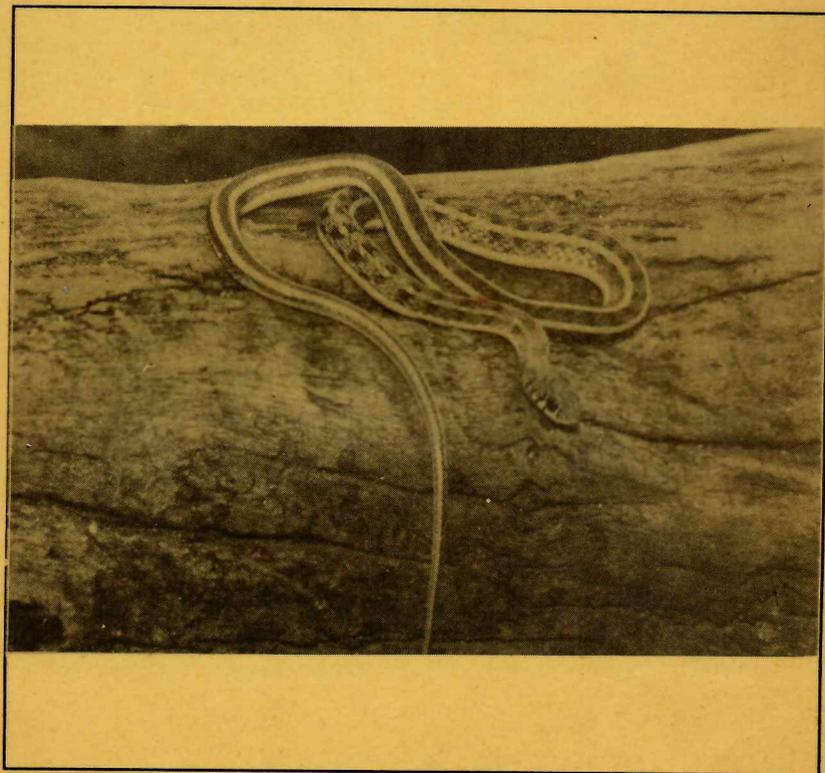


Cobra

Volume 18

Oct-Dec '94



Quarterly Newsletter of the Madras Snake Park Trust

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COVER

Striped Keelback (*Amphiesma stolata*)

The striped keelback is one of the India's most widespread and common snakes. This gentle snake which grows to less than 1.5 ft. in length is non poisonous. It is closely related to the common water snake or checkered keelback (*Xenochropis piscator*).

Photo: V.S. Raghavan.

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"The snake with its many unique and, in some ways, contradictory attributes has been worshipped, feared, puzzled over, hated, loved, exploited, exterminated, studied and even petted. It has been used in magic, witchcraft, religion, medicine, war, torture, sport, science, commerce and entertainment. On the one hand, it has been a symbol of procreation, health, longevity, immortality and wisdom; on the other, it has represented death, disease, sin, lechery, duplicity, and temptation. It is a paradox... Mankind has seldom ignored it"

- Ramona & Desmond Morris
(in *Men and Snakes*)

HERPETOFAUNAL ASSEMBLAGE IN MAYILADUTHURAI AREA
A CONSERVATION APPROACH

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V. Kalinjaray
Madras Snake Park Trust, Madras 600 022

Introduction

EDITORIAL

Cobra publishes full length articles and short notes 'jottings' on reptiles and amphibians on a quarterly basis. We solicit articles and short notes on the ecology, biology, natural history, conservation and other aspects relating to reptiles and amphibians. These may be of scientific or popular interest. Black and white photographs are also welcome. Contributions may be sent to the Editor, COBRA, Madras Snake Park Trust, Raj Bhavan Post, Madras 600 022.

- Editor

Even though the role of herpetofauna in the ecosystem is realized, little work has been done on this field. Studies have been done on taxonomy, morphology, biogeography and other aspects of the group (Mishra, 1977; Murthy, 1987; Inger and Das, 1988; Mohanty et al., 1990; Murthy 1990; Prasad et al. 1991; Malhotra et al., 1991; and Das, 1992 and 1994; Mishra and Das, 1993; Sundaresan and Das, 1994). But a comprehensive conservation strategy has been recommended for this group of animals.

