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**Front and Back Cover**

**Banded racer (*Argyrogena fasciolata*)**

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Photo : **M.Rameshwaran**

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TIT (1898) AND THE SALT INDIAN RIVER IN EAST HILLS RAM DISTRICT IN THE  
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The ancient Greeks defined beauty as fitness for function.  
Going by this definition, the snake is one of the most beautiful  
of all animals in creation.

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The animal Creek definitions are listed for function  
(being by the definition, the name of the most beautiful  
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In (Sri S. Narayana)

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Photo: M. Narayana

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## PRELIMINARY NOTES ON SNAKE OCCURRENCE IN KANCHEEPURAM DISTRICT, TAMIL NADU\*

**Romulus Whitaker and Janaki Lenin**

'Pambukudivanam', Thiruvadisulam Village

Sembakkam Post, Chengalpattu Taluk

Kancheepuram District – 603108

### Abstract

During the course of 6 days, the authors accompanied Irula Cooperative Society members during routine snake hunting for the Irula Venom Centre, Vadanemmel Village. Number, size class and sex of the target species, three of the Big Four venomous snakes (*Naja naja*, *Bungarus caeruleus* and *Daboia russelii*) were recorded. The fourth species of venomous snake found here, *Echis carinatus* was not searched for nor encountered. A total of 49 snakes were found including 19 venomous. The 6 day snake hunt covered a total of about 20 km with an actual search period of 33 hours with a two man team or 66 man hours.

### Methods

Irulas with their expert knowledge would choose the location of each day's hunt aimed at three of the Big Four venomous species. Irulas use the skills of many generations of oral tradition in understanding snake behaviour and habitat/seasonal preferences to direct and refine their hunting locations and timing. For example, the Irulas explained that if they were targeting *Echis carinatus* they would hunt in different, more open habitats, and only after a significant summer rain when *Echis* become visible during this time of the year before the northeast monsoon. The two hunters would search

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\* Original Draft: December 20, 2003

within hailing distance of each other and walk slowly along the edge of likely microhabitats which they deduce by long experience and training. Noting signs such as shedded skins, scats and (mainly) smooth edges on likely rat burrows, the hunter would dig until he either found a snake or felt that the snake no longer occupied the burrow. Nonvenomous snakes caught on the move were restrained long enough to note species and size class and released. Numbers and species of shed skins were recorded.

Venomous snakes were carefully caught, checked for health and bagged to take to the Venom Centre for extraction. Juvenile snakes were released on the spot and the two clutches of cobra eggs were left intact in their underground chambers. Distance walked (recorded on a simple athlete's pedometer) and time spent searching for snakes were noted along with basic habitat types of areas hunted. Shedded skins were counted and identified.

### Daily record of snake hunts

Day 1 – 19<sup>th</sup> July, 2002 (overcast). 8 AM to 12 noon. Distance: 2 km. Hunted edges and bunds of dry fallow fields and well tailing mounds with thorny scrub.

Village: Manamadhi

Irula Snake Catchers Cooperative members: C. Kali and R. Raju

Snakes found: 2 *Naja naja*, 1 *Ptyas mucosa*, 1 *Ahaetulla nasuta* and 1 *Amphiesma stolata* plus 32 shed skins (see Table 4 for species breakdown of shed skins).

Note: Kali bitten by cobra at noon, one fang, local effects. Kali was successfully treated with polyvalent antivenom serum at Apollo Hospital in Chennai and was home in 24 hours with a 2 day subsequent recovery period.

Day 2 – 21<sup>st</sup> July, 2002 (sunny). 8 AM to 4 PM (less one hour for lunch). Distance: 4.5 km. Mainly hunted edges of dry fallow fields, tank bunds and dry ditches.

Village: Karumbakkam

ISCC members: R. Raju and V. Poongavanam

Snakes found: 3 *Naja naja* (two with clutches of eggs), 2 *Ptyas mucosa*, 1 *Dendrelaphis tristis* plus 21 shed skins.

Day 3 – 23<sup>rd</sup> July, 2002 (sunny). 9 AM to 3 PM (less one hour for lunch). Distance: 4 km. Mainly hunted well tailing mounds with thorny bushes in the middle of open fallow paddy fields and along dry drainage ditches.

Village: Mambakkam

ISCC members: R. Murugesan and T. Seenu

Snakes found: 1 *Naja naja*, 1 *Daboia russelii*, 1 *Bungarus caeruleus*, 4 *Ptyas mucosa* plus 34 shed skins.

Day 4 – 24<sup>th</sup> July, 2002 (sunny/late overcast). 9 AM to 4 PM (less one hour rain/lunch). Distance: 3.5 km. Hunted tank bund with heavy underbrush, fallow field edges, well tailing mounds with thorn bushes.

Village: Polacheri

ISCC members: R. Murugesan and T. Seenu

Snakes found: 1 *Naja naja*, 5 *Ptyas mucosa* (plus two found killed by villagers), 1 *Amphiesma stolata*, 1 *Dendrelaphis tristis* plus 33 shed skins.

