Cobra

Volume - 46 October - December 2001

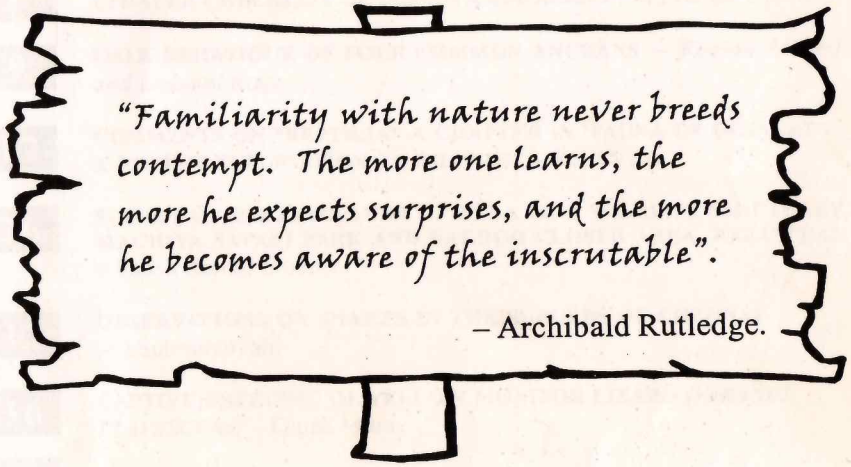
CHENNAI SNAKE PARK TRUST

Quarterly Newsletter of the Chennai Snake Park Trust

Cover

'Combat dance' of male rat snakes *(Ptyas mucosus)*. For two accounts of this, see ***Cobra*** Volumes 18 (1994) and 21 (1995).

This photograph was taken by Mr. **S. Sridhar** in the fields adjacent to Sankey Tank in Bangalore on 13th May 2001. He writes that the 'dance' lasted for two hours and was repeated the next day also.



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UPDATED CHECKLIST OF INDIAN AMPHIBIANS

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About a decade ago, the number of species of amphibians known from India was around 200. Over the years, however, the total number of species of Indian amphibians has changed considerably. While many new species were discovered and described, many others' specific identities were considered invalid. Despite the disqualified lot, the number of valid species of Indian amphibians is clearly on the rise. And judging by the rate of recent descriptions of new species, especially from the Western Ghats, it would be reasonable to say that there are at least 250 species of amphibians in India.

The following is the updated list of valid species of Indian amphibians based on inputs provided by Indraneil Das, M S Ravichandran and Sushil K Dutta. It includes one salamander, 21 caecilians and 206 species of anurans.

Reference

Das, I (2000) Updates in amphibian systematic and nomenclature for the Indian region. *Biodiversity India* (ISCB Newsletter July 1998-Dec 2000): 3-5.

Dubois, A and Ohler, A (1999) Asian and Oriental toads of the *Bufo melanostictus, Bufo scaber* and *Bufo stejnegeri* groups (Amphibia, Anura): a list of available and valid names and redescription of some name-bearing types. *J. South Asian Nat. His.* 4(2): 133-180.

Dutta, S K (1997) *Amphibians of India and Sri Lanka (Checklist and Bibliography)*. Bhubaneshwar, Odyssey Publishing House.

Krishnamurthy, S V, Reddy, A H M and Gururaja, K V (2001) A new species of frog in the genus *Nyctibatrachus* (Anura: Ranidae) from Western Ghats, India. *Current Science* 80(7): 887-891.

Pillai, R S and Ravichandran, M S (1999) Gymnophiona (Amphibia) of India. A taxonomic Study. *Occ. Pap. Zool. Surv. India* 172: 1-117.

Checklist of Amphibians of India

Order	Family	Scientific Name
Caudata	Salamandridae	1. *Pleurodeles verrucosus*
Gymnophiona	Ichthyophiidae	2. *Ichthyophis beddomei*
		3. *Ichthyophis bombayensis**
		4. *Ichthyophis garoensis*
		5. *Ichthyophis glutinosus*[+]
		6. *Ichthyophis husaini*
		7. *Ichthyophis longicephalus**
		8. *Ichthyophis malabarensis**
		9. *Ichthyophis peninsularis**
		10. *Ichthyophis sikkimensis*
		11. *Ichthyophis subterrestris**
		12. *Ichthyophis tricolor**
	Uraeotyphlidae	13. *Uraeotyphlus interruptus**
		14. *Uraeotyphlus malabaricus**
		15. *Uraeotyphlus menoni**
		16. *Uraeotyphlus narayani**
		17. *Uraeotyphlus oxyurus**
	Caeciliidae	18. *Gegeneophis carnosus**
		19. *Gegeneophis fulleri*
		20. *Gegeneophis krishni**
		21. *Gegeneophis ramaswamii**
		22. *Indotyphlus battersbyi**
Anura	Pelobatidae**	23. *Leptobrachium hasseltii*
		24. *Leptobrachium smithi*
		25. *Megophrys boettgeri*

Order	Family	Scientific Name
		26. *Megophrys kempii*
		27. *Megophrys lateralis*
		28. *Megophrys monticola*
		29. *Megophrys parva*
		30. *Megophrys robusta*
		31. *Scutiger mokokchungensis*
		32. *Scutiger nyingchiensis*
		33. *Scutiger occidentalis*
		34. *Scutiger sikkimensis*
	Bufonidae	35. *Ansonia ornata**
		36. *Ansonia rubigina**
		37. *Bufo abatus*
		38. *Bufo beddomii**
		39. *Bufo brevirostris**[@]
		40. *Bufo himalayanus*
		41. *Bufo hololius**
		42. *Bufo koynaensis**
		43. *Bufo latastii*
		44. *Bufo melanostictus*
		45. *Bufo microtympanum*
		46. *Bufo parietalis**
		47. *Bufo scaber*
		48. *Bufo silentvalleyensis**
		49. *Bufo stomaticus*
		50. *Bufo stuarti*
		51. *Bufo viridis*
		52. *Bufoides meghalayanus*
		53. *Pedostibes kempi*
		54. *Pedostibes tuberculosus**
	Hylidae	55. *Hyla annectans*
	Microhylidae	56. *Kaloula baleata*
		57. *Kaloula taprobanica*
		58. *Melanobatrachus indicus**
		59. *Microhyla berdmorei*
		60. *Microhyla chakrapani*
		61. *Microhyla heymonsi*

Order	Family	Scientific Name
		62. *Microhyla ornata*
		63. *Microhyla rubra*
		64. *Micohyla sholigari**
		65. *Micryletta inornata*
		66. *Ramanella anamalaiensis*@*
		67. *Ramanella minor*@*
		68. *Ramanella montana**
		69. *Ramanella mormorata*@#*
		70. *Ramanella triangularis**
		71. *Ramanella variegata*
		72. *Uperodon globulosus*
		73. *Uperodon systoma*
	Rhacophoridae	74. *Chirixalus doriae*
		75. *Chirixalus dudhwaensis*
		76. *Chirixalus simus*
		77. *Chirixalus vittatus*
		78. *Nyctixalus moloch*
		79. *Philautus andersonii*
		80. *Philautus annandalii*
		81. *Philautus argus*
		82. *Philautus beddomii**
		83. *Philautus bombayensis**
		84. *Philautus chalazodes**
		85. *Philautus charius*@#*
		86. *Philautus cherrapunjiae*
		87. *Philautus crni*@#*
		88. *Philautus elegans*@*
		89. *Philautus femoralis*
		90. *Philautus flaviventris**
		91. *Philautus garo*
		92. *Philautus glandulosus**
		93. *Philautus hassanensis*@#*
		94. *Philautus kempiae*
		95. *Philautus kottigeharensis*@*
		96. *Philautus leucorhinus*
		97. *Philautus melanensis*@*

