	1
28	Three-lined Grass Skink *Mabuya trivittata* (Hardwicke & Gray,1827)	1	-	-	-
29	Bronze Grass Skink *Mabuya macularius* (Blyth,1853)	1	-	-	-
	Family: Varanidae				
30	Bengal Monitor *Varanus bengalensis* (Daudin,1802)	1	2	3	1
	Order: Squmata : Sub Order : Serpentes Family:Typhlopidae				
31	Brahminy Worm Snake *Ramphotyphlops braminus* (Daudin,1803)	1	1	-	-
	Family: Uropeltidae				
32	Elliot's shield tail snake *Uropeltis ellioti* (Gray,1858)*	1	-	-	-
33	Shield tail snake (species not known)	1	-	-	-

Sl.No	Species	NBR	IGWLS	SGGSS	KMTR
	Family:Pythonidae				
34	Rock Python *Python molurus* (Linnaeus,1758)	1	-	-	-
	Family:Boidae				
35	Common Sand Boa *Gongylophis conicus* (Schneider,1801)	1	-	1	-
36	Red Sand Boa *Eryx johnii* (Russell,1801)	1	-	-	1
	Family:Colubridae				
37	Common Kukri Snake *Oligodon arnensis* (Shaw,1802)	-	1	-	-
38	Common Wolf Snake *Lycodon aulicus* (Linnaeus,1758)	1	-	-	-
39	Common cat snake *Bioga trigonata* (Schneider in:Bechstein,1802)	-	-	-	1
40	Beddome's keel back *Amphiesma beddomi (*Gunther,1864)*	1	-	-	2
41	Striped Keelback *Amphiesma stolatum* (Linnaeus,1758)	1	1	-	1
42	Green Keelback *Macropisthodon plumbicolor* (Cantor,1839)	1	-	-	1
43	Checkered Keelback *Xenochropis piscator* (Schneider,1799)	2	-	2	1
44	Olive keelback *Atretium schistosum* (Daudin,1803)	1	-	-	1
45	Common Trinket Snake *Coelognathus helena helena* (Daudin,1803)	-	1	-	-
46	Indian Rat Snake *Ptyas mucosa* (Linnaeus,1758)	4	2	2	1
47	Bronzeback Tree Snake *Dendrelaphis tristis* (Daudin,1803)	1	-	-	1
48	Ornate Flying Snake *Chrysopelea ornata* (Shaw,1802)	1	-	-	-
49	Common Vine Snake *Ahaetulla nasuta* (Lacepede,1789)	1	-	2	1
50	Brown Vine Snake *A. pulverulenta* (Dumeril,Bibron &Dumeril,1854)	3	-	-	-

Sl.No	Species	NBR	IGWLS	SGGSS	KMTR
51	Bronze-headed Vine Snake *A. perroteti* (Dumeril,Bibron & Dumeril,1854) *	5	-	-	-
	Family:Elapidae				
52	Common Krait *Bungarus caeruleus* (Schneider,1801)	1	-	1	-
53	Striped coral snake *Calliophis nigrescens* (Gunther,1862) *	1	-	-	-
54	Spectacled Cobra *Naja naja* (Linnaeus, 1758)	2	4	1	1
55	King Cobra *Ophiophagus hannah* (Cantor,1836)	1	1	-	1
	Family:Viperidae				
56	Russel's Viper *Daboia russelii* (Shaw& Nodder,1797)	1	1	-	-
57	Saw scaled Viper *Echis carinatus* (Schneider,1801)	1	-	-	-
58	Hump nosed Pit Viper *Hypnale hypnale* (Merrem,1820)	2	-	-	1
59	Large-scaled Pit Viper *Trimeresurus macrolepis* Beddome,1862*	-	3	-	-
60	Malabar Pit Viper *T. malabaricus* (Jerdon,1853) *	5	-	-	1
61	Horseshoe Pit Viper *T. strigatus* Gray,1842 *	1	-	-	-
62	Bamboo Pit Viper *T.gramineus* (Shaw,1802)	1	-	-	-
	Total no of species recorded in each locality	54	29	18	31

* Endemic to the Western Ghats

- NBR-Nilgiri Biosphere Reserve; IGWLS - Indira Gandhi Wildlife Sanctuary; SGGSS-Srivilliputthur Grizzled Giant Squirrel Sanctuary; KMTR - Kalakad Mundanthurai Tiger Reserve