The snake with its many unique and in some ways contradictory attributes has been worshipped, feared, parried over, hated, loved, exploited, exterminated, studied and even petted. It has been used in magic, witchcraft, religion, medicine, war, torture, sport, science, commerce and entertainment. On the one hand it has been a symbol of protection, health, longevity, immortality and wisdom on the other, it has represented death, disease, sin, jealousy, duplicity, and temptation. It is a paradox. Man has seldom ignored it.

- Patricia S. Deshpande
(in Man and Snake)

**1. HERPETOFAUNAL ASSEMBLAGE IN MAYILADUTHURAI AREA:
A CONSERVATION APPROACH**

**P. Kannan, C. Sankaravadivelu
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**V. Kalaiarasan,
Madras Snake Park Trust, Madras 600 022.**

Introduction

Reptiles and amphibians are distributed in a wide variety of habitats ranging from rain forest to desert and found in almost all niches from rock crevices to under tree bark. Some of them are endemic to a particular habitat while others are very common, found throughout the country.

Amphibians and reptiles render incalculable service to agriculture. Insects and rodents do great damage to standing crops. The majority of frogs and lizards feed on insects and some snakes mostly feed on rodents. Further, snakes may prove to be valuable indicator species in agricultural ecosystems.

Even though the role of herpetofauna in the ecosystem is realised, there is not much scientific work done on this line. Earlier Studies have dealt with taxonomy, morphology, breeding biology and some aspects of ecology (Murthy, 1977, Murthy, 1985, Inger and Dutta, 1986, Mohanty Hejmadi, 1990, Murthy 1990, Prasad and Jayanthi, 1991; Malhotra *et. al.*, 1991 and Daniels, 1992 and 1994, Mahanta and Dash 1993, Sundaresan and Daniels 1994. But no comprehensive conservation strategy has been recommended for this group of animals.

Since these are sedentary in nature they may be affected by pesticidal, industrial and other pollutants. This group of animals also declines in numbers because of habitat shrinkage and habitat destruction, especially in areas like Nagai Quaid-e-Milleth district in Tamil Nadu where the land has been converted into agricultural fields. These wetlands are fragile in nature and have also suffered a lot by indiscriminate use of fertilizers and pesticides. Aquaculture is coming up in a big way. Fresh water wetlands slowly becoming are saline. The impact on the herpetofauna due to the recent developments is to be studied.

The main objectives of this study are to :

- i. Develop a species list of amphibians and reptiles in Mayiladuthurai area, Nagai Quaid-e-Milleth district, Tamil Nadu.
- ii. Describe species association with vegetation.
- iii. Estimate species density of herpetofauna and
- iv. Estimate the species diversity.

Study Area:

The study area Mayiladuthurai is located at Nagai Quaid-e-Milleth District, Tamil Nadu. The approximate geographical location is 11° 18'N 80° 50'E. This area enjoys typical tropical coastal climates. In this area four different study sites have been selected viz., Mannampandal, Maraiyur, Mappadugai and Aklur for systematic study.

Methodology:

In each study sites three 500m x 20m strip transects were laid in paddy field, fallow land and human habitation. Systematic data (including species identity and number of individuals of each species) on amphibians and reptiles were collected from Jan.'94 to March '94. Samplings have been done once in a week between 9.00 a.m. and 12.00 noon. The amphibians were identified by using the key of Daniel (1963). The reptilian species were identified using keys of Smith (1931, 1935 and 1943) and classification followed is that of Murthy (1985)b.

Data Analysis:

The raw data from four localities were pooled together for statistical analysis. The month wise data are also pooled together and considered as data of post monsoon season.

Herpetofaunal density was estimated by using the formula

$$\text{Relative density} = \frac{\text{No. of individuals of a species}}{\text{Total No. of individuals of all species}} \times 100$$

Species diversity by means of richness was estimated as number of species encountered during the study period and also measured by Shannon Wiener Index.

$$H' = -\sum_{i=1}^s p_i \ln p_i$$

Where, the p_i = proportion of 'i'th species in sample. Similarity between species composition was measured by Sorenson's Index.

$$C = \frac{2C}{a+b}$$

Where
 a = Number of species in sample a
 b = Number of species in sample b
 c = Number of common species in the samples a and b.