Order	Family	Scientific Name
		98. *Philautus namdaphaensis*
		99. *Philautus narainensis*@*
		100. *Philautus nasutus*+*
		101. *Philautus noblei**
		102. *Philautus parkeri**
		103. *Philautus pulcherrimus**
		104. *Philautus sanctisilvaticus*
		105. *Philautus shillongensis*
		106. *Philautus shyamrupus*
		107. *Philautus signatus**
		108. *Philautus swamianus*@*
		109. *Philautus temporalis*
		110. *Philautus terebrans*
		111. *Philautus travancoricus**
		112. *Philautus variabilis*
		113. *Polypedates insularis*
		114. *Polypedates leucomystax*
		115. *Polypedates maculatus*
		116. *Polypedates pseudocruciger**
		117. *Rhacophorus appendiculatus*
		118. *Rhacophorus bipunctatus*
		119. *Rhacophorus bisacculus*
		120. *Rhacophorus calcadensis**
		121. *Rhacophorus dubius*
		122. *Rhacophorus jerdonii*
		123. *Rhacophorus lateralis**
		124. *Rhacophorus malabaricus**
		125. *Rhacophorus maximus*
		126. *Rhacophorus namdaphaensis*
		127. *Rhacophorus naso*
		128. *Rhacophorus nigropalmatus*
		129. *Rhacophorus pleurostictus**
		130. *Rhacophorus pseudomalabaricus**
		131. *Rhacophorus reinwardtii*
		132. *Rhacophorus taeniatus*
		133. *Rhacophorus tuberculatus*

Order	Family	Scientific Name
	Ranidae	*134. Theloderma asper*
		135. Amolops afghanus
		136. Amolops chakrataensis
		137. Amolops formosus
		138. Amolops gerbillus
		139. Amolops jaunsari
		140. Amolops monticola
		141. Chaparana sikimensis
		142. Euphlyctis cyanophlyctis
		143. Euphlyctis ghoshi
		144. Euphlyctis hexadactylus
		145. Hoplobatrachus crassus
		146. Hoplobatrachus tigerinus
		*147. Indirana beddomii**
		*148. Indirana brachytarsus**
		*149. Indirana diplostictus**
		*150. Indirana gundia**
		*151. Indirana leithii**
		*152. Indirana leptodactylus**
		*153. Indirana phrynoderma**
		*154. Indirana semipalmatus**
		155. Indirana tenuilingua@*
		156. Limnonectes andamanensis
		*157. Limnonectes brevipalmats**
		158. Limnonectes cancrivorous
		159. Limnonectes doriae
		*160. Limnonectes keralensis**
		161. Limnonectes khasiensis
		162. Limnonectes kuhlii
		163. Limnonectes laticeps
		164. Limnonectes limnocharis
		165. Limnonectes mawlyndipi
		166. Limnonectes mawphlangensis
		*167. Limnonectes murthii**
		*168. Limnonectes mysorensis**
		*169. Limnonectes nilagirica**

Order	Family	Scientific Name
		*170. Limnonectes orissaensis**
		171. Limnonectes sauriceps@*
		172. Limnonectes shompenorum
		173. Limnonectes syhadrensis
		*174. Micrixalus fuscus**
		*175. Micrixalus gadgili**
		*176. Micrixalus nudis**
		*177. Micrixalus phyllophilus**
		*178. Micrixalus saxicola**
		*179. Micrixalus silvaticus**
		*180. Micrixalus thampii**
		181. Nanorana pleskei
		*182. Nyctibatrachus aliciae**
		*183. Nyctibatrachus beddomii**
		*184. Nyctibatrachus deccanensis**
		*185. Nyctibatrachus humayuni**
		*186. Nyctibatrachus hussaini**
		187. Nyctibatrachus kempholeyensis@*
		*188. Nyctibatrachus major**
		*189. Nyctibatrachus minor**
		190. Nyctibatrachus sanctipalustris@*
		191. Nyctibatrachus sylvaticus@*
		*192. Nyctibatrachus vasanthi**
		193. Occidozyga lima
		194. Paa annandalii
		195. Paa blanfordii
		196. Paa hazarensis
		197. Paa liebigii
		198. Paa minica
		199. Paa sternostignata
		200. Paa vicina
		201. Phrynoglossus borealis
		202. Rana alticola
		203. Rana assamensis
		204. Rana aurantiaca
		205. Rana chalconota

Order	Family	Scientific Name
		206. *Rana charlesdarwini*
		207. *Rana curtipes**
		208. *Rana danieli*
		209. *Rana erythraea*
		210. *Rana garoensis*
		211. *Rana khare*
		212. *Rana leptoglossa*
		213. *Rana livida*
		214. *Rana malabarica**
		215. *Rana micobariensis*
		216. *Rana nigrovittata*
		217. *Rana senchalensis*
		218. *Rana taipehensis*
		219. *Rana temporalis*
		220. *Rana travancorica**
		221. *Taylorana hascheana*
		222. *Tomopterna breviceps*
		223. *Tomopterna dobsonii**
		224. *Tomopterna leucorhynchus*@*
		225. *Tomopterna parambikulamana*@*
		226. *Tomopterna rolandae*
		227. *Tomopterna rufescens**
		228. *Sphaerotheca maskeyi*[$]

Note:

The list of species and nomenclature are based on Dutta (1997) modified after Dubois & Ohler (1999) and updated using Das (2000) and Krishnamurthy, *et al* (2001)

*Species endemic to peninsular India

+ Species endemic to Srilanka, doubtfully reported from India (also see Pillai and Ravichandran, 1999)

@ Rao's species - species described in 1937 by C R N Rao with no specimens left to validate the same

Rao's species since rediscovered/redescribed

$ Certain species of *Tomopterna* have recently been reclassified under this genus (see Das, 2000)

**Das (2000) treats the Indian species as members of family Megophryidae

CALL BEHAVIOUR OF FOUR COMMON ANURANS

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Introduction

The anuran advertisement call is now widely considered as an important character for species identification, which is more distinctive than morphological characters. Frogs, which on the basis of morphological characters had been considered as belonging to one species by analyses of their advertisement call, may turn out to belong to different species (Schneider, *et.al.*1993; Roy & Elepfandt, 1995; Roy,1994).

Similarly geographic variation in the advertisement call has been reported for the North American cricket frog *Acris* (Nevo,1969), Central American hylid frog (Duellman, 1970) and the toad *Bufo viridis* in Europe and South Western Asia (Nevo and Schneider,1976). Among Indian species *Limnonectes limnocharis* exhibits variation in the advertisement call (Roy and Elepfandt, 1993).

The present study is on 4 species viz., Indian bullfrog (*Hoplobatrachus tigerinus),* skipper frog (*Euphlyctis cyanophlyctis),* cricket frog (*Limnonectes limnocharis)* and common Indian toad (*Bufo melanostictus).* These species render incalculable service to agriculture

and serve as bioindicators in determining the quality of the environment. The 4 species had once been abundant in India but their populations have declined as a consequence of intensive capture and trade (Daniels, 1991).

The study area lies in the Nalbari District of Assam. Nalbari is the northernmost district of Assam, situated on the north bank of the river Brahmaputra. The district lies between longitude 91°0′E to 91°45′ E and latitude 26°0′N to 26°45′N. The district is bounded on the south by the river Brahmaputra and on the northern side lie the Himalayan ranges and Bhutan Hills. The east is bounded by the Kamrup and Darrang districts and the west by the Barpeta district.

The study area Ghograpar is one of the circles under the Nalbari district and is located in the southwestern part of the district (Fig.1). It lies between longitude 91°30′E to 91°45′E and latitude 26°15′N to 26°30′N. The circle is 675 sq.km. comprising five large bheels – Silpota bheel, Katakiya bheel, Bilpar bheel, Punnibheel and Jabarihati bheel and approximatley 2600 ponds. Most of the ranges are covered with shrubs, thin forests and cultivated areas.