Discussion

The higher number of species recorded in the Nilgiri Biosphere Reserve (NBR) could be due to the availability of a higher number (5) of forest types and lower in Srivilliputtur Grizzled Giant Squirrel Sanctuary (SGGSS) due to lower number of forest types (3), and overall dry nature when compared to NBR. Altitudinal variation is also very high in NBR (200 – 2500 m) while it is 200-1400 m in SGGSS. Higher species richness and diversity in the tropical moist deciduous and evergreen forests could be due to stable climatic conditions and higher number of microhabitats. Large differences in snake species richness are apparent between habitats in the tropics. Low-land tropical forests appear to support large numbers of snake species. The low-land tropical forests generally experience high annual rainfall and exhibit higher plant species diversity. Patterns of snake species richness are influenced by latitude, elevation, moisture and habitat complexity and prey availability. Significant correlations exist between the number of species of lizards, anurans and various snake guilds. Arnold (1972) explored this idea by correlating snake species density with latitude (including climatological variables) and possibly prey types. Typically these habitats also contain large prey availability for snakes and lizards. Lower number in the shola and montane grassland could be attributed to the extreme climatic conditions in higher altitudes. Above 1,000 meters, the montane rain forests are cooler and wetter than the surrounding lowland forests, and dominated by evergreen trees and montane shola grassland. Altitude and latitude are important factors that determine the species richness and abundance (Brown and Lomalino,1998 and Gaston,2000). The decrease in the encounter rate of reptiles from dry to wet forests types may be due to the abundance of a few habitat generalist species such as *C. versicolor, P.dorsalis*, *S. ponticeriana, Ptyas mucosa* in the dry forests. Wet undisturbed forests had more species, but in lower abundance. Higher reptile species diversity in altitude 601 – 900 m is due to the commonness of as many as species. This is similar to the general distribution of amphibians, i.e. Medium altitude hills with higher number of species and diversity (Daniels 1992). Lower overlap in species composition of SMG and > 1200 m is due to the presence of specialized vegetation type and very cold conditions where a few species have adaptations to inhabit. In recent years new species of reptiles were being added to science, which indicates there is a need for further work on reptiles on a long term basis to bring out a thorough list of reptiles in the Western Ghats.

Acknowledgement

The author is thankful to Dr.S.Bhupathy, Senior Scientist, SACON, Coimbatore for offering comments on the first draft of this manuscript.

References

Arnold, S.J. 1972. Species densities of predators and their prey. *Am. Nat.* 106: 220-236.

Bhupathy, S. and P. Kannan 1997. Status of agamid lizards in the Western Ghats of Tamil Nadu, India. SACON Technical Report No.5, Salim Ali Centre for Ornithology and Natural History, Coimbatore. pp. 28.

Brown, J.H. and M.V.Lomolino 1998. *Biogeography*. Sunderland, M.A:Sinauer Associates.

Campbell, H.W. and S.P. Christman 1982. Herpetological communities. Wildlife Research Report 13. US Department of the Interior and Fish and Wildlife Service. Washington D.C. 193 – 200.

Corn, P.S. and R.B. Bury 1990.Sampling methods for terrestrial amphibians and reptiles. US Department of Agriculture, Forest Service, General Technical Report PNW-GTR-256.

Daniels, R.J.R. 1992. Geographical distribution pattern of amphibians in the Western Ghats, *India. J. Biogeography* 19: 521-531.

Groombridge, B. 1990. Comments on the rain forest of southwest India and their Herpetofauna. In conservation in Developing Countries: Problems and Prospects. Procedings of the centenary seminar of the Bombay Natural History Society. Eds. J.C. Daniel and J.S. Serrao, Oxford Univerystity Press, Bombay.

Gaston,K.J. 2000.Global Patterns in Biodiversity, *Nature,*405:220-27.

Inger, R.F. Shaffer, H.B., Koshy, M and Bakde, R. 1987. Ecological structure of a Herpetological assemblage in South India. *Amphibia - Reptilia*. 8: 189-202.

Ishwar, N.M., Ravichellam, A. Kumar 2001. Distribution of forest floor reptiles in the rainforest of Kalakad–Mundanthurai Tiger Reserve, South India. *Current Science* 80 (3):413-418.

Kannan, P. and C.Venkatraman 1998. Reptile fauna of Siruvani Hills, Nilgiri Biosphere Reserve,Tamil Nadu. *Cobra* 33: 6-9.

Kannan, P 2005. A study on Reptiles in Mudumalai Wildlife Sanctuary, Nilgiri Biosphere Reserve,Tamil Nadu. *Cobra,* 61: 6-11.

Malhotra, A. and K. Davis 1991. A report on a herpetological survey of the Srivilliputtur Reserve Forest, Tamil Nadu *J. Bombay nat. Hist. Soc*. 88:157-166.