Day 5 – 25<sup>th</sup> July, 2002 (overcast). 7:30 AM to 4 PM (less one hour for lunch and transit). Distance: 3.8 km. Hunted scrub covered tank bund, dry, ipoemea-choked drainage ditches, fallow field edges and well tailing mounds with dense grasses and thorny undergrowth.

Village: Kolathur

ISCC members: C. Kali and T. Seenu

Snakes found: 1 *Naja naja*, 2 adult and 6 juvenile *Daboia russelii*, 6 *Ptyas mucosa* (plus 1 found killed by villagers), 1 *Amphiesma stolata* and 1 *Dendrelaphis tristis* plus 27 shed skins.

Day 6 – 26<sup>th</sup> July, 2002 (overcast). 8 AM to 12 noon. Distance: 2.5 km. Hunted fallow field edges, dry drainage ditch and well tailing mounds.

Village: Anandapuram

ISCC members: C. Kali and R. Raju

Snakes found: 2 *Naja naja*, 3 *Ptyas mucosa*, 1 *Eryx johnii* plus 14 shed skins.

## Discussion

There is very little statistical data on the population density of snakes in Indian farmlands. It is usually assumed that since the population of rodents is so high

in agricultural areas, especially rice paddies, the population of key predators, such as the larger species of snakes will be correspondingly high. This theory seems to have credence based on preliminary observations and anecdotal accounts, however it needs to be scientifically tested and statistically proven. The fact that Kancheepuram and neighbouring districts, where Irulas have their stronghold, bore the brunt of a snake skin industry that took literally millions of snakes out of the ecosystem each year up till 1975 indicates the kind of population density one might expect to find, but until empirical studies are done this is still just educated guesswork.

### Conclusion

These observations were made with the intention of providing an impetus for a larger, comprehensive study of the population dynamics of the major snake species found here, with emphasis on the four target venomous species caught under license of the Tamil Nadu Forest Department by Irula Cooperative members for the production of venom destined mainly for antivenom production. These six days of operations pointed out other facets of a study, including using shedded skins as indicators of population density, measuring Irula catch effort (hours spent searching, hours spent digging) in relation to numbers/species of snakes caught. Irula snake finding knowledge has yet to be quantified and described, their understanding of snake habits, seasonality, hiding places and prey preferences is unrivalled.

**Table 1. All species of snakes found and size classes\***

<b>Venomous</b>	Adult	Sub	Juv	in hole	outside	Totals
<i>Naja naja</i>	10			6	4	10
<i>Bungarus caeruleus</i>	1			1		1
<i>Daboia russelii</i>	3		6		9	9
<b>Nonvenomous</b>						
<i>Ptyas mucosa</i>	19	2		2	19	21
<i>Dendrelaphis tristis</i>	3				3	3
<i>Amphiesma stolata</i>	3				3	3
<i>Eryx johnii</i>	1			1		1
<i>Ahaetulla nasuta</i>	1				1	1
Total all Snakes						49

**Table 2. Total snakes and shed skins found by irulas in 6 days**

Date	Village	Hrs	Kms	<i>Naja</i>	<i>Bungarus</i>	<i>Daboia</i>	Other	Sheds
19/7	Manamadhi	4	2	2			3	30
21/7	Karumbakam	7	4.5	3			3	21
23/7	Mambakkam	5	4	1	1	1	4	34
24/7	Polacheri	5.5	3.5	1			7	31
25/7	Kolathur	7.5	3.8	1		8	8	27
26/7	Anandapuram	4	2.5	2			4	14
Totals		33	20.3	10		9	29	157

\* *Echis carinatus* is arguably the most abundant of the Big Four venomous snakes in this landscape and are caught by the hundreds when searched for post rains. None were found on this survey as the Irulas were targeting the other three species.

**Table 3. Breakdown of size class and sex of venomous snakes**

	<i>Naja</i>	<i>Bungarus</i>	<i>Daboia</i>
Adult male	3	1	1
Adult female	7		2
Subadult			
Juvenile			6
Totals	10	1	9

**Table 4. Number and species of shed skin found\***

<i>Naja naja</i>	36
<i>Bungarus caeruleus</i>	14
<i>Daboia russelii</i>	6
<i>Ptyas mucosa</i>	88
<i>Dendrelaphis tristis</i>	4
<i>Amphiesma stolata</i>	3
<i>Xenochropis piscator</i>	3
TOTAL	157

\* Inferences can be drawn though with caution, ie *Ptyas* is indeed common but the skins are big and conspicuous. The water snake, *Xenochropis* is equally common, but since this hunt was for terrestrial target snakes these sheds were not found in abundance.

References

- Whitaker, R. and Ashok Captain(2004).** *Snakes of India: the Field Guide.* Draco Books, Chengalpattu, 480 pp.
- Whitaker, R. and Andrews H.V. (1996).** *Snake capture and venom extraction in Tamil Nadu.* In: Assessing the sustainability of uses of wild species. Robert and Christine Prescott-Allen (eds.) Occasional Paper of the IUCN/SSC No. 12, 9 pp.