Experiments

The common and most abundant anuran species in the Ghograpar area are *Limnonectes limnocharis, Euphlyctis cyanophlyctis, Hoplobatrachus tigerinus* and *Bufo melanostictus.*

The calls were recorded during the active breeding season with a Sony WM-DGC recorder. Recorded calls were digitized *via* an analogue to digital interface board on to an IBM PC and stored on diskettes. Oscillograms, sonograms and mean spectra were prepared with a computerised FFT sound analysis system after passing through band pass filters and printed with a laser printer.

Call Characteristics

The calls were analysed for the following characters (Roy and Elepfandt, 1993).

i)	Call duration (ms)	:-	Duration from the beginning of a call to its end.
ii)	Call period (ms)	:-	Duration from the beginning of a call to the beginning of the next call.
iii)	Pulse number	:-	The number of individual components of each call.
iv)	Inter-pulse interval (ms)	:-	Time between the pulses of a call.
v)	Dominant frequency (Hz)	:-	The frequency with maximum intensity.
vi)	Frequency domain (Hz)	:-	The range of frequency that differ by less than 10 db intensity from the dominant frequency.

Oscillograms, sonograms and mean spectra were then prepared (Fig. 2).

The intensity of the male call can be very high, at times of the order of 100-110 db (Loftus-Hills & Little John, 1971; Gerhardt, 1975). Males must therefore expend a considerable amount of energy in broadcasting such intense signals.

They are highly vocal animals, yet they possess a small set of signals in their repertoire, such a mating calls, release calls, territorial calls, distress calls, and warning calls (Bogert,1960). Thus communication plays a very significant role in their lives.

The anuran advertisement call also acts as a primary species specific isolating mechanism in anuran speciation (Blair, 1964; Little John, 1977; Drewry and Rand, 1983; Zimmerman and Bogart,1988).

Results

Call Analysis:

a) *Limnonectes limnocharis*:- Calls were emitted every 2-3 seconds lasting 300-500 ms. Calls were composed of about 80 pulses with 10 ms interpulse, interval. The call has a single dominant frequency at about 2150 Hz and lack harmonics (Fig. 3).

b) *Euphlyctis cyanophlyctis*:- Calls were emitted while floating on the water surface. Calls lasted somewhat more than half a second, about 615 ms and were emitted at 2-3 seconds interval. The calls were composed of about 6-8 pulses with quite constant inter pulse interval of 85 ms. Frequency distribution is bimodal with dominant frequencies at about 1650 Hz and its second harmonic (Fig. 4).

c) *Hoplobatrachus tigerinus*:- The call is low pitched and lasts approximately 300 ms. It is produced with a large call period of nearly 1-5 seconds. The call is very regular composed of about 16 pulses with only 18 ms interpulse interval. The dominant frequency is at 520 Hz with a third harmonic of about equal amplitude at about 1650Hz. (Fig. 5).

*d) *Bufo melanostictus*:- The calls lasts about 80 ms, with about 70 pulses. Single dominant frequency at about 1500Hz. Frequency domain extends from 1120 to 2110 Hz. (Fig. 6).

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References

Ahmed, R. (1995) 'Reproductive Strategies, Breeding behaviour and Chorus formation in Anurans' M.Phil Dissertation N.E.H.U. Shillong.

Bogert, C.M. (1960) The influence of Sound on the behaviour of amphibians and reptiles in : *Animal sounds and Communication* (eds.) W.E.Lanyan and W.N.Tavolga. Amer. Inst. Biol. Sci. Washington pp137-320.

Blair, W.F. (1964) Isolating mechanisms and interspecies interactions in Anuran amphibians .*Q.Rev.Biol.* 39: 333-344.

Duellman. W.E. (1970) Hylid frogs of middle America 1 and *2, Monogr. of Mus. Nat.Hist.* Lawrence Univ. Kansas.

Drewry, G.E. and Rand A.S. (1983) Characteristic of an acoustic community, Puerto Rican frogs of the genus *Eleutherodactylus. Copeia.* 941-953.

Daniels. R.J.R. (1991) The problem of conserving amphibians in the Western Ghats, India *Curr. Sci.* 60: 630-632.

Gerhardt, H.C. (1975) Sound pressure levels and radiation pattern of the vocalizations of some North American frogs and toads. *J.Comp. physiol* 102: 1-12

Loftus Hills, J.J and Little John, M.J (1971) Mating call sound intensities of anuran amphibians. *J.Acoust. Soc. Am.* 49.

Little John, M.J. (1977) Long range acoustic communication in anurans : an integrated and evolutionary approach in : *The reproductive biology of amphibians* (eds.) D.H. Taylor and S.I. Guttman. Plenum press. New York pp 263-294.

Nevo, E.(1969) Discussion on the systematic significance of isolating mehanisms. In *Systematic biology. Proc. Int. Conf. Natl. Acad. Sci. Washington D.C.* pp 485-489.

Nevo, E. and Schneider, H. (1976) Mating call pattern of green toads in Israel and its ecological correlates. *J.Zool, London.* 178: 133-145.

Roy, D. and Elepfandt. A. (1993) Bioacoustic analysis of frog calls from northeast India. *J.Bio Sci.* 18(3): 381-393.

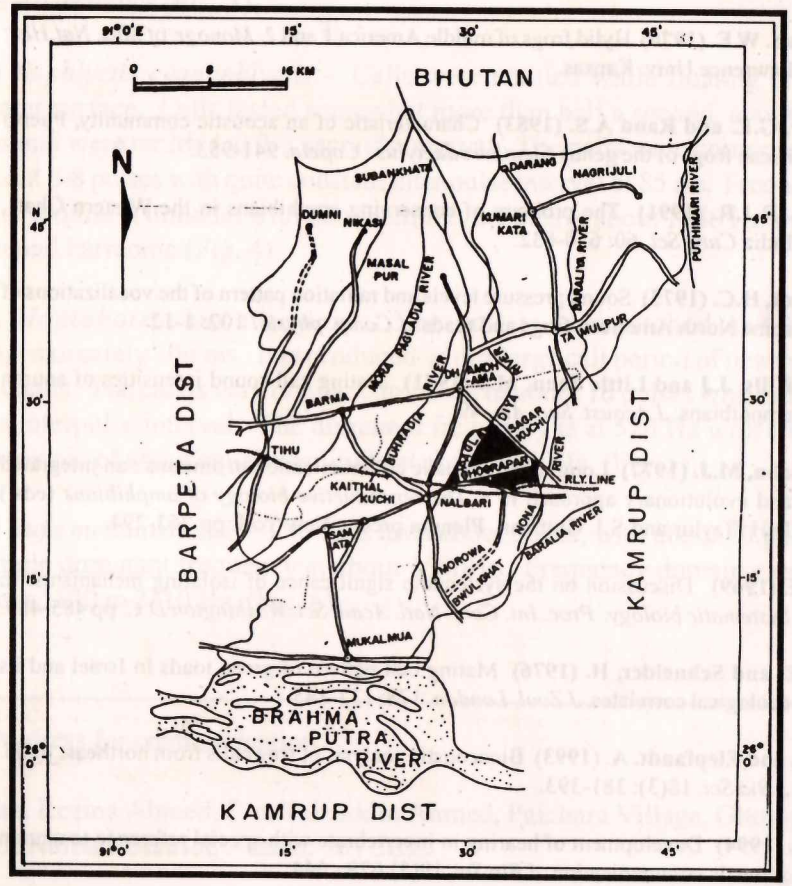
Roy, D. (1994) Development of hearing in invertebrate with special reference to anuran acoustic communication. *J.Bio Sci.* 19(5):629 - 644.