Mukherjee,D and S.Bhupathy 2007. A new species of wolf snake (Serpentes:Colubridae:*Lycodon*) from Anaikatty Hills, Western Ghats, Tamil Nadu, India.*Russian Journal of Herpetology*.14 (1):21-26.

Murhty, T.S.N.2001. Reptilia. Pp. 239-243. in (Ed: Director) *Fauna of Nilgiri Biosphere Reserve, Fauna of Conservation Area Series* 11 (Published - Director Zool.Surv.India, Kolkata).

Mittermeier R.A.,Patricio R.G.,Michael II., John P., Thomas B., Cristina G.,Mittermeir J.L. and da Fonseea G.A.B. 2005. Hotspots Revised. Earths Biologically Richest and most Endangered Terrestrial Ecoregions.Cemex.Conservation International and Agrupacion Sierra Madre.Monterrey.Mexico.

Meher-Homjï, V.M. 1985. Udhagamandalam: A case study of a stressed environment. *J. Econ. Tax. Bot.* 7: 687 – 695.

Puri, G.S., Gupta, R.K., Meher – Homji, V.M. and S. Puri 1983. *Forest Ecology* (Vol 2): Plant form, diversity, communities and succession. Oxford & IBM Publishing Co., New Delhi.

ON THE OCCURRENCE OF *PHILAUTUS NAMDAPHAENSIS* SARKAR AND SANYAL AND *RHACOPHORUS NASO* ANNANDALE (ANURA:RHACOPHORIDAE) FROM MEGHALAYA, NORTH EASTERN INDIA

Rosamma Mathew and **Nibedita Sen**
Eastern Regional Station
Zoological Survey of India
Risa Colony, Shillong 793 003.

Frogs of the family Rhacophoridae, tree frogs and bush frogs, are more popular due to their habits and habitats. The bush frog genus *Philautus* has about 141 species in the world with 30 species in India, out of which Northeast India has 8 species. Sarkar and Sanyal, (1985) described *Philautus namdaphaensis* from Namdapha National Park in the Tirap district of Arunachal Pradesh. In his pioneering work 'Anuran (Amphibia) fauna of Northeast India', Chanda (1994) remarked this species to be "one of the rare and endemic frogs of Northeast India".

During a recent survey in the Nokrek Biosphere Reserve in the East Garo Hills district of Meghalaya the authors collected a single male specimen (snout-vent length 22 mm) from bamboo in the evening of 1st May, 2008. At the time of collection it was calling, its call was loud and voluminous, louder than its congener *Philautus shillongensis* Pillai & Chanda, 1973. Our specimen agreed well with the original description of the species except that the present specimen was lighter in colour.

The genus *Rhacophorus* has 60 species in the world and 15 species are distributed in India out of which, Northeast India has 11 species. Annandale's (1912) *Rhacophorus naso* described from Arunachal Pradesh was rediscovered by Mathew and Sen (2008) from Mizoram. An adult male specimen (snout-vent length 47 mm) was picked up from the backyard of Daribokgree village in the Nokrek Biosphere Reserve along with *Rhacophorus bipunctatus* Ahl, 1927 in the evening of 1st May, 2008. The calling males including *Fejervarya teraiensis* (Dubois, 1984) and other species of *Fejervarya* from a nearby field had made loud chaotic chorus that it was difficult to tell one from the other.

Both *Philautus namdaphaensis* and *Rhacophorus naso* were deposited in the holdings of the Eastern Regional Station of Zoological Survey of India, at Shillong and bears the Reg. Nos. V/A/ERS/ZSI/837 and 838 respectively (Plate I & II).

Plate I : *Philautus namdaphaensis*

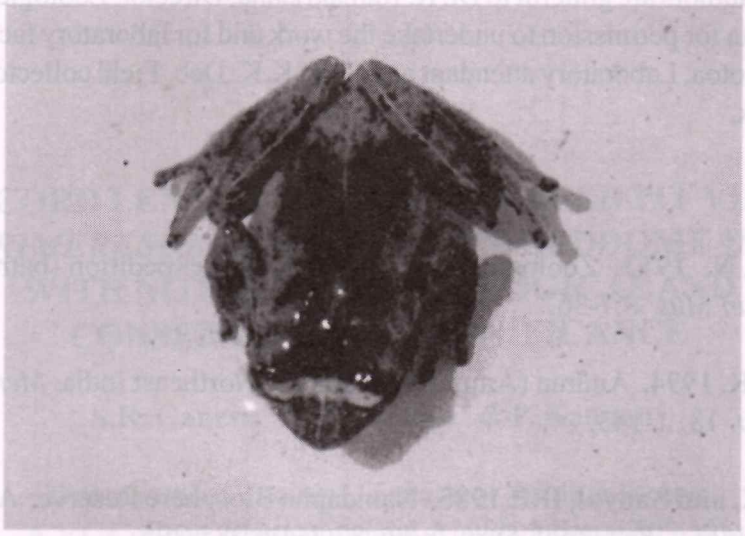


Plate II : *Rhacophorus naso*

These are montane species and we feel both *Philautus namdaphaensis* and *Rhacophorus naso* should also be available in suitable forests of all the northeastern states.