Results:

During the study period 27 species of amphibians and reptiles were recorded of which seven species are amphibians (Bufonidae, Ranidae and Rhacophoridae) eight species are lizards (Gekkonidae, Agamidae, Chamaeleonidae, Varanidae and Sincidae) and eleven species are snakes (Typhlopidae, Boidae, Natricidae, Colubridae and Elapidae) and only one species of turtle (Emydidae) (Table - 1).

Ten to sixteen, species of trees were recorded in human habitation whereas it was one to seven in fallow land, in paddy field it was five to eleven. Plant diversity measured by Shannon Wiener Index gives the highest value of 2.565 to human habitation and the lowest value of 0.481 was obtained from paddy field and in fallow land it was 0.409 (Table-2).

Table 3 shows the relative density of herpetofauna. *Rana crassa* has the highest density of all the amphibian fauna and also in

all three habitats. The minimum relative density of *Rana hexadactyla* was recorded in the paddy field. In the case of lizards the maximum relative density of *Calotes versicolor* was recorded in fallow land. The minimum relative density of *Varanus bengalensis* was recorded in human habitation. Similarly *Xenochropis piscator* shows the highest relative density of snakes in all three habitats. The minimum relative density of *Dendrelaps tristis* was recorded in paddy field.

There is not much difference in herpetofaunal richness but Shannon-Wiener Index shows much variations. It ranges from 1.466 - 2.520 (Table 2).

Regarding the similarity between species composition of herpetofauna in four different localities, the highest was between Mappadugai and Aklur (0.93) followed by that of Mannampandai and Maraiyur. The minimum value of 0.75 was obtained between Mannampandal and Aklur. (Table 4).

Similarity index among the three habitats shows the highest between fallow land and human habitation (0.76), whereas human habitation and paddy field show the lowest (0.58), (Table 5).

Discussion:

Twenty seven species of reptiles were recorded during the study period of the total individuals. 4060 were amphibians 865 lizards, 206 snakes and 10 turtles.

The results indicate that amphibian density in the paddy field was higher than in the other two habitats. The general tendency shows that reptilian density is much lower than amphibian density in all three habitats. Analysis of species diversity and similarity provide valuable quantitative information for different habitats. The species richness and diversity depend largely on the structural diversity of habitats. The availability of more water bodies due to recent monsoon during January could be the reason for more species.

The plant species richness and diversity are greater in human habitation. There are also various niches. So the human habitation may support more species than the other two habitats.

During the study period a number of dead specimens were counted. A higher mortality of *Rana cyanophlyctis*, *R. limnocharis*, *R. crassa* and *R. breviceps* was found in paddy fields. The reason could be that these small frogs may be susceptible to pesticidal effect than the larger frogs like *Rana hexadactyla*. When compared with fallows and paddy field the number of dead species were more in human habitation.

Acknowledgement:

Authors are grateful to R. Kanakasabai Prof and Head, Department of Zoology for his encouragement. Prof. A. Rajmohan Principal, AVC College, provided an opportunity for this Research Work.

Table 1

A checklist of Amphibians and Reptiles in the study area.

Amphibians

Family : Bufonidae

1 : *Bufo melanostictus* *

Family : Microhylidae

2 : *Microhyla ornata*

Family : Ranidae

3 : *Rana crassa* *

4 : *R. cyanophlyctis* *

5 : *R. hexadactyla* *

6 : *R. limnocharis* *

7 : *R. tigrina*

8 : *R. breviceps* *

Family : Rhacophoridae

9 : *Polypedates maculatus* *

Reptiles

Lizards

Family : Gekkonidae

10 : *Hemidactylus brooki* *

11 : *H. leschenaulti*

12 : *H. frenatus* *

- Family : Agamidae
 13 : *Sitana ponticeriana* *
- 14 : *Calotes versicolor* *
- 15 : *Calotes calotes* *
- Family : Chamelenoidae
 16 : *Chameleon zeylanicus* *
- Family : Scincidae
 17 : *Mabuya carinata* *
- 18 : *M. trivittata*
- 19 : *Riopa punctata* *
- Family : Varanidae
 20 : *Varanus bengalensis* *
- Snakes
- Family : Typhlopidae
 21 : *Rhamphotyphlops braminus* *
- Family : Boidae
 22 : *Eryx conicus* *
- 23 : *Eryx johnii* *
- Family : Dipsadidae
 24 : *Lycodon aulicus* *
- 25 : *Oligodon arnensis*