## MUSIC OF THE SNAKECHARMERS OF RAJASTHAN

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The snakecharmers of India play their music on a traditional instrument called *pungi* in the north, *sanpurer bansi* in the east, *magudi* in the south, *been* in the west (and north). It has also other names in various regions. This paper is with particular reference to the snakecharmers of Rajasthan.

In Rajasthan, snakecharmers come under a general category called 'jogi'. Here, more than eighty tribes have been labeled as 'jogis' – tribes such as Kalbeliya, Ghattiwal, Bansdewal, Gadolia Lohar etc. They lead a nomadic life and provide different types of service to society.

Some subsections of jogis are professional musicians who sing for their patrons and thus earn their livelihood. Hindu jogis sing for the mina community whereas Muslim jogis sing for the meo community.

Some jogis possess some knowledge about insects. They protect the crops of their patrons against pest attacks. This knowledge is passed on from generation to generation. They also possess some knowledge of herbs and treat the people with herbal medicines.

Amongst the jogis, Kalbeliyas are specifically recognized as 'snakecharmers'. The snake is regarded by many communities in rural Rajasthan, as elsewhere in India, as gods and the Kalbeliyas are regarded as the priests of the snake god. They move from village to village carrying snakes in their bamboo baskets and, while displaying the 'mystic' charm of the snakes, they play on the pungli. In return, they get milk, money and other gifts from the villagers. Sometimes, when a person is playing on the pungli, another would accompany him on dafli, a tambourine, or on the bhapang, a gourd percussion instrument in which the sound is produced by plucking on a string of variable tension.

In Rajasthan, the pungli is also called 'been'. It has a round gourd or calabash with an extended neck to which the player applies his mouth and blows. There are two or three tubes at the other end. If there are two pipes, the longer one produces a constant drone and the other one is for playing dhun. If the instrument has three pipes, two are used for drone and one for dhun. If there are two drone pipes, one is often made of metal. The drone pipe has one or two holes whereas the dhun pipe may have six to eight holes and the player plays on these holes with his fingers. One rear hole is also there which is operated with the thumb.

In Rajasthan, three types of punglis are found — one of bass octave (*mandra saptak*) with a fat belly, another one of middle (*madhyaya saptak*) with a medium structure and medium pitch and the third one with a very sleek belly and of high pitch having a capacity to play the notes of medium octave (*madhya saptak*) and upper octave (*taar saptak*). These three types of punglis are called *agore*, *mansuri* and *tanki* respectively. Out of these three, *agore* and *mansuri* are played by the kalbeliya tribe of jogis whereas *tanki*, also called *murla*, is played by the langa musicians residing in the western region of Rajasthan.

The pungli also has a single beating reed attached to both the pipes and this vibrates when the player blows into the gourd.

In Rajasthan, snake charmers move from village to village and play on the pungli. The tunes they play are often based on the folk songs of Rajasthan. These songs are based on Raagaas like Des, Sarang, Mand, Khamaj, Durga, Kalingra etc. and are limited to four or five notes of middle octave. However, after the release of the

Hindi film *Nagin* in the 1950s the most popular punggi tune is the theme song of this film i.e. *Man Dole Mera Tan Dole.....*

The punggi is also used by the kalbeliya tribe to entertain the public even without any snakes. Their women dance to the tune of the punggi. These performances showcase their virtuosity. The tunes are catchy, fast paced and limited to four or five notes of middle octave and the songs are often based on full notes. Half notes are seldom used. In these performances, support is provided by daflī, a small round framed drum and an idiophonic instrument called the Jew's harp (*Morchang*).

Tanki, the third type of punggi is played by the surnaya langa community of western Rajasthan. According to the famous folklorist, the late Sh Komal Kothari, they might have borrowed this instrument from the jogis. Tanki, also known as murla or murli is made of wood. This is a high-pitched instrument. It is extensively used by the surnaya langas in their presentations of folk music. Since the langa community is a professional musician caste, the instrument used by them is quite an advanced one and has more musical potential than the punggi. Almost all the finer nuances of Rajasthani folk music can be played on this instrument.



## PRELIMINARY OBSERVATIONS ON THE AMPHIBIAN ASSEMBLAGE WITHIN THE FOREST AND TEA AGRO ECOSYSTEM OF CACHAR DISTRICT, ASSAM

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### Introduction

At present, 210 species of amphibians are known from India (Das and Dutta, 1998). The Western Ghats has the maximum number of amphibian species i.e. about 117 species. The Northeastern India by virtue of high precipitation, rich diversity of vegetation and sub tropical and humid climate is home to more than 54 species of anurans (Chanda, 1994). Among the Northeastern states, Maghalaya has highest number of species (Chanda, 1994; 1995). Assam with its varied topography was known to support a single species of caecilian and 29 species of anurans (Chanda, 1994). However there is no published record on the anuran diversity and their status of southern most part of Assam. The present note aims for a comparative determination of diversity and species richness of amphibians within the forest and tea agro ecosystem and other related aspects in Cachar District, Assam.