Schneider, H. *et al.* (1993) The water frogs of Greece. Bioacoustic evidence for a new species. *Z. Zool. Syst. Evolutions for Sch.* 31: 47-63.

Zimmerman, B.L. and Bogert, J.P. (1988) Ecology and calls of four species of Amazonian frogs. *J.Herpetol.* 22: 97-108.

Figure-1: A Map of Nalabari District, showing Ghograpar Circle

MAP OF NABARI DISTRICT



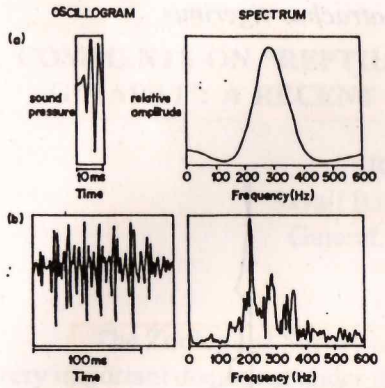


Figure-2: Calls represented as variations in sound pressure with time - oscillogram and a spectrum where the sound is broken down into its component frequencies by FFT analysis. The calls are made up of series of repeated pulses. (a) Shows the spectrum for a single frequency analysis. (b) Shows the repetition of a series of smaller pulses.

Figure-3: Advertisement call of *Limnonectes limnocharis.*

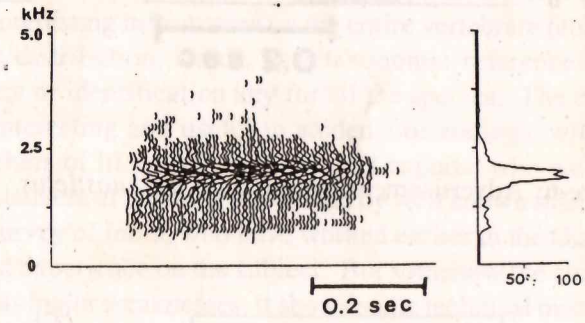


Figure-4: Advertisement call of *Euphlyctis cyanophlyctis.*

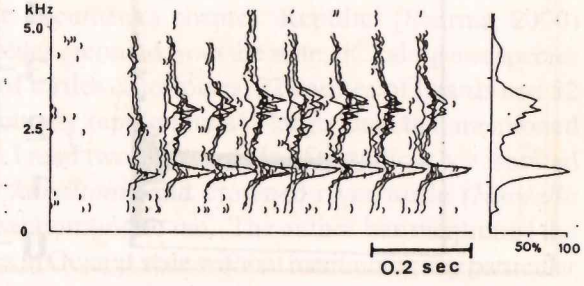


Figure-5: Advertisement call of *Hoplobatrachus tigerinus.*

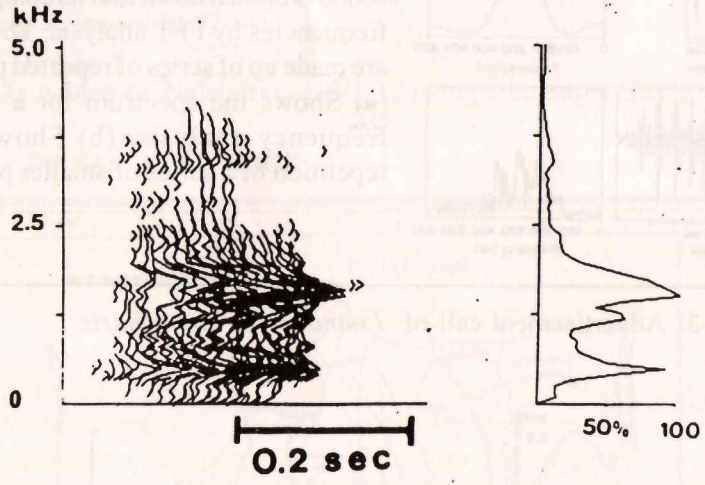
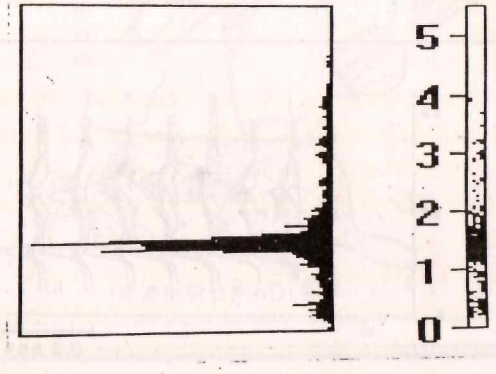


Figure-6: Advertisement call of *Bufo melanostictus.*



COMMENTS ON "REPTILIA" A CHAPTER IN 'FAUNA OF GUJARAT': A RECENT PUBLICATION OF ZSI, INDIA

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The Zoological Survey of India, Kolkata has recently published a very important document under the State Fauna series 8: Fauna of Gujarat, Part – I, which contains higher vertebrate fauna of the Gujarat state, including amphibian and reptilian fauna.

The document is the first compiled document on Gujarat state, which shows very interesting information on the entire vertebrate fauna of the state including distribution, status, past taxonomic references and diagnostic characters or identification key for all the species. The entire document is very interesting and useful to students of zoology, wildlife enthusiasts, researchers of life-science and subject experts, who work in the region. All the chapters of the book are written by well known scientists of the Zoological Survey of India, who have worked earlier in the Gujarat state and have a vast experience on the subject. But somehow the chapter on reptilian fauna has major weaknesses. It shows some technical mistakes which raise some questions on the subject as it has been dealt here.

According to the document's chapter 'Reptilia' (Sharma, 2000) there are 89 species of reptiles recorded from the state, including one species of crocodile, 14 species of turtles & tortoises, 22 species of lizards and 52 species of snakes. But actually reptile fauna is larger than that mentioned by R.C.Sharma. Therein I read two new records of testudines viz. spotted pond turtle *(Geoclemys hamiltoni)* and crowned river turtle *(Hardella thurgi)*, which is very disappointing to me. The author has mentioned the distribution of both species in Gujarat state without mentioning any particular

localities. He has mentioned its distribution as broad ranging from southern to northwestern Gujarat. Also, he has derived records of both species from early reference of Tikedar and Sharma (1985). However the original paper has not mentioned the distribution of the 2 species in the state. Such erroneous references to the species may not only misguide students and biologists, but also create difficulties for a conservationist, who works on a particular species.

Also, the author has mentioned a subspecies of *Kachuga tentoria (K. t. tentoria)* from the state as distributed in southern Gujarat, whereas only *K.t. circumdata* is reported from the river Tapti (=Tapi), southern Gujarat (Bhatt, 1989). The author has reported both subspecies of *Lissemys punctata* viz., *L.p.punctata* and *L.p. granosa* as having distribution in the state, but *granosa* is not a valid subspecies. It is synonym of *andersonii*.

In addition to that, there are many typographical and technical mistakes in the chapter. Diagnostic key of the genera and species are based on some of the difficult characters. It is better to provide identification key with simple and well known characters of species rather than confusing and less familiar characters. The taxonomic nomenclature used in the document is quite out-dated, e.g. *Naja naja oxiana* and *Naja naja naja,* both the subspecies have been now elevated and considered as valid species (Wuster and Thorpe, 1992).

Also, the author has quoted some references in the text e.g. Sharma and Vazirani, 1977 and Sharma, 1971. Actually both the references are not about reptiles of the state. There are also some citation references, which are not mentioned in the text (e.g. Acharya, 1933; Akhtar & Tiwari,1991; Badam, 1974; Bellairs, 1969; Sharma, 1998).