- Family : Natricidae
 26 : *Amphiesma stolata* *
- 27 : *Xenochroptis piscator* *
- 28 : *Atretium schistosum* *

- Family : Colubridae
 29 : *Elaphe helena*
- 30 : *Ptyas mucosus* *
- 31 : *Dendrelaphis tristis* *
- 32 : *Ahaetulla nasuta* *
- 33 : *Boiga trigonata* *

- Family : Elapidae
 34 : *Bungarus caeruleus* *
- 35 : *Naja naja* *

Turtles

- Family : Testudinidae
 38 : *Geochelone elegans*

- Family : Trionychidae
 39 : *Trionyx leithi*
- 40 : *Lissemys punctata*

- Family : Emydidae
 41 : *Melanochelys trifuga* *

1. Checklist prepared from Smith's Fauna of British India (1939-1943).
 * Recorded during the survey.

TABLE 2

RELATIVE DENSITY OF HERPETOFAUNA IN THREE
DIFFERENT HABITATS/HECTARE

SL No.	Species Name	Paddy Field	Fallow habitation	Human habitation
1.	<i>Bufo melanostictus</i>	1.26	1.03	3.5
2.	<i>Rana cyanophlyctis</i>	20.52	26.54	24.65
3.	<i>R. hexadactyla</i>	0.14	2.53	1.88
4.	<i>R. limnocharis</i>	16.49	11.91	15.34
5.	<i>R. crassa</i>	35.14	29.26	26.02
6.	<i>R. breviceps</i>	8.43	7.59	0.99
7.	<i>Polypedates maculatus</i>	2.76	3.00	0.78
8.	<i>H. brooki</i>	0.32	-	5.75
9.	<i>H. frenatus</i>	0.14	-	2.87
10.	<i>Sitana ponticeriana</i>	1.45	5.62	2.46
11.	<i>Calotes versicolor</i>	6.56	8.72	8.42
12.	<i>Calotes calotes</i>	0.14	-	0.89
13.	<i>Mabuya carinata</i>	2.01	0.93	2.19
14.	<i>R. punctata</i>	10.18	0.18	0.41
15.	<i>Varanus bengalensis</i>	-	0.37	0.05
16.	<i>Eryx conicus</i>	0.14	-	-
17.	<i>E. johnii</i>	0.09	-	-
18.	<i>Ramphotyphlops braminus</i>	0.19	0.09	-
19.	<i>Amphlesma stolata</i>	0.64	0.46	0.47

SL No.	Species Name	Paddy Field	Fallow habitation	Human habitation
20.	<i>Xenochroptis piscator</i>	1.68	1.21	1.41
21.	<i>Atretium schistosum</i>	0.92	0.93	0.83
22.	<i>Ptyas mucosus</i>	0.14	-	0.1
23.	<i>Dendrolepis tristis</i>	0.04	-	0.15
24.	<i>Ahaetulla nasuta</i>	0.32	-	0.15
25.	<i>Bungarus caeruleus</i>	0.09	-	-
26.	<i>Naja naja</i>	0.6	0.28	0.36
27.	<i>Melanocheilus trijuga</i>	0.09	0.28	0.2