Acknowledgements

The authors are grateful to Dr. R. Ramakrishna, Director, Zoological Survey of India, Kolkata for permission to undertake the work and for laboratory facilities. Shri. Nirmal Sapkotoa, Laboratory attendant and Shri. K.K. Deb, Field collector assisted in the field work.

References

Annandale, N. 1912. Zoological results of the Abor expedition (batrachia), Rec. *Indian Mus.* 8:7-36.

Chanda, S.K. 1994. Anuran (Amphibia) Fauna of Northeast India. *Mem. Zool. Sur. India.* 18: 1-143.

Sarkar, A.K. and Sanyal, D.P. 1985. Namdapha Biosphere Reserve: An overview: *Amphibia. Rec. Zool. Surv. India*, 82(1-4): 285-295.

Mathew, R. and Sen, Ò 2008. Rediscovery of *Rhacophorus naso* Annandale, 1912 (Amphibia: Anura: Rhacophoridae) from Mizoram, Northeast India. *Rec. Zool. Surv. India* 108 (1): 41-42.

RECORD LENGTH OF LARGE SCALED PIT VIPER (*TRIMERESURUS MACROLEPIS*) BEDDOME 1862, WITH NOTES ON ITS ECOLOGICAL AND CONSERVATIONAL SIGNIFICANCE

S.R. Ganesh [1,2]*, S. Asokan [1] & P. Kannan [2]

[1] Department of Zoology, Division of Wildlife Biology,
A.V.C College, Mannampandal, Mayiladuthurai 609 305

[2] Present address: Chennai Snake Park, Rajbhavan Post, Chennai 600 022.

[2]Chennai Snake Park, Rajbhavan Post, Chennai 600 022

* Corresponding author: snakeranglerr@gmail.com

Introduction

Large-scaled pit viper (*Trimeresurus macrolepis*) Beddome 1862, is a green-coloured, primarily arboreal species endemic to the high hills of southern Western Ghats and Shevroy Hills, inhabiting montane rainforests and feeding mainly on amphibians, lizards, small birds and small mammals like rodents and shrews (Smith, 1943; Whitaker & Captain, 2004; Vogel, 2006). According to Smith (1935), Whitaker & Captain (2004) and Vogel (2006) the maximum total length of this species is 580 mm, while Murthy (1986) mentions it to be a little less than 730 mm. In this paper, we present our observations on two extraordinarily long individuals from High Wavy Mountains in Theni district of Tamil Nadu, which proves to be the record length for this species.

Methodolgy

We used visual encounter method (Crump & Scott, 1994) to collect basic ecological data; Champion and Seth (1968) to identify habitat types based on floral species dominance and physiognomy. Total lengths for these two individuals were collected by measuring with an inch tape (L.C = 1 mm). Care was taken not to stress the snakes and though several other specimens were sighted, only these two were measured for purposes of precise scientific record, which is impossible by mere ocular estimation. Sex was determined by observing the tail base. Possible prey species sighted in the snake's vicinity were identified using Ali (2002), Das (2002) and Dutta (1997). Altitudes and geographic coordinates of the sighting localities were recorded using Garmin 12 channel Global Positioning System.