In the text, the author has claimed that he has surveyed enormous material on the subject and listed 89 species of reptiles from the state. It is

very surprising that the author has neither carefully surveyed any past literature, nor has he referred to any of the latest literature or material from his own institute ZSI (e.g. Tikader and Sharma, 1992 and Gayen, 1999).

This type of document might be problematic for conservation and management. Distribution is also an important component of the biology of the species: if we fail to note its precise distributional range, we may fail to understand its ecological requirements!

While on the subject, it is noteworthy to reiterate Brown (1992) 'Accurate information on existence and distribution of species requires an expert knowledge of the animals, geography and the literature'.

A large amount of literature exists on the reptilian fauna of Gujarat state and the recently published work of Vyas (2000) lists a total of 107 species of reptiles belonging to 21 families (Table.1). This includes 1 species of crocodile, 12 species of turtles & tortoises, 36 species of lizards and 58 species of snakes.

Literature cited

Acharya, H.N. (1933) The occurrence of the common chameleon (*Chamaeleon calcarata)* in Gujarat. *J. Bombay nat. Hist. Soc.* 36: 513-514.

Akhtar, S.A. and Tiwari, J.K. (1991) Extension of range of the black cobra *Naja naja oxiana. J.Bombay nat. Hist. Soc.* 88(1):123.

Badam, C.C. (1974) Skull characters of *Crocodylus biporcatus. J. Geol.Soc.India.* 14(1):40-46.

Bellairs, A. (1969) *The life of reptiles* 2:1-526.

Bhatt, K. (1989) New locality record for the Indian pink-ringed terrapin. *J. Bombay nat. Hist. Soc.* 86:253.

Brown, S.B. (1992) India's herpetofauna: A plea for standardized distributional records. *Hamdryad* 17: 53-53.

Gayan, N.C. (1999) A synopsis of the reptiles of Gujarat, western India. *Hamadryad* 24(1): 1-22.

Sharma, R.C. (1971) The reptile fauna of the Nagarjunasagar Dam area (Andhra Pradesh, India). *Rec. zool. Survey. India.* 63(1-4): 77-93.

Sharma, R.C. (1998) *The fauna of India and adjacent countries. Reptilia* Vol.I *Testudines and Crocodilians*, Director, Zoological Survey of India, XVI+196pp.

Sharma, R.C. (2000) Reptilia, *in* State Fauna series 8: *Fauna of Gujarat,* Part-I, Zoological Survey of India, 243-297.

Sharma, R.C. and Vazirani,T.G. (1997) Food and feeding habits of some reptiles of Rajasthan, India. *Rec. zool. Surv. India.* 73: 77-93.

Tikader, B.K. and Sharma, R.C (1992) *Handbook Indian lizards,* Zoological Survey of India, Calcutta. 250.

Vyas, R. (2000) A review of reptile studies in Gujarat State. *Zoos' Print J.* 15(12): 386-390.

Wuster, W. and Thorpe, R. (1992) Asiatic cobras: Population systematics of the *Naja naja* species complex (Serpentes: Elapidae) in India and Central Asia. *The Herpetologica.* 48(1): 69-85.

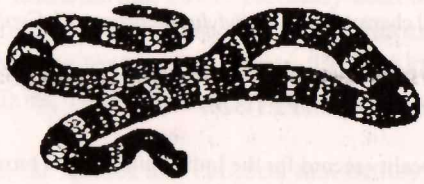

Table . 1. Systematic list of the reptilian species reported from Gujarat.

Sl.No.	Family/Common name/species/subspecies
	CROCODYLIDE
1	Mugger *(Crocodylus palustris)*
	DERMOCHELIDE
2	Leatherback sea turtle *(Dermochelys coriacea)*
	CHELONIDAE
3	Loggerhead sea turtle* *(Caretta caretta)*
4	Green turtle *(Chelonia mydas)*
5	Hawsbill sea turtle* *(Eretmochelys imbricata)*
6	Olive ridley sea turtle *(Lepidochelys olivacea)*
	BATAGURIDEA
7	Indian roofed turtle *(Kachuga tecta)*
8	Pink-ringed tent turtle *(Kachuga tentoria circumdata)*
9	Penninsular black turtle *(Melanochelys trijuga trijuga)*
	TESTUDINIDAE
10	Indian star tortoise *(Geochelone elegans)*
	TRIONYCHIDAE
11	Indian softshell turtle *(Aspideretes gangeticus)*
12	Leith's softshell turtle* *(Aspideretes leithii)*
13	South Indian flapshell turtle *(Lissemys punctata)*
	EUBLEPHARIDE
14	Common leopard gecko *(Eublepharis fuscus)*
	GEKKONIDAE
15	Warty rock gecko *(Cyrtopodion kachhensis)*
16	Kollegal ground gecko *(Geckoella collegalensis)*
17	Brook's house gecko *(Hemidactylus brookii)*
18	Yellow-green gecko *(H. flaviviridis)*
19	Slender gecko *(H. gracilis)*
20	Bark gecko *(H. leschenultii)*
21	Northern spotted gecko *(H.m.maculatus)*
22	Porbandar gecko *(H. porbandarensis)*

Sl.No.	Family/Common name/species/subspecies
23	Indian termite gecko *(H. t. triedrus)*
	AGAMIDAE
24	Roux's forest lizard *(Calotes rouxii)*
25	Eastern garden lizard *(Calotes v. versicolor)*
26	Lesser agama *(Laudakia minor)*
27	Blandford's rock agama *(Psammophilus blanfordanus)*
28	Fan-throated lizard *(Sitana ponticeriana)*
29	Brilliant ground agama* *(Trapelus agilis)*
30	Hardwick's spiny-tailed lizard *(Uromastyx hardwickii)*
	CHAMAELEONIDAE
31	Indian chamaeleon *(Chamaeleo zeylanicus)*
	SCINCIDAE
32	Dwarf earless skink *(Ablepharus grayanus)*
33	Indian mole skink *(Eumeces s. schneiderii)*
34	Eastern yellow-bellied mole skink *(E.t.taeniolatus)*
35	White-spotted supple skink *(Lygosoma albopunctata)*
36	Gunther's supple skink *(L. guentheri)*
37	Lined supple skink *(L. lineata)*
38	Spotted supple skink *(L. punctatus)*
39	Common keeled grass skink *(Mabuya c.carinata)*
40	Striped grass skink *(M. dissimilis)*
41	Eastern bronze skink *(M. macularius)*
42	Indian sand-swimmer *(Ophiomorus raithmai)*
	LACERTIDAE
43	Indian fringe-toed lizard *(Acanthodactylus cantoris)*
44	Beddome's lacerta *(Ophisops beddomei)*
45	Snake-eyed lacerta *(O. jerdoni)*
46	Small-scaled lacerta *(O. microlepis)*
	VARANIDAE
47	Bengal monitor *(Varanus bengalensis)*
48	Yellow monitor* *(Varanus flavescens)*
49	Eastern desert monitor *(V.griseus koniczнyi)*