### Study area

Geographically Cachar district of Barak valley is surrounded by North Cachar hills and Jatinga in the north. In the east by the state of Manipur in the south the Mizoram and the west by Tripura and Sylhet district of Bangladesh. The area has an altitude of 26-27 m above MSL. The temperature regime of the area ranges with a mean maximum temperature of 30.2°C and a mean minimum temperature of 19.6°C. It is located between 24° 82' and 25° 152' North and 92° 202' and 93° 152' East covering an area of 6962 sq. km. We had covered our study sites in the different water sources of splendid Eco-forest and Dorgakona Tea Estate situated near the Assam University campus. The forest type in this part is represented by Tropical Semi Evergreen forest (Dutta *et al.*, 1998).

### Material and Methods

Survey was made during the monsoon from October 2005 to September 2006. Occasional visits were made during this period to different water sources of the forest areas and tea agro ecosystem when temporary rain water flow in the area. Sampling was done both in morning and evening hours. Individual frogs and their tadpoles were located and caught by hand and pitfall traps in association with drift fences. Animals such caught were identified and released back in to the same site after taking photographs. Identification were done based on the keys provided in Boulenger (1890) and Daniel (1963, 1975). The status of each species have been assigned as common (number of sightings >100) uncommon (<100 but >10) and rare (<10) in each month. The richness of species diversity in both the habitat is determined by the Simpson species diversity index ( $\bar{e}$ ), which is given by  $\bar{e} = \frac{1}{\sum P_i^2}$  where  $P_i$  = the proportion of individuals in  $i^{\text{th}}$  species.

### Results and Discussion

A total of four species of Anurans belong to two families were recorded in the different water sources of splendid Eco-forest and Dorgakona Tea Estate. This includes Common Indian toad *Duttaphrynus melanostictus*, Indian bull frog *Hoplobatrachus tigerina*, Cricket frog *Fejervarya limnocharis* and Skittering frog *Euphlyctis cyanophlyctis*. For each study sites within the Tea Agro ecosystem and the Forest habitat we calculated the Simpson diversity index separately (Table 1 & 2).

**Table-1.** Simpson diversity index of Tea Agroecosystem's anuran assemblage

Sl. No.	Species	No. observed	$P_i$	$P_i^2$
1	<i>Duttaphrynus melanostictus</i>	335	0.17	0.0289
2	<i>Hoplobatrachus tigerina</i>	536	0.27	0.0729
3	<i>Fejervarya limnocharis</i>	752	0.38	0.1444
4	<i>Euphlyctis cyanophlyctis</i>	323	0.16	0.0256

$$\sum P_i^2 = 0.2718$$

**Table-2.** Simpson diversity index of Forest Ecosystem's anuran assemblage

Sl. No.	Species	No. observed	$P_i$	$P_i^2$
1	<i>Duttaphrynus melanostictus</i>	208	0.12	0.0144
2	<i>Hoplobatrachus tigerina</i>	442	0.26	0.0676
3	<i>Fejervarya limnocharis</i>	564	0.34	0.1156
4	<i>Euphlyctis cyanophlyctis</i>	431	0.26	0.0676

$$\sum P_i^2 = 0.2652$$

The Simpson diversity index of the Tea Agro ecosystem is found to be  $\sum P_i^2 = 0.2718$  and that in case of degraded forest habitat is found to be  $\sum P_i^2 = 0.2652$ .

Variety of organisms and their relative abundance contribute to diversity when diversity index is near or equal to 1, it indicates maximum diversity. But from the result it is found that diversity index for both the community is less than 1, even less than 0.5. Eventhough Assam with its varied topography was known to support a single species of caecilian and 29 species of anurans (Chanda, 1994), we could record only four non endemic habitat generalist species. In comparison to Chanda (1994) both the sites are having less diversity. The reason can be explained by the ever increasing anthropogenic activities within the forest, large scale collection of the forest products and extensive use of water sources during winter period for various purposes. In case of the Tea Agro ecosystem the reasons can be cluster of extensive use of chemical fertilizer and pesticides, utilization of all the nearby streams and water bodies for the irrigation purposes etc. Additional observations on the distribution of anuran species is needed.

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## References

- Boulenger, G.A. 1890.** *The Fauna of British India including Ceylon and Burma. Reptilia Batrachia.* Tailor and Francis, London. xviii+541pp.
- Chanda, S. K. 1994.** *Anuran (Amphibia) fauna of northeast India.* Memoirs of the Zoological Survey of India. Vol. 18, No. 2. (Zoological Survey of India, Calcutta; pp. 143)
- Chanda, S. K. 1995.** *Amphibia. In: Fauna of Meghalaya; Part I, Vertebrates.* Zoological Survey of India. pp: 464.
- Daniel, J.C. 1963.** Field guide to the amphibians of the western India. Part I & 2. *J. Bombay nat. Hist. Soc.* 60(1): 415-438; 690-702.
- Daniel, J.C. 1975.** Field guide to the amphibians of the western India. Part 3. *J. Bombay nat. Hist. Soc.* 72: 506-522.
- Das, I. and Dutta, S.K. 1998:** Checklist of the amphibians of India with English common names. *Hamadryad*, 23(1): 63-68 pp.
- Dutta, B.K., A.Gupta & A.K. Das. 1998.** Assam University Campus (Silchar) *Ecology and Biodiversity.* Assam University, Silchar, 19 pp.