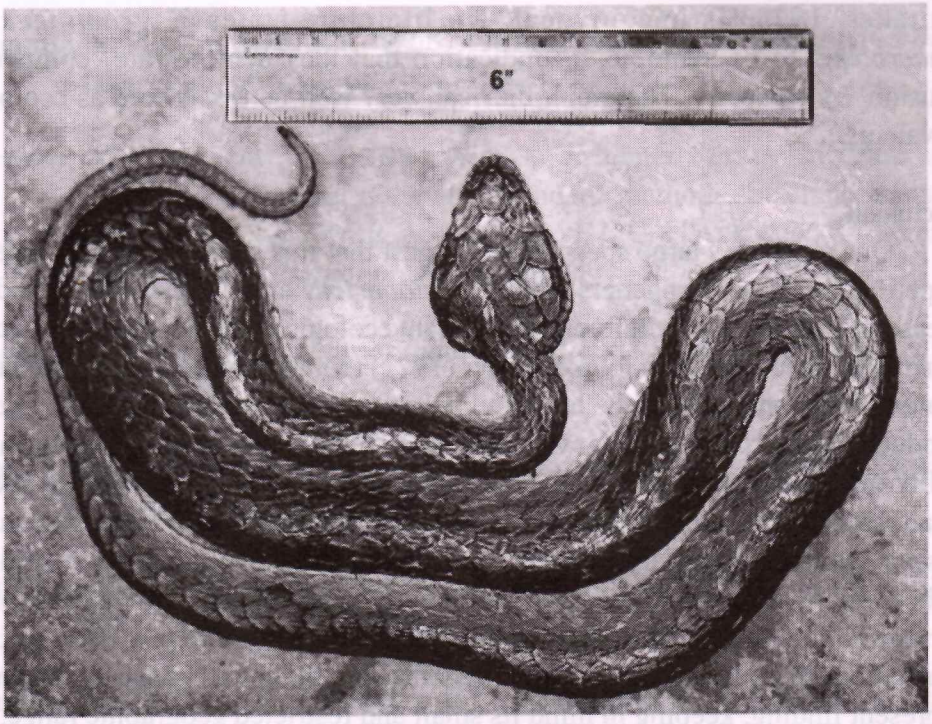
Results

We recorded two specimens that were nearly one meter long, almost a foot longer than known records; details, photographic evidences of which are given below.

Table 1. Details of extraordinarily long, large-scaled pit vipers sighted.

Date	Places of sighting, with geographic coordinates and altitudes (in m)	Habitat, microhabitat, sighting time, perching height and prey species sighted in snake's immediate vicinity	Sex and total length (in cm)
6/01/08	Silambu Estate (9°38'N 77° 21'E) 1461 m asl.	On a coffee (*Coffea arabica*) plant in an eastwardly hill slope, coiled at a heightof 8 feet. Seen at 8.05 hrs. Prey species sighted: *Calotes ellioti, Pyconotus cafer* and *Nectarinia* sp.	Female; 95.3
16/3/08	Eravangalar Estate (9°35'N 77° 17'E) 1572 m asl.	On fern (*Cyathea* sp.) and *Strobilanthus kunthiana* bushes, at 4 feet height, bordering tea (*Camelia sinensis*) estate. Sighted at 15.25 hrs. Prey species sighted : *Calotes ellioti, C. grandisquamis* and *Nectarinia* sp.	Female;96.5

Figure 1. Top view of an extraordinarily long specimen, with a 15 cm scale nearby for comparison. Note that the snake is 6-7 times the scale's length.



Discussion

Wuster *et al.* (2005) after examining two species of insular pit vipers and their respective mainland congeners, with one neotropical (*Bothrops*) and one paleotropical form (*Gloydius*), concluded that there is a significant trade-off between size and arboreality in pit vipers and although subjected to similar selection regimes as a result of parallel evolution, caution must be exercised in interpreting the results, as some discrepancies were noted between the two insular species *Bothrops insularis* and *Gloydius shedaoensis* which lie outside the variation spectrum of their morphologically conservative genera *Bothrops* and *Gloydius* respectively.

Of the six species of pit vipers in south India two, *Trimeresurus macrolepis* and *gramineus* (a larger species, > 1 m) are reported to be chiefly arboreal. Curiously they both are reported to be parapatric (Smith, 1943; Whitaker & Captain, 2004),

although Kumar *et al.* (2001) list *T. gramineus* from Kalakkad - Mundanthurai Tiger Reserve (8°N lat.) and Grumpecht *et al.* (2004) from Sirumalai hills (9°N lat.), its distribution in montane-rainforests of southern Western Ghats, typical *T. macrolepis* habitat (Whitaker, 1973) is unequivocal. No literature states *T. gramineus* and *T. macrolepis* to be syntopic, an indication that they demonstrate 'competitive exclusion' by parapatry. Therefore, they can very well be considered as ecological equivalents.

Conclusion

Our record of 'large specimens' suggest that this species can be a potential competitor for larger congeners (like *T. malabaricus* and *T. gramineus*) and this increase in body bulk is therefore of significant ecological value, especially in terms of territorial needs and prey intake. Porter (1972) remarks that in snakes, the largest females which tend to have the largest clutches or brood are also the most likely to reproduce regularly and so longevity may be extremely important in increasing the natality of snake populations. Life expectancy of individuals goes up with age and human intrusion into the habitats is an important detrimental factor for mature snakes. Thus our sightings of two large females clearly indicate their vulnerability, considering that both the sightings were in estates, an anthropogenic habitat. Although becoming rarer due to habitat alteration, stable populations still persist largely because of the contributions of such large females. This emphasizes the conservation importance of the present finding, keeping in mind its small and restricted geographic range, high degree of climatic requirements and anthropogenic assault that the habitat faces.