Sl.No.	Family/Common name/species/subspecies
	TYPHLOPIDAE
50	Brahminy worm snake *(Ramphotyphlops braminus)*
51	Beaked worm snake *(Ramphotyphlops acutus)*
52	Slender blind snake *(Typhlops porrectus)*
	UROPELTIDAE
53	Elliot's shieldtail *(Uropeltis ellioti)*
54	Bombay shieldtail *(U. m. macrolepis)*
55	Nilgiri shieldtail* *(U. ocellatus)*
	BOIDAE
56	Common sand boa *(Eryx c. conicus)*
57	Eastern red sand boa *(E. j. johnii)*
58	Indian rock python *(Python m. molurus)*
	ACROCHORDIDAE
59	Western wart snake *(Acrochordus granulatus)*
	COLUBRIDAE
60	Common vine snake *(Ahaetulla nasutus)*
61	Brown vine snake *(A. pulverulenta)*
62	Buff-striped keelback *(Amphiesma stolata)*
63	Banded racer *(Argyrogena faciolatus)*
64	Olive keelback water snake* *(Atretium schistosum)*
65	Foresteni cat snake *(Boiga forsteni)*
66	Common Indian cat snake *(B. trigonatus)*
67	Dog-faced water snake *(Cerberus rynchops)*
68	Indian ornate flying snake *(Chrysopelea ornata)*
69	Glossy-bellied racer* *(Coluber ventromaculatus)*
70	Painted bronzeback tree snake* *(Dendrelaphis pictus)*
71	Common bronzeback tree snake *(D. tristis)*
72	Common Indian trinket snake *(Elaphe h. helena)*
73	Glossy marsh snake *(Gerarda prevostianus)*
74	Common Indian wolf snake *(Lycodon aulicus)*
75	Yellow-spotted wolf snake *(L. flavomaculatus)*
76	Northern barred wolf snake *(L. s. striatus)*

Sl.No.	Family/Common name/species/subspecies
77	Indian green keelback *(Macropisthodon plumbicolor)*
78	Banded kukri snake *(Oligodon arnensis)*
79	Indian streaked kukri snake *(O. taeniolatus)*
80	Black-spotted kukri snake* *(O.venustum)*
81	Western sand snake* *(Psammophis c. condanarus)*
82	Pakistani ribbon snake *(P. leithii)*
83	Stout sand snake *(P. longifrons)*
84	Afro-Asian sand snake* *(P. schokari)*
85	Indian rat snake *(Ptyas mucosus)*
86	Dumeril's black headed snake *(Sibynophis subpunctatus)*
87	Royal snake *(Spalerosophis d. diadema)*
88	Checkered keelback water snake *(Xenochrophis piscator)*
	ELAPIDAE
89	Common Indian krait *(Bungarus caeruleus)*
90	Common Sind krait *(B.s.sindanus)*
91	Common slender coral snake *(Calliophis m. melanurus)*
91a	Black slender coral snake *(C.m.nigrescens)*
92	Spectacled cobra *(Naja naja)*
93	Black cobra* *(N. oxiana)*
94	King cobra* *(Ophiophagus hannah)*
	HYDROPHIDAE
95	Hook-nosed sea snake *(Enhydrina schistosus)*
96	Many-toothed sea snake *(Hydrophis caerulescens)*
97	Cantor's narrow-headed sea snake *(H. cantoris)*
98	Annulated sea snake *(H.cynocinctus)*
99	Common small-headed sea snake *(H. gracilis)*
100	Persian Gulf sea snake* *(H.lapemoides)*
101	Bombay sea snake *(H.mamillaris)*
102	Yellow sea snake *(H. spiralis)*
103	Short sea snake *(Lapemis curtus)*
104	Pelagic sea snake *(Pelamis platurus)*

Sl.No.	Family/Common name/species/subspecies
	VIPERIDAE
105	Russell's viper *(Doboia r. russelli)*
106	Indian saw-scaled viper *(Echis carinatus)*
107	Bamboo pit viper *(Trimeresurus gramineus)*

* Record needs to be conformed for its presence in Gujarat.

SURVEY OF HERPETOFAUNA OF KELA DEVI WILDLIFE SANCTUARY, MACHIYA SAFARI PARK AND BARDOD CLOSED AREA, RAJASTHAN

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This paper deals with the herpetofauna of three important sites in Rajasthan State namely, Kela Devi Wildlife Sanctuary, which is situated in Karauli district, Machiya safari Park, which is on the outskirts of Jodhpur city, amidst the Thar desert, and Bardod Closed Area, which is confined to Behror tehsil of Alwar district. Short descriptions of these sites are given below:

Kela Devi Wildlife Sanctuary

It adjoins the famous tigerland of Ranthambhore. Situated between 26° 2′ N & 26° 21′ N Latitude and 76° 37′ E & 77°13′ E Longitude, its area is about 674 sqkm. It has Vindhyan rock formation, clad with dry deciduous forests. *Anogeissus pendula* is the dominant species. A vast tract of the Chambal, a perennial river, marks its eastern boundry. The Chambal tract is full of ravines. Three surveys of the sanctuary and adjoining areas were conducted from 1983 to 2000 to list the herpetofauna. Many localities like Mandrael, Kaser, Baler, Kela Devi, Chambal River etc. were surveyed with the help of local forest officers and members of the Eco-development Committees (EDCs).

Machiya Safari Park, Jodhpur

It is a small protected forest block of 650 ha only. The famous Machiya Fort is atop one of the small hills, in this block. A large waterbody, the Kailana Lake, is within the park and it bisects the park into two unequal parts. Two small waterbodies namely, Takhta Sagar and Akheraj-ji-ka-Talab lie towards the south of the main lake. Actually, these small waterbodies are extensions of Kailala lake. Machiya is a rocky land, having shallow soil and stunted trees and bushes. Dry scrub forests, dominated by *Acacia senegal* and *Euphorbia caducifolia* are present all over the rocky terrain. An off-shoot of the Indira Gandhi Nahar, called Haathi Canal, feeds water to Kailana, making it a perennial water source. Heavy growth of *Prosopis juliflora* is present in most parts of the park. Three surveys were conducted in Machiya from 1998 to 2000.

Bardod Closed Area

It covers 23.60 ha. This green patch of forest lies between Bardod and Behror town on plain land. An ancient, beautiful palace built by a former Maharaja of Alwar State is located in the middle. *Prosopis juliflora* now dominates here but once it was dominated by *Prosopis cineraria, Acacia nilotica, Capparis decidua, C. sepiaria* etc.

During 1981, I was posted as Officer-in-charge of Berdod-Behror shelterbelt plantation, and I had the opportunity to study this area. I have visited this small closed area many times during subsequent years also, specially for survey of birds. Few scientific studies have been made so far to list the herpetofauna of these three places. Sharma (2000 a, b) has made some efforts to fill this gap.

Results

Results of the surveys are presented below in Table-1.

Table-1. Results of surveys

No.	Taxa	Species recorded with name					
		Kela Devi W.S		Machiya S.P		Bardod C.A.	
		Status	Local name	Status	Local name	Status	Local name
	AMPHIBIANS						
1	**Indian Bull frog** *(Hoplobatrachus tigerinus)*	+	.	+	.	+	Bhuj
2	**Cricket frog** *(Limnonectes limnocharis)*	+	.	++	.	-	.
3	**Skipping frog** *(Euphlyctis cyanophylctis)*	+++	.	++	.	++	.
4	**Burrowing frog** *(Tomopterna breviceps)*	++	.	-	.	-	.
5	**Indian Balloon frog** *(Uperodon systoma)*	-	.	-	.	+	.
6	**Common Indian toad** *(Bufo melanostictus)*	+	.	-	.	-	.
7	**Marbled toad** *(Bufo stomaticus)*	+	.	-	.	-	.
	REPTILES						
1	**Gharial** *(Gavialis gangeticus)*	+	Tumrail	-	.	-	.
2	**Maggar** *(Crocodylus palustris)*	+	Mangor	-	.	-	.