TABLE 3.
SPECIES RICHNESS AND DIVERSITY OF PLANTS AND HERPETOFAUNA IN
FOUR DIFFERENT LOCALITIES

Sl. No.	Habitat	Mannampandal		Maraiyur		Mappadugai		Aklur		All (pooled)	
		Plants	Herpeto fauna	Plants	Herpeto fauna	Plants	Herpeto fauna	Plants	Herpeto fauna	Plants	Herpeto fauna
1.	Species richness	5	18	9	18	11	18	5	17	11	25
Paddy Field	Species diversity	0.481	1.874	1.534	2.001	1.992	1.916	1.583	1.825	1.871	1.867
2.	Species richness	1	13	2	15	7	15	4	6	8	18
Fallow land	Species diversity	0	1.772	0.409	2.154	1.342	1.894	1.277	1.466	1.453	1.995
3.	Species richness	14	16	10	18	16	18	12	13	15	23
Human Habitation	Species diversity	2.035	2.086	2.147	2.855	2.565	2.318	2.198	2.520	2.212	2.044

TABLE 4.

SIMILARITY IN SPECIES COMPOSITION OF HERPETOFAUNA
IN FOUR DIFFERENT LOCALITIES

Sl. No.	Locality	Mannam pandal	Maraiyur	Mappadugai	Aklur
1.	Mannampandal	-	0.9	0.79	0.75
2.	Maraiyur	-	-	0.89	0.81
3.	Mappadugai	-	-	-	0.93
4.	Aklur	-	-	-	-

TABLE 5.

SIMILARITY IN SPECIES COMPOSITION OF HERPETOFAUNA IN
THREE DIFFERENT HABITATS

Sl. No.	Habitats	Paddy field	Fallow land	Human Habitation
1.	Paddy field	-	0.71	0.58
2.	Fallow land	-	-	0.76
3.	Human Habitation	-	-	-

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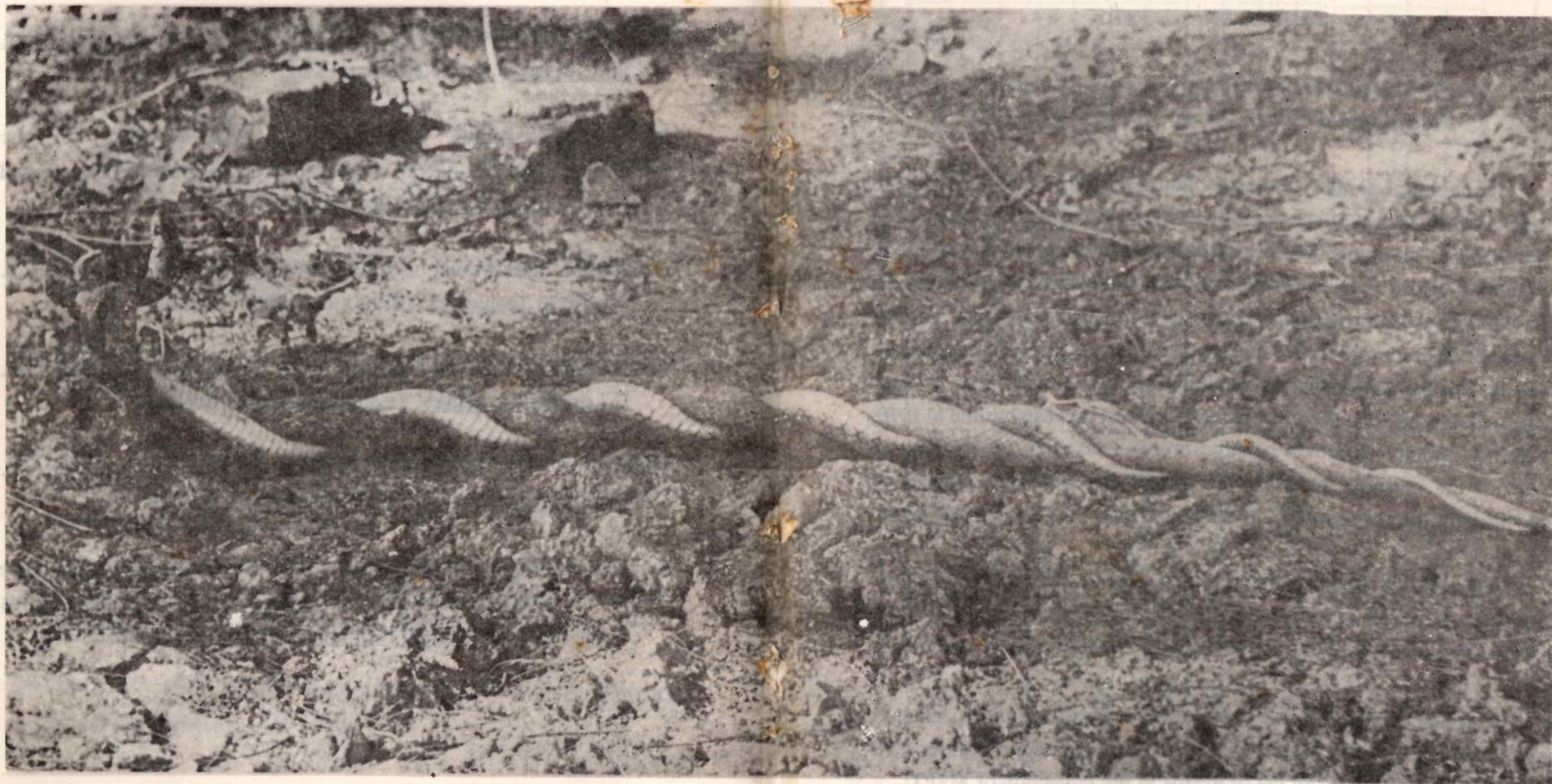
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RAT SNAKES ENTWINED
(See Note at P.No. 20)