## A CHECKLIST OF REPTILES AND AMPHIBIANS OF SANJAY GANDHI NATIONAL PARK, MUMBAI, MAHARASHTRA

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The Sanjay Gandhi National Park (SGNP) (Longitude 72°53' - 72°58' E; Latitude 19°88' – 19°21' N) falls within the two districts viz. Mumbai and Thane and is situated on the northern edge of the Western Ghats. About 70 percent of the park lies on island of Mumbai and the remaining 30 percent (Nagla Block) of the habitat is on the mainland across the Bassien creek. The latter part of the habitat is well connected with other forest habitats like the Tungareshwar Wildlife Sanctuary, Tansa Wildlife Sanctuary and so on (Management Plan 2000-2010, Sanjay Gandhi National Park, Maharashtra Forest Department). The SGNP is well documented and is represented by more than 274 species of birds, 150 species of butterflies, 35 species of mammals and over 1000 species of plants (Management Plan 2000-2010, Sanjay Gandhi National Park, Maharashtra Forest Department). A total of 38 species of reptiles and 9 species of amphibians have been listed in the forest department management plan 2000-2010 of the SGNP. Mirza and Patil (submitted) recorded 48 species of reptiles and 12 species of amphibians from Aarey Milk Colony, Film City and Powai which lies on the southern border of the SGNP. Our findings yielded some additional species and thus we take the opportunity to update the checklist of reptiles and amphibians of the Sanjay Gandhi National Park based on opportunistic sightings, random surveys, published records and reliable photographic evidence.

**Reptilia:**

**Family Gekkonidae**

1. Brook's gecko *Hemidactylus cf. brookii*
2. Yellow green house gecko *Hemidactylus flaviviridis*
3. Asian house gecko *Hemidactylus cf. frenatus*
4. Bark gecko *Hemidactylus leschenaultii*
5. Spotted rock gecko *Hemidactylus maculatus*
6. Unidentified gecko *Hemidactylus sp.*
7. Kollegal ground gecko *Geckoella cf. collegalensis*
8. Deccan ground gecko *Geckoella dekkanensis*

**Family Agamidae**

9. Indian garden lizard *Calotes versicolor*
10. Roux's forest lizard *Calotes rouxii*
11. Fan-throated lizard *Sitana ponticeriana*

**Family Scincidae**

12. Keeled grass skink *Eutropis carinata*
13. Bronzed grass skink *Eutropis cf. macularia*
14. Lined supple skink *Lygosoma lineata*
15. Spotted supple skink *Lygosoma punctata*

**Family Lacertidae**

16. Snake-eyed lacerta *Ophisops jerdoni*
17. Beddome's lacerta *Ophisops beddomei*

**Family Chamaeleonidae**

18. South Asian chamaeleon *Chamaeleo zeylanicus*

**Family Varanidae**

19. Bengal monitor *Varanus bengalensis*

**Family Crocodylidae**

20. Marsh crocodile *Crocodylus palustris*

**Family Bataguridae**

21. Indian black turtle *Melanochelys trijuga*

**Family Trionychidae**

22. Leith's soft shell turtle *Aspideretes leithii*

23. Indian flapshell turtle *Lissemys punctata*

**Family Typhlopidae**

24. Brahminy worm snake *Ramphotyphlops braminus*

25. Beaked worm snake *Grypotyphlops acutus*

**Family Uropeltidae**

26. Large-scaled shield tail *Uropeltis macrolepis*

**Family Acrochordidae**

27. File snake *Acrochordus granulatus*

**Family Boidae**

28. Indian rock python *Python molurus*

29. Common sand boa *Gongylophis conicus*

30. Red sand boa *Eryx jonhii*

**Family Colubridae**

31. Indian rat snake *Ptyas mucosa*

32. Montane trinket snake *Coelognathus helena monticollaris*

33. Common trinket snake *Coelognathus helena helena*

34. Common wolf snake *Lycodon aulicus*

35. Barred wolf snake *Lycodon striatus*

36. Common kukri snake *Oligodon arnensis*

37. Russel's kukri snake *Oligodon taeniolatus*

38. Common cat snake *Boiga trigonata*
39. Beddome's cat snake *Boiga beddomei*
40. Foresten's cat snake *Boiga forsteni*
41. Ceylon cat snake *Boiga ceylonensis*
42. Common bronzeback tree snake *Dendrelaphis tristis*
43. Banded racer *Argyrogena fasciolata*
44. Slender racer *Coluber gracilis*
45. Green keelback *Macropisthodon plumbicolor*
46. Striped keelback *Amphiesma stolatum*
47. Checkered keelback *Xenochrophis piscator*
48. Common vine snake *Ahaetulla nasuta*
49. Dumeril's black-headed snake *Sibynophis subpunctatus*
50. Dog-faced water snake *Cerberus rhynchops*
51. Glossy marsh snake *Gerarda prevostiana*