No.	Taxa	Species recorded with name					
		Kela Devi W.S		Machiya S.P		Bardod C.A.	
		Status	Local name	Status	Local name	Status	Local name
3	**Indian mud turtle** *(Lissemys punctata)*	+	Kachhua	-	.	+	Kachhua
4	**Keeled rock gecko** *(Cyrtodactylus scaber)*	++	.	-	.	-	.
5	**Northen house gecko** *(Hemidactylus flaviviridis)*	+++	Chhipkali	+	Gilari	++	Chhipkali
6	**Common garden lizard** *(Calotes versicolor)*	+++	Girgit	++	Kilda	+++	Kilkant
7	**Fan-throated lizard** *(Sitana ponticeriana)*	+	.	-	.	-	.
8	**Spiny-tailed lizard** *(Uromastyx hardwickii)*	-	.	-	.	+	Sanda
9	**Common skink** *(Mabuya carinata)*	+	.	-	.	+	.
10	**Snake skink** *(Riopa punctata)*	+	.	+	Samp-ki-Mausi	+	Samp-ki-Bamni
11	**Longtailed desert lacerta** *(Eremias gattulata)*	-	.	+	Dudha Gilari	-	.
12	**Common Indian moniter** *(Varanus bengalensis)*	+	Goh	+	Goh	+	Gohra, Pata-goh
13	**Python** *(Python molurus)*	+	Ajgar	-	.	-	.
14	**John's earth boa** *(Eryx johnii)*	+	Sawad, Chaklond	+	Dhumuhi	+	Dumuhi
15	**Russell's earth boa** *(Eryx conicus)*	+	.	-	.	-	.

No.	Taxa	Species recorded with name					
		Kela Devi W.S		Machiya S.P		Bardod C.A.	
		Status	Local name	Status	Local name	Status	Local name
16	**Checkered keelback** (*Xenochrophis piscator*)	+	Pani-ki-Samp	-	.	+	Paneta
17	**Common wolf snake** (*Lycodon aulicus*)	-	.	-	.	+	.
18	**Glossy-bellied racer** (*Argyrogena ventrimaculata*)	-	.	+	.	-	.
19	**Royal snake** (*Spalerosophis diadema* var. *diadema)*	-	.	-	.	+	Ghoda-pachhad
20	**Rat snake** (*Ptyas mucosus*)	+	Gurha	+	Dhaman	+	Dhaman
21	**Cat snake** (*Boiga trigonata*)	-	.	-	.	+	.
22	**Indian cobra** (*Naja naja*)	+	Kala samp	+	Kala Samp	+	Kala samp
23	**Saw-scaled viper** (*Echis carinatus*)	+	.	++	Perd, Bandi	+	.
	Total species recorded	23		13		18	

+=Present; ++=Less comon; +++= Very common; -= Absent/not observed during study

Kela Devi Sanctuary has 23 species of amphibians and reptiles. *Gavialis gangeticus* and *Crocodylus palustris* are present in the Chambal river. *Gavialis gangeticus* can be seen in the adjoining riverine Gharial Sanctuary at Ghota Ghat, Kodai village, Ood village, Rahu Ghat (Rohu Ghat) etc. A big population of a riverine mammal, the smooth-coated otter (*Lutra perspicillata*) is also found at Rohu Ghat (M.L.Meena, Conservator of Forests, pers. comm.). *Cyrtodactylus scaber* is quite common on the foothill rocks of Mandrael fort. A good population of this species can be seen on the rocks behind the office of the Wildlife Ranger. Many *Sitana ponticeriana* were seen at the western end of Mandrael fort. On September 19, 2000, many young ones of this species were seen in moulting stage. Since chambal is a perennial river, many species of riverine turtles are also present here but due to paucity of facilities, I could not locate and watch them. A skink, looking like the snake skink, captured near the village Karer, had yellowish tail instead of red.

Many small anicuts and ponds/puddles are present inside of Machiya Safari Park. Dense growth of *Eleocharis atropurpurea* (a sedge of family *cyperaceae*) and *Marsilea oegyptiaca* (a fern) can be seen in anicuts and ponds during the rainy season. 'Swarms' of *Limnonectes limnocharis* can be seen in the lush green growth of *E.atropurpurea. Euphlyctis cyanophlyctis* is common in Kailana, Takhta Sagar and Akheraj-ji-ka-Talab. Since depth of soil and growth of sedges is slightly better near anicuts more number of *L. limnocharis* are found there than in small puddles. Perhaps soil in the anicuts fulfill their hibernation requirement better than puddles.

Bardod Closed Area has a small population of the spiny-tailed lizard. A small colony was observed south of the palace. During the rainy season, royal snakes have been found as road kills adjacent to Bardod Closed Area.

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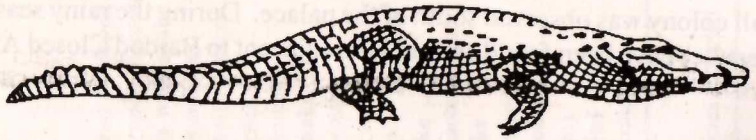
References

Sharma, S.K. (2000a). A preliminary survey of biodiversity of Machiya safari Park, Jodhpur (Rajasthan). Wildlife Wing, Dept. of Forests, Rajasthan.

Sharma, S.K. (2000b). A preliminary survey of biodiversity of Kela Devi Wildlife Sanctuary, Karauli district(Rajasthan). Wildlife Wing, Dept. of Forests, Rajasthan.



OBSERVATIONS ON SNAKES IN THE SUBURBS OF CHENNAI

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My first encounter with a snake during my school days was when Nanganallur was a slowly developing countryside. A friend of mine and I were watching large pied wagtails (*Motacilla maderaspatensis)* foraging for insects in an open ground when a large snake appeared. The birds got excited and started pecking the snake. The snake later entered a burrow. The snake was identified as a rat snake (*Ptyas mucosus)* from a picture in a poster in the Chennai Snake Park. Over the years, Nanganallur had changed from a rural countryside to a large residential area. Man and snake encounters, became inevitable resulting in the death of several snakes. We are silent spectators to the massacre that was happening around us. There is an urgent need for protecting snake habitats on the outskirts of Chennai that are being endangered by urbanisation.

Observation

Observations were made in representative habitats in four localities in the outskirts of Chennai to determine the snake populations that will be endangered by urbanisation. Observations were made in the evenings after the monsoon rains in November, 2000. The places studied were Perungalathur, Mudichur, Manimangalam and Kovilapakkam. These areas have similar topography. The topography consisted of lakes surrounded by paddy fields. Water is available from the wells and the lake. The level of water in the wells is maintained at a constant level by the nearby lakes. The various representative habitats that were observed were

1. Periphery of lakes
2. Vegetation on the bunds of lakes
3. Paddy fields
4. Wells
5. Vegetation around the wells and
6. Water on the side of the roads.

The olive keelback *(Atretium schistosum)* was the only snake found in the periphery of lakes. The other water snake that was common was the checkered keelback *(Xenochrophis piscator)* which was often seen basking on the footsteps of wells. Striped keelback (*Amphiesma stolata)* is normally seen hunting for prey late in the evening. Rat snake *(Ptyas mucosus)* is frequently seen in the vegetation at the center of the fields.

Unlike the rat snake, the Indian cobra (*Naja naja)*, the saw-scaled viper *(Echis carinatus)*, the Russell's viper *(Daboia russelli)* and the common krait *(Bungaraus caeruleus)* are not only venomous snakes but are seldom seen during the day since they are nocturnal. The Indian cobra could be seen on its burrow in the various habitats. The saw-scaled viper and the Russell's viper could not be seen on any of the visits. There were two sightings of the common krait in the study area. One was in a burrow in Perungalathur and the other was near a well in Manimangalam. Both these sightings are indicators of an ecosystem rich in biodiversity and hence the need to protect such habitats. Some non-venomous snakes like the common sand boa (*Eryx conicus)*, banded kukri *(Oligodon arnensis)* and the vine snake *(Ahaetulla nasutus)* were observed to have specific habitat prferences. Young ones of vine snake and cobra were seen after the monsoon rains. There was only one sighting of the bronze back tree snake *(Dendrelaphis tristis)*.