Photo by C.P. Sudhir Nath
(Courtesy: Indian Express)

2. A CATALOGUE OF HERPETOLOGICAL SPECIMENS IN THE MADRAS SNAKE PARK

V. Kalaiarasan, R. Rajarathinam and R. Aengals
Madras Snake Park Trust, Madras - 600 023.

Taxonomical studies of herpetofauna in India date back to the 1800s. More than 600 species of amphibians and reptiles have been described in literature. Smith (1931-1943) has compiled the series of Fauna of British India including Pakistan, Bangladesh, Burma and Sri Lanka, with available museum specimens in the British museum. Various research institutions like the Zoological Survey of India, have collected several species of reptiles and amphibians and stored them in their regional stations. The Madras Snake Park Trust was established in 1970, with the primary objectives of education and research on reptiles. As part of the research activities, the MSPT has collected number of specimens from various parts of the country over a period of 20 years.

However, till recently, the collection was not properly catalogued. Some of the specimens were not identified and labelled with detailed information such as locality, date of collection and person who collected.

Currently, all the available specimens have been identified, labelled and catalogued. We intend to publish the entire catalogue in parts. The first part that follows is the list of lizards in the collection of MSPT.

Sl. No.	Family	Genus	Species	Collection No.	Date of Collection	Collection locality	No. of Examples
1.	Gekkonidae	Hemidactylus	leschenaulti	MSPT/L-13	2.11.1990	Narmada valley	10
2.		Hemidactylus	frenatus	MSPT/L-14			9
3.		Hemidactylus	brooki	MSPT/L-15	8.11.1990	Narmada valley	20
4.		Hemidactylus	triedrus	MSPT/L-16	24.10.1990	Narmada valley	4
5.		Hemidactylus	maculatus	MSPT/L-17			10
6.		Hemidactylus	reticulatus	MSPT/L-18			2
7.		Hemidactylus	giganteus	MSPT/L-19			2
8.		Hemidactylus	sp.	MSPT/L-20			3
9.		Oemaspis	wynadenis	MSPT/L-21			3
10.		Oemaspis	indica	MSPT/L-22			9
11.		Gekko	gekko	MSPT/L-23			6
12.		Gekko	gekko	MSPT/L-24			1
13.		Phelsuma	andamanense	MSPT/L-25			1
14.	Agamidae	Calotes	versicolor	MSPT/L-2	4.11.1990	Narmada valley	9