#### Family Elapidae

52. Common krait *Bungarus caeruleus*
53. Slender coral snake *Calliophis melanurus*
54. Spectacled cobra *Naja naja*
55. Hook-nosed sea snake *Enhydrina schistosa*
56. Bombay Gulf sea snake *Hydrophis mamillaris*
57. Cochin banded sea snake *Hydrophis ornatus*
58. Annulated sea snake *Hydrophis cyanocinctus*
59. Black Yellow sea snake *Pelamis platurus*

#### Family Viperidae

60. Russell's viper *Daboia russelii*
61. Saw-scaled viper *Echis carinatus*

62. Bamboo pit viper *Trimeresurus gramineus*

**Amphibia:**

**Family Bufonidae**

1. Common toad *Duttaphrynus melanostictus*
2. Marbled toad *Bufo stomaticus*

**Family Microhylidae**

3. Ornate microhylid *Microhyla ornata*
4. Jerdon's narrow mouthed frog *Ramanella montana*

**Family Dicroglossidae**

5. Indian bull frog *Hoplobatrachus tigerinus*
6. Skittering frog *Euphlyctis cyanophlyctis*
7. Paddy field frog *Fejervarya cf. limnocharis*
8. Unidentified *Fejervarya Fejervarya* sp.
9. Burrowing frog *Sphaerotheca breviceps*

**Family Ranidae**

10. Fungoid frog *Hydrophylax malabarica*

**Family Petropedetidae**

11. Unidentified leaping frog *Indirana* sp.

**Family Rhacophoridae**

12. Common tree frog *Polypedates maculatus*
13. Unidentified bush frog *Philautus* sp.

**Family Ichthyophidae**

14. Bombay caecilian *Ichthyophis bombayensis*



**References**

**Maharashtra Forest Department, 1999.** Management Plan 2000-2010, Sanjay Gandhi National Park.

NOTES ON THE EGGS AND HATCHLINGS OF STRIPED  
 KILLBACK AMPHISMASTOXYM (LINNAEUS, 1758)  
 M. Sotharaman, A. K. Srinivasan, B. Venkateswaraiah, C. Srinivasulu

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During our visit to Erudanganam Wildlife Sanctuary (18°02' N and 80°16' E), Andhra Pradesh, many amphibian tadpoles (Linnaeus, 1758) were sighted at different locations in and around the sanctuary. Dead frogs close to water bodies and paddy fields were mostly chosen as a microhabitat by this snake.

On 2.9.2008 at 6:00 hrs, seven eggs were sighted under a dead log in a house outside the sanctuary limits. The eggs were oval in shape, white and leathery in texture. The eggs were saved from destruction picked up carefully and carried to the lab. One egg was found damaged with a part of its yolk leaking out, but surprisingly all the eggs hatched on 1.8.2009 including the damaged one. Around 20 albino tadpoles were provided as food to the snakes, out of which four were reared and the others consumed in two weeks. A suitable habitat for the other four snakes was identified and they released after the second molt. Though literature is available on the hatchlings and embryology of the snake (Wall, 1907; Smith, 1944), there are no morphometric details of its eggs in the recent past.

## NOTES ON THE EGGS AND HATCHLINGS OF STRIPED KEELBACK *AMPHIESMA STOLATUM* (LINNAEUS, 1758)

M. Seetharamaraju<sup>1</sup>, R. Sreekar<sup>2\*</sup>, B. Ventakeshwarlu<sup>2</sup> and C. Srinivasulu<sup>1</sup>

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During our visit to Eturinagaram Wildlife Sanctuary (18° 09' N and 80° 16' E), Andhra Pradesh, many *Amphiesma stolatum* (Linnaeus, 1758) were sighted at different locations in and around the sanctuary. Dead logs close to water bodies and paddy fields were mostly chosen as a microhabitat by this snake.

On 5.9.2008 at 6:00 hrs, seven eggs, were sighted under a dead log in a house outside the sanctuary limits. The eggs were oval in shape, white and leathery in texture. The eggs were saved from destruction, picked up carefully and carried to the lab. One egg was partly damaged with a part of its yolk sticking out, but, surprisingly, all the eggs hatched on 11.9.2009 including the damaged one. Around 20 *Microhyla ornata* were provided as food to the snakes out of which four were regurgitated and the others consumed in two weeks. A suitable habitat for the other four snakes was identified and then released after the second molt. Though literature is available on the hatchlings and embryology of the snake (Wall, 1907; Smith, 1943), there are no morphometric details of its eggs in the recent past.

**Table 1. Morphometric details of the eggs**

	Length	Width
Egg 1	18.93	13.72
Egg 2	20.71	13.54
Egg 3	18.78	15.67
Egg 4	19.56	14.60
Egg 5	20.10	15.35
Egg 6	19.71	12.56
Egg 7	-	-

**Table 2. Morphometric details of the hatchlings**

	SVL	TL
1 <sup>st</sup> individual	133.07	39.36
2 <sup>nd</sup> individual	133.34	40.89
3 <sup>rd</sup> individual	126.92	41.36
4 <sup>th</sup> individual	132.68	41.21
5 <sup>th</sup> individual	115.56	35.59
6 <sup>th</sup> individual	135.25	40.88
7 <sup>th</sup> individual	124.95	38.80

SVL – Snout to Vent Length

TL – Tail length

**Note: Measurements were taken in millimeters.**

### References

- Smith, M. A. (1943).** *The fauna of British India, Ceylon and Burma, including the whole of the Indochinese region. Vol. III. Serpentes.* Taylor and Francis, London. xii + 583 pp. + 1 map. Reprinted 1970 Ralph Curtis Books, Hollywood, Florida and 1980 Today and Tomorrow's Publishers, Dehradun.
- Wall, F. (1907).** Remarks on the embryology of a snake. *J. Bombay Nat. Hist. Soc.*, 18(1): 205-206.