Acknowledgements

We thank Tamil Nadu Forest Department, Sri. Sukhdev, P.C.C.F, Sri. Srinivasa Reddy, D.F.O. Theni, for permission; Mr. T.S. Subramaniam Raja, Mr. Shyam Raja, Mr. Anand Raja, Mr. Raghu Raja, Mr. Ramkumar & Dr. Rajkumar of Wildlife Association of Rajapalayam (WAR) for funding; SRG thanks Dr. V. Kalaiarasan and Dr. M.C. Sathyanarayana for introduction to WAR NGO; Mr. Prabhu Datta and Mr. Krishnan Nair, estate managers, for their hospitality and work-permission within their estate premises; Mr. Romulus Whitaker, Mr. Gerry Martin and Dr. Gernot Vogel, herpetologists, for their guidance.

References

Ali, S. 2002. *The Book of Indian Birds*. Thirteenth revised edition. Bombay Natural History Society, Mumbai. 326 pp.

Champion, H.G. & Seth, S.K. 1968. *A revised survey of the forest types in India*. Manager of publications, New Delhi.

Crump, M.L. & Scott, N.J. 1994. Visual Encounter Survey. In: Measuring & Monitoring biological diversity: Standard methods for amphibians (W.R. Heyer, M.A. Donnelly, R.W. Mcdiarmid, L.C. Hayek & M.S. Foster eds.); *Smithsonian Institution press*. pp 84-96

Dutta, S.K. 1997. *Amphibians of India and Sri Lanka*. Odyssey Publishing House, Orissa, India

Das, I. 2002. *A photographic guide to snakes and other reptiles of India*. New Holland publications, UK

Grumpecht, A. Tillack, F. Orlov, N.L., Captain, A & Raybow, S. 2004. *Asian pit vipers*. Getije books, Berlin.

Kumar, A., Chellam, R., Chowdry, B.C., Mudappa, D., Vasudevan, K., Ishwar, N.M. and Noon, B. 2001. *Impact of rainforest fragmentation on small mammals and herpetofauna in the Western Ghats, south India*. A summary of research findings.

Murthy, T.S.N. 1986. *The Snake Book of India*. International Book distributors, DehraDun, India pp 101

Porter, R.H. 1972. *Herpetology*. W.B. Sanders Company, U.S.A., pp 524

Smith, M.A. 1943. *Fauna of British India, including Ceylon and Burma. Vol- III Serpentes*., Taylor & Francis publications, London.

Vogel, G. 2006. *Venomous Snakes of Asia / Giftschlangen Asiens*. Terralog Series, Vol. -14. Edition Chimaria, Germany

Whitaker, R. 1973. Pit viper (*Trimeresurus macrolepis*) bites in a south Indian tea estate. *J. Bombay Nat. His. Soc.* 70 (1): 207-08.

Whitaker, R. 1978. *Common Indian Snakes – A Field Guide*. Macmillan press, New Delhi, India

Whitaker, R & Captain, A. 2004. *Snakes of India - The Field Guide*. Draco Books, Chengelpat, Tamil Nadu, India.

Wuster, W., Duarte, M.R. & Salomao, M. da, G. 2005. Morphological correlates of incipient ornithophagy and arboreality in island pitvipers, and the phylogenetic position of *Bothrops insularis*. *J. Zool. Lond.* 226:1-10

RECORD OF SHORT SEA SNAKE *LAPEMIS CURTUS* (SHAW,1802) AT TUTICORIN COASTAL WATERS TAMIL NADU

M.Rameswaran and **A.Naveen Joseph**
New Harbour, Tuticorin- 628 004, Tamil Nadu

Introduction

Four families of sea snakes with 70 representative species inhabit the world's ocean and estuaries. Sea snakes can be easily identified from all other families of snakes by the flattened, paddle-shaped tail. They are completely aquatic and produce live young, never coming ashore with the exception of the sea kraits, that bask, rest and lay eggs in small islands (Das, 2002). Some seas snakes are especially common, others extremely rare and poorly documented.

The seas around India harbour a rich sea snake fauna with great species diversity. Twenty species of sea snakes have been recorded from the west and east coasts of India (Smith, 1943 and Murthy, 1977a). Studies on sea snakes tend to be poorly known because of logistical difficulties inherent in sampling them. Most studies rely on the incidental capture in commercial fishing operations and washed-ashore specimens. The present paper is on the record of short sea snake (*Lapemis curtus*) in the Tuticorin area. Even though this species has been reported in Chennai coast (Murthy, 1977b; Kalaiarasan and Kanaksabai, 1994, Kannan and Rajagopalan, 2008), the present observation is from Tuticorin coastal area.