Sl. No.	Family	Genus	Species	Collection No.	Date of Collection	Collection locality	No. of Examples
15.		Calotes	nemoricola	MSPT/L-3			2
16.		Calotes	elliotti	MSPT/L-4			2
17.		Calotes	rouxi	MSPT/L-5			11
18.		Calotes	grandisquamis	MSPT/L-6			5
19.		Pseudomophis	dorsalis	MSPT/L-7	5.09.1990	Gingee hills	14
20.		Pseudomophis	blanfordianus	MSPT/L-8	2.11.1990	Narmada valley	13
21.		Agama	himalayana	MSPT/L-9			1
22.		Salea	anamaillayana	MSPT/L-10			3
23.		Uromastix	hardwickii	MSPT/L-11			7
24.		Draco	dussumieri	MSPT/L-12			1
25.	Chamaeleonidae	Chamaeleon	zeylanicus	MSPT/L-1		Hatched at MSPT	100
26.	Scincidae	Mabuza	sp.	MSPT/L-26			3
27.		Mabuza	sp.	MSPT/L-27			2
28.		Mabuza	sp.	MSPT/L-28			2

Sl. No.	Family	Genus	Species	Collection No.	Date of Collection	Collection locality	No. of Examples
29.		Mabuza	trivittata	MSPT/L-29			28
30.		Mabuza	sp.	MSPT/L-30			2
31.		Mabuza	sp.	MSPT/L-31			2
32.		Mabuza	beddomei	MSPT/L-31a.			2
33.		Mabuza	sp.	MSPT/L-32			3
34.		Mabuza	carinata	MSPT/L-33			25
35.		Mabuza	tyleri	MSPT/L-33a.			1
36.		Mabuza	macularia	MSPT/L-33b			1
37.		Riopa	punctata	MSPT/L-33c			1
38.		Sphenomorphus	dussumieri	MSPT/L-33d			1
39.	Varanidae	Varanus	bengalensis	MSPT/L-34			2
40.		Varanus	salvator	MSPT/L-35			3
41.		Varanus	flavescens	MSPT/L-35a			1
42.	Lacertidae	Ophisops	jerdoni	MSPT/L-36			2

3. SNAKES ENTWINED

The photograph on the centre-spread appeared in the Indian Express of the 11th March, 1995 and was taken by Express lensman C.P. Sudhir Nath on the previous day on the banks of the Cooum river in Madras City. The picture shows two rat snakes entwined tightly together from below the neck to the tail-end with the head and neck of both raised vertically above the ground. Reports of such sightings have appeared on the pages of the Journal of the Bombay Natural History Society off and on. The first report was from Humayan Abdulali which came in JBNHS 42:666. The snakes were, at first, taken to be mating, but, on dissection, they were found to be both males. In JBNHS 55(1) 173, K.R. Sethna reported a similar incident. The correspondent assumed the snakes were courting. In JBNHS 55 (2): 366, R.C. Morris reported seeing two rat snakes in a similar clinch. On being disturbed, they "went down a hole in a culvert wall just as a single snake would". While commenting on a similar sighting recorded by A.K. Bhattacharya and R.K. Bhatnagar in JBNHS 65 (2): 492, the Editors of JBNHS observed: "The exact significance of this behaviour known as 'combat dance' is not clear. It is thought that it may be due to sexual or territorial rivalry. This behaviour, though well known among some rattle snakes ... and an Australian elapid, has been recorded only for the rat snake among Indian snakes. (emphasis added). However, in JBNHS 68(2): 462, with reference to a photograph captioned 'male kraits in combat', Romulus Whitaker writes: "The male 'combat dance' is observed with this species (common krait) as with many others but in these rituals (thought to be associated with sexual behaviour) the contest is a harmless wrestling match. The krait here demonstrates an exception with its aggressive biting attacks. The snakes were separated with difficulty, neither suffered ill-effects".

It will be interesting to know in which species of Indian snakes, apart from the rat snake and the common krait, this behaviour occurs and its exact significance. We also do not have so far any step-by-step account of how the entwining starts and proceeds and how the unwinding proceeds and ends.

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4. INDETERMINATE TERMINOLOGY

We do not have a satisfactory terminology to describe a snake that has venom of sufficient potency to be fatal to humans and is also comparatively quick to bite humans. The expressions now used are inadequate one way or the other. Nor are they uniform.