## A SHORT NOTE ON THE BANDED RACER *ARGYROGENA FASCIOLATA* (SHAW, 1802)

M. Rameshwaran

New Harbour, Tuticorin 628 004, TamilNadu.

Two photographs of the banded racer (*Argyrogena fasciolata*) (Shaw, 1802) taken by me accompany this note\*. In the first one, the snake is shown with eggs and the snake has bands around its body. This snake was caught in the New Harbour area, Tuticorin on 8.06.2006. It was found that it laid seven eggs inside the bag while being removed for release. The eggs were white in colour. Two eggs measured 40 mm in length, 15mm width and 32mm circumference. Five eggs had a length of 35mm and width 10mm.

The banded racer in the 2<sup>nd</sup> photograph was seen in Yavatmal district, eastern Maharashtra, while it was crossing the road on 15.04.2008. It had no bands on its body.

These observations are at variance with what Whitaker and Captain say in *Snakes of India – The Field Guide*, 2004. Firstly, according to their account, the adults are usually without bands. In this case, the individual which had laid eggs and, therefore, presumably, was an adult had bands around its body.

Secondly, according to them, the eggs are laid in October. In this case, the eggs were laid in June.

Thirdly, they give its distribution in S. India as upto Tirunelveli except Southeast Coast. But, Tuticorin where the snake with eggs was found is on the Southeast Coast.

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\* See front & back covers.

## RANDOM HARVEST

### How not to display snakes

A very rarely seen (mercifully so) ‘snake show’ is for the handler to insert a snake head first into his nostril and manage to make it come out through his mouth or *vice versa*. *The New Indian Express* of 21 Dec.2007 carried a photograph of one C. Manoharan *alias* ‘Snake Manoharan’ performing such a feat with two snakes – both thin bodied – one a green vine snake (*Ahaetulla nasuta*) and the other a bronzeback treesnake (*Dendrelaphis tristis*). He had plans of finding a place in the Guinness Book of World Records.

I understand that the book *The Fascination of Reptiles* by Manrice Richardson (Andre Deutsch, London, 1972) gives a “hair raising account” of one Miss Ongawa, a Japanese cabaret artiste who performs this trick and then (horror of horrors!) proceeds to eat the snake.

Ø Ø Ø

### *Rajur Sarpa* – the rope serpent

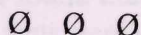
In India’s ancient texts there is reference to *rajur sarpa* or rope serpent. The encircling gloom of ignorance makes us afraid of a piece of rope which we mistake for a snake, but the light of knowledge enables us to see the reality and be reassured. To carry the parable further, it could be said that once we learn more about snakes and their ways, then not all snakes will be an equal source of dread. We learn to discriminate, know how to tell a non-venomous one from a venomous one and how to approach a venomous snake if we must approach it at all.

Ø Ø Ø

## A hark back to the age of dinosaurs

*Have* The tuatara lizard of New Zealand is called a 'living fossil'. That is because it belongs to the age of the dinosaurs, 225 million years ago, and all the reptiles of this period, big and small, become extinct. That is, all except the tuatara lizard of New Zealand. But it was feared to have become extinct on mainland New Zealand as well, some 300 years ago. A massive effort has been on in the Karori Wildlife Sanctuary in the capital, Wellington, to revive the wild population on the mainland (some 50,000 of them are still learnt to live on the 32 small offshore islands) but the efforts have been confined to the sanctuary.

And, now, for the first time in 300 years, a month-old hatchling has been discovered on the mainland outside the sanctuary, according to a report in *The Hindu* of Mar.20, 2009, It has a tough journey ahead and has to survive a host of predators.



## Fear of snakes

The fear that most humans exhibit at the very sight of a snake is not just ordinary fear. Ordinary fear is a natural and healthy reaction towards any source of potential danger as, for example, fear of an unpredictable wild animal or a growling dog or fear of fire or of heights. But where snakes are concerned, there is something morbid about our fear as most of us know from our personal experience. But is this fear inborn in us or acquired? This is a very vexed question to which no clear answer has emerged.

It has been noticed that children upto the age of about four, have no particular fear of snakes, or the fear is no more than what they show in the presence of any other strange animal. The morbid fear of snakes is developed later on by the child watching the reaction of adults to snakes or upon being told exaggerated accounts of how dangerous snakes are. In other words, it is the result of 'emotional conditioning'. This is, however, a grey area; the sensitivity of the subject precludes research.