Observation and Results

On 03rd August 2008 at 11.30 hrs., we saw a snake that had got entangled in a fishing net and immediately brought to the shore for removal from the net by fishermen. We identified it as the short sea snake by the following characters. Head – blunt shape and black with yellow colour. Neck – not distinct, Eye – black in colour

and round shape, body – short, dorsal–dark yellow with black bands (46), bands often connected along midline of its back, its look like Y shape. Ventral - yellowish white colour. Tail – laterally compressed (flat), black colour.

Scalation: Supralabials – 7 (4th touching eye), Preocular – 1, Postocular – 1, Anterior temporals – 2, Parietals- broken up into irregular small scales. The morphometric measurements such as snout to vent length – 285 mm, vent to tail length – 40 mm, total body length – 325 mm, mid body circumference – 40 mm and mid tail width – 9mm were measured. After measuring the snake it was safely released back into sea. While interviewing the local fishermen they provided us some details that it is available in particular seasons in the Tuticorin coast.

References

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

Kalaiarasan,V and R.Kanakasabai 1994. Seasonal availability of sea snakes (Family: Hydrophidae) in the Madras waters. *Cobra* 16:18-19.

Kannan, P. and M. Rajagopalan 2008. Distribution of sea snakes in the Indian coastal waters. *J.Sci.Trans.Environ.Technov.* Vol 1 (4): 218-223.

Murthy, T.S.N. 1977a. Systematic index, distribution and bibliography of the sea snakes of *India. Indian J. Zootomy*, Vol,XVIII (2):131-134.

Murthy, T.S.N. 1977b. On sea snake occurring in Madras waters. *J.Mar. Biol. Ass.India* 9 (1): 68-72.

Smith, M.A. 1943. *The Fauna of British India. Ceylon and Burma.* Vol.III Serpentes. Taylor and Francis, London. Xii +583 pp+1 map.

Whitaker, R. and A. Captain. 2004. *Snakes of India – The Field Guide*, Draco Books, Chengalpattu-603 001.

RANDOM HARVEST

Python explosion

'Random Harvest' published in *Cobra* vol.43 (2001) and vol.62 (2005) made mention of the dangers posed in Hong Kong and parts of U.S. by pythons brought to the country as pets and later released by their owners into neighbouring parks when they became unmanageably big. *The Hindu Business Line* of 17 May 2008 carried a report from Miami, Florida, U.S. of such free-ranging pythons which have easily adapted to an urban life-style feeding on cats, dogs, hares, foxes, squirrels, raccoons and even alligators. During the last six years, some 619 of such pythons have been caught by state authorities! The largest of them weighed 70 kg and measured five metres.

Ø Ø Ø

A boa of mind-boggling size

The longest extant snake is the reticulated python (*Python reticulatus*) whose maximum length known is 28 feet. But fossil evidence recently found suggests the existence of a boa in the Colombia region 60 million years ago that could have measured more than 40 feet and weighed about two tonnes. The investigating team which made this discovery in an open-cast coal mine was led by Jonathan Block of the University of Florida. A report on this appeared in *Times of India* of 6 Feb.2009.

Ø Ø Ø

Frog + Salamander = Frogamander

Hindustan Times of May 23, 2008 carried a report, attributed to Canadian scientists, on the discovery of a 290 million-years-old fossil that links present day frogs and salamanders. They claim that this may resolve a long-standing debate about amphibian ancestry. The fossil, named *Gerobatrachus hottoni* or elderly frog has been described in the journal *Nature.*

The fossil shows a mixture of frog and salamander features with fused ankle bones as seen only in salamanders, a wide, frog-like skull and a backbone that resembles a mix of the two. The fossil was discovered in Texas in 1995 by the late Nicholas Hotton and his colleagues from the Smithsonian.

Ø Ø Ø

World's smallest snake: much ado about little

Till now, the world's smallest snake was believed to be the brahminy worm snake (*Ramphotyphlops braminus*), adults usually not exceeding 5". Blair Hedges, an American evolutionary biologist is now reported to have "discovered" a still smaller related species, measuring 4", in Barbados in the Caribbean. He has named it *Leptotyphlops carlae*, after his wife Carla. But this has sparked a big controversy, the Barbadians venting their ire on the internet and the radio ("heating up blogs and clogging radio airwaves", as one report has it) that a snake which was their own and always known to have been in their country should have been named by a visiting scientist after his wife. "How dare this man come in here and name a snake after his wife?" asks the outraged Barbadian writer, Margaret Knight. Hedges contends, and rightly so, that "under established scientific practice, the first person to do a full description of a species is said to have discovered it and gives it a scientific name".