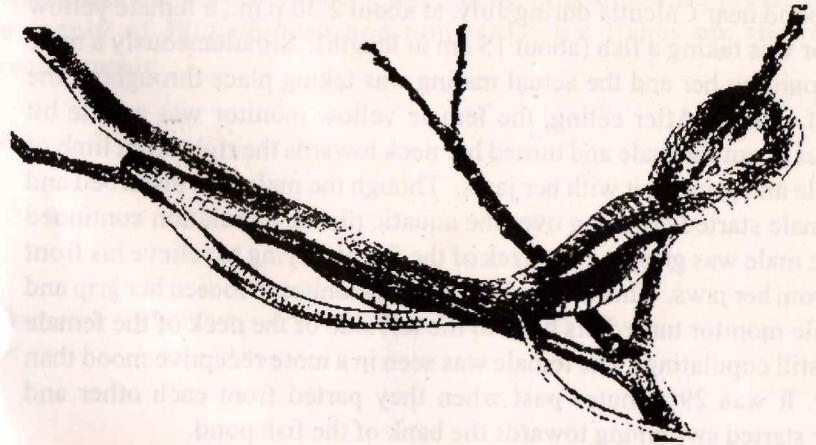
Conclusion

Urbanisation leads to the slow but steady transformation of a rural countryside into an urban locale. Urbanisation could be seen all places in

the study area. Habitats that were once paddy fields are marked for construction of houses. The snakes that are present there will be forced to encounter humans. This will result in the extinction of local population of snakes similar to what was seen in Nanganallur ten years back. There is no immediate solution to this problem since the root cause of this lies in the attitude of the society. Unless there is a change in the priorities of the society there will always be a conflict between development and nature. Real estate development does not happen in the entire place but only in selective areas. The remaining areas could be protected from real estate development by careful monitoring. Traditional communities should be made to play an active role in the conservation of the agro-ecosystem.

Acknowledgements

I would like to thank the staff of the Chennai Snake Park for their valuable guidance. My sincere thanks to the villagers of the study area for their co-operation.



CAPTIVE BREEDING OF YELLOW MONITOR LIZARD *(VARANUS FLAVESCENS)*

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Calcutta – 700 029

Prior to the Wildlife Protection Act 1972, in West Bengal, yellow monitor lizards were collected for skinning and export during the breeding season only, that is in the month of June and July and also in the month of August by local lizard hunters. This resulted in the species being brought under the endangered species list. In the said months this diurnal lizard is always out of its burrow and moves in wet areas. It is found most of the times within the aquatic plants where it breeds and feeds throughout the day. It is here that it gets hunted.

Yellow monitors are very fond of fish and they are greedy too. In a fish pond near Calcutta during July, at about 2.30 p.m., a female yellow monitor was taking a fish (about 15 cm in length). Simultaneously a male was mounting her and the actual mating was taking place throughout the time of eating. After eating, the female yellow monitor was a little bit cautious about the male and turned her neck towards the right front limb of the male and gripped it with her jaws. Though the male was disturbed and the female started crawling over the aquatic plants, copulation continued and the male was gripping the neck of the female trying to relieve his front limb from her jaws. This induced the female monitor to loosen her grip and the male monitor turned his head to the left side of the neck of the female while still copulating. The female was seen in a more receptive mood than before. It was 29 minutes past when they parted from each other and slowly started swimming towards the bank of the fish pond.

It is observed during the breeding season that the yellow monitors like to move in fish pond and wet areas which get dried up during the summer. The rainwater gets stored in the lowlands from the month of June and molluscans, mainly the *Pila globosa* come out from the crab holes and move about everywhere. Some live-bearing fishes then move with their young and catfishes also come out of their holes and start breeding in the same water. During the mating season, the yellow monitors take a large number of *Pila*.

Following these observations, during the breeding season in captivity *Pila globosa,* non-scaly fishes and skipper frogs were given to the yellow monitors in the Calcutta Snake Park. Some aquatic plants on which they are observed in the breeding season were also introduced in the artificial tanks. This is the 4th year the yellow monitor lizards are breeding very successfully in the Calcutta Snake Park, P.O. Badu, District, 24-Pgs(N), West Bengal, India. Most probably this is the only zoo in India that is successfully breeding yellow monitor lizards.

For captive breeding of yellow monitors keeping them in an enclosure with shade and adequate water supply along with some aquatic plants and a supply of *Pila globosa* and non-scaly live fishes are the basic requirements.

RANDOM HARVEST

Python dung has its uses

The Parks and Wildlife Service, Australia, is hoping to keep flying foxes away from lychee crops by using foul-smelling substances such as python dung. Trials are aimed at protecting the crops without harming the bats.

(Source : *Hindu Business Line,* (1st Oct 2001))

A £1 million love nest

Romeo and Juliet, a pair of green sea turtles washed ashore on the Cornish coast, thousands of miles off course, five years ago, are spending their time in the Bournemouth Oceanarium. They are not complaining but their keepers are. The rare turtles have not mated all these years. So the Oceanarium has refurbished the nearby beach with swaying palm trees and everything else to make it look like a tropical island, the natural habitat of the green sea turtles in the hope that this will provide the necessary stimulus. The cost? £1 million!

(Source : *Hindu Business Line,* 11Jan, 2002)

Snakes make the best pets

"You don't have to walk a snake three times a day
You don't have to clean a litter box each day
If you forget to feed your snake one day, it probably won't matter.
They shed all in one piece, so they don't cause allergy problems.
They're generally inexpensive.
They don't bark or meow, or generally make any noise at all.
They're happy in small confined areas.

You don't have to buy them a lot of expensive toys.
They don't get rabies.
You can go away for a while and your snake doesn't care.
They don't scratch your furniture or ruin your carpet.
They don't die on you frequently like fish."

(Courtesy : Paulette Cooper & Pinar Temelli & *www.thesnake.org*)

Who's the tiniest of them all ?

Books on lizards refer to the Caribbean dwarf gecko (*Sphaerodactylus elegans),* measuring 4 cm., as the smallest lizard in the world. Now a report has appeared in the *Hindu Business Line* of 4 Dec, 2001 on the discovery of a much smaller lizard in the Jaragua National Park in the Dominican Republic and on the Beata island off Hispaniola. It measures 1.6 cm.!

Why the female calls

In most frogs, only the males call during courtship, though both sexes may give release call, scream when threatened by a predator or call in defending a retreat. There are not many species of frogs that indulge in reciprocal calls, that is, the sexes alternating calls that seem to facilitate amplexus. But in recent times, many cases of female calling are being reported in species noted for silent females. Some of these may perhaps be explained by geographical variations in the calling behaviour of the same species.

Writing in *Froglog*, the Newsletter of the Declining Amphibian Population Task Force of Dec.2001, A.Stanley Rand raises the possibility that, in some species, the female calling may also be the result of a distortion of the hormone system by pollutant chemicals.

– B.Vijayaraghavan.

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AIMS AND OBJECTIVES OF

CHENNAI SNAKE PARK TRUST

i) To maintain and display a captive collection of snakes and other reptiles as a means of education of the public.

ii) To undertake captive breeding of vulnerable species of snakes and other reptiles.

iii) To promote knowledge on snakes, and other reptiles and amphibians and dispel the erroneous beliefs about them.

iv) To aid and assist research on reptiles and amphibians.

v) To provide facilities for the identification and classification of snakes and other reptiles and amphibians and, for this purpose, maintain a museum of study collections.

vi) To maintain a library of books and other literature on reptiles and amphibians.

vii) To publish scientific and semi- scientific literature on snakes and other reptiles and amphibians.

viii) To undertake survey on the distribution and status of snakes and other reptiles and amphibians.

ix) To provide consultancy services on snakes and other reptiles.

x) To provide a common forum for interaction among amateur scientists and friends of reptiles and amphibians.