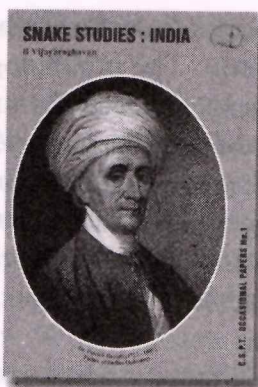
Experiments with animals have shown that anti-predator (i.e. not necessarily with regard to snakes) responses are sometimes imprinted at birth. The ornithologist Susan Smith demonstrated this with hand-reared and thus 'inexperienced' mot-mots (tropical birds related to kingfishers) which feed on lizards and small snakes. Mot-mots would peck at even thin painted wooden rods resembling snakes. But if these rods are painted with alternating red, yellow and black rings to resemble a deadly coral snake, the fledglings refused to touch them. This behaviour has been recorded also in the 'inexperienced' young of the great kiskadee, a predatory bird species.

There are references in scientific or semi-scientific literature to how young monkeys, not exposed to snakes earlier, respond to them with alarm when they are first exposed. But even here, opinion is divided on whether the reaction is truly inborn or learnt somehow from the community. For instance, D.O. Hebb found that chimpanzees born in captivity scream in terror when they first see a snake. Mark Hauser found that his laboratory-bred cottontop tamarins (a S. American monkey) screamed out alarm calls when they saw a piece of plastic tubing on the floor (mistaking it for a snake?) Steven Pinker, the well-known professor of brain and cognitive sciences, takes a contrary line but puts a spin on it when he says (*How the Mind Works*): "Laboratory-raised rhesus macaques are not afraid of snakes when they first see them but if they watch a film of another monkey being frightened by a snake, they fear it too. The monkey in the movie *does not instil the fear so much as awakens it* (emphasis added) for if the film shows the monkey recoiling from a flower or a bunny instead of a snake, the viewer develops no fear". Does this mean that the snake triggers some deep-hidden atavistic terror? If so for our primate ancestors, could it not be so for us too?

Ø Ø Ø

- B. Vijayaraghavan

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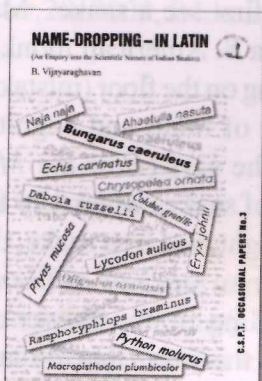
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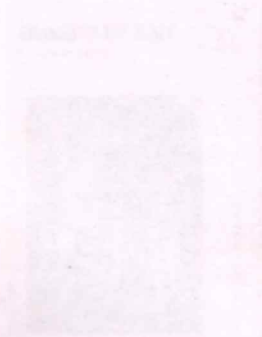


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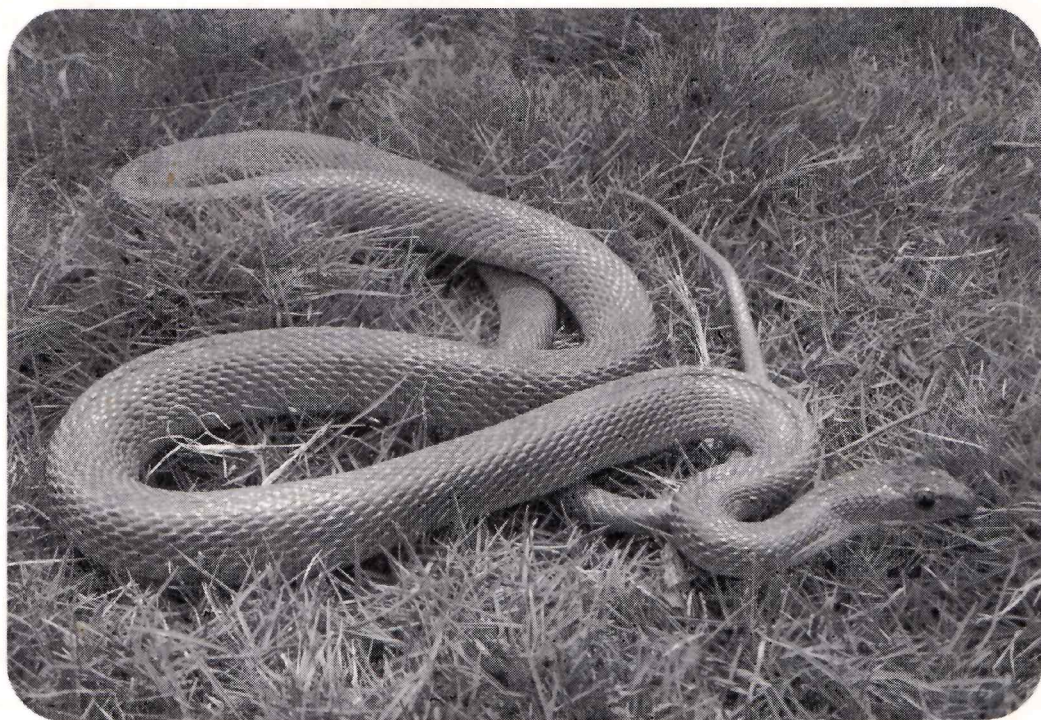
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