Source: *The Monitor*, Aug.2008
Hindu Business Line Aug 4, 2008.

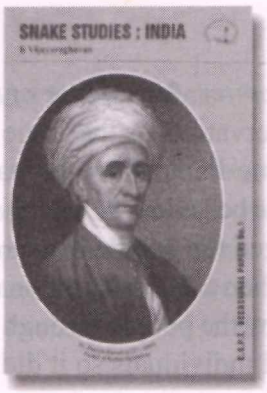
Ø Ø Ø

Larger than life

Ed Ferrer, a regular contributor on snakes to *The Monitor: Newsletter of the Hoosier Herpetological Society* makes an interesting observation in the issue of Oct.2008. He reports on a visit to the Brown County State Park where Brittany Davis, the interpretive naturalist of the Park, was explaining the behaviour of a northern copperhead (*Agkistrodon contortrix mokasen*). "She arranged the people in a circle and put a copperhead on the ground as she talked about it. When asked why the snake didn't try to get away, Brittany explained that the serpent saw the people through its heat sensors as one large living organism instead of several individuals so it didn't want to approach it".

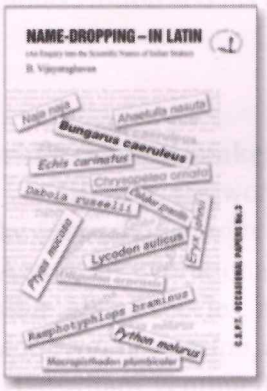
- B. Vijayaraghavan

Our Publications

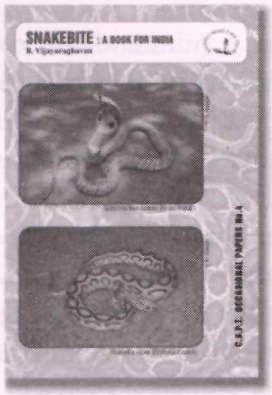


1 **Snake Studies:India**
- B.Vijayaraghavan
(CSPT Occasional Papers No.1)
Containing "A Brief History of Indian Ophiology " and much else.
Pages - 34 **Price - Rs. 25.00**

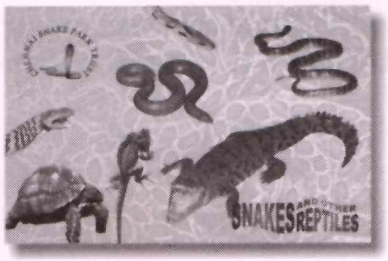
Snakes in the Bible **2**
- B.Vijayaraghavan
(CSPT Occasional Papers No.2)
Pages - 28 **Price - Rs. 25.00**



3 **Name-dropping – In Latin**
(An Enquiry into the Scientific Names of Indian Snakes)
- B.Vijayaraghavan
(CSPT Occasional Papers No.3)
Pages - 28 **Price - Rs. 25.00**



Snakebite : A Book for India **4**
- B.Vijayaraghavan
(CSPT Occasional Papers No.4)
Pages - 96 **Price - Rs. 65.00**



5 **Snakes & Other Reptiles** (English & Tamil versions)
- B.Vijayaraghavan
A compendium of essential information.
Pages - 20
Price - English: **Rs. 20.00**
Tamil: **Rs. 10.00**

6 **Colour Posters:**
Size - 61cm W x 43cm H
- Common Snakes of Chennai
- Four Common Dangerously Venomous Snakes of India

Price - Rs. 10.00 each

Available at :
The Chennai Snake Park or by Post.
Postage extra

Cobra, the quarterly journal of the Chennai Snake Park Trust, invites articles and notes on reptiles and amphibians, their ecology, biology, natural history, conservation or other aspects. These may be of scientific or popular interest. Black and white photographs are also welcome.

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

Annual subscription for 4 issues of *COBRA*
commencing from the date of
subscription including postage.

Individual – Rs. 75/-
Institution – Rs.150/-

by MO/DD in favour of
"Chennai Snake Park Trust"
Payable at Chennai.

Chennai Snake Park Trust
Rajbhavan Post
Chennai – 600 022. India.

Registered with the Registrar Office of Newspapers for India
(Ministry of Information and Broadcasting)
Registration No. TNENG/2007/19859
(*vide* letter dated 28.05.2007 of the Registrar of Newspapers for India)

Printer : **N. Arunachalam**, Students Offset Services
Shop No. 3, Apex Chambers, 20, Thiagaraya Road, Pondy Bazar, Chennai - 600 017.
Publisher : **R. Rajarathinam** on behalf of Chennai Snake Park Trust. Published by Chennai Snake Park Trust, Rajbhavan Post, Chennai - 600 022
Editor : **Dr. G. Thirumalai**