The descriptions 'venomous' and 'non-venomous' or 'poisonous' and 'non-poisonous' are not quite correct since the saliva of even the so-called non-venomous snakes has some degree of poison. The poison gland itself is a modified salivary gland and the biological function of the poison is to kill or paralyse the prey and also, as in the case of saliva, to aid in digestion. The bite of the so-called non-venomous snakes can sometimes cause persistent pain, inflammation and other local discomfort even in humans.

The expressions 'dangerous' (or 'harmful') and 'harmless' are also vague. Sea snake venom is four to eight times more potent than cobra venom. But sea-snakes rarely bite men and confirmed cases of deaths from sea-snake bites are extremely rare. Are they then dangerous or harmless? The taipan of Australia (*Oxyuranus microlepidotus*) is often called the most dangerous snake in the world. It reaches a length of 13 ft, is very aggressive, biting repeatedly, and is credited with a death-rate of 100%. But, the smooth-scaled snake of Australia has venom four times as potent as that of the taipan. However, there is not a single record of its having bitten a human being. Now, how do we describe the smooth scaled snake - 'highly venomous', 'most dangerous' or 'harmless'? Similarly, to describe the python as 'harmless' looks very puzzling at least to the uninitiated.

In the circumstances of the case, it would be prudent to avoid such single-word descriptions of snakes especially as found in popular literature.

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5. INTERACTION BETWEEN MUGGER

(*Crocodylus palustris*)

AND WILD BOAR (*Sus scrofa*)

Mugger (*Crocodylus palustris*) is one of 15 reptiles recorded so far in Madhav National Park, Shivpuri (M.P.). Present note describes the interaction between mugger and wild boars (*Sus scrofa*) who forage in the bed-reeds of Sakhya Sagar Lake which is situated in the central part of the national park.

On 16 January 1995, I visited Sakhya Sagar to conduct midwinter waterfowl census. At about 11.30 am, I was standing on the point known as Landing Station No.7 on an elevated narrow land strip jutting into the lake. This place has muddy marshy shoreline. I was watching birds through 7 x 50 binoculars when I spotted two muggers. One was basking and the other was lying submerged near the bank. There was a sounder of wild boars in the bed-reeds behind these reptiles.

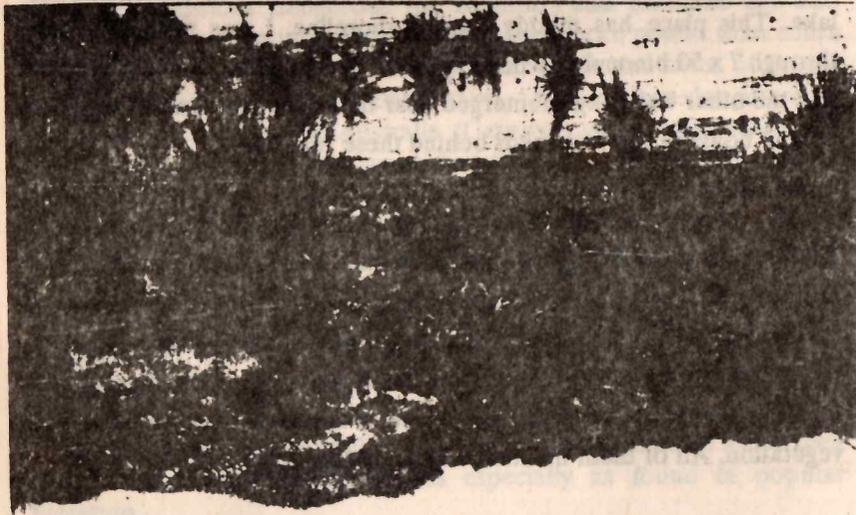
The muggers and the wild boars were showing neutral interaction - neither of them evincing any interest in the other's activities. Soon the mugger which was so far lying submerged tried to come on the bank, and finding the spot too steep to climb, swam a few metres and began to emerge on the edge of the water. Wild boars who were digging and foraging peacefully became alert. Some of them ran into the thicket of vegetation. All of them maintained a safe distance.

Three boars - two full grown adult and one young - became inquisitive and moved towards the emerging mugger which was a large

one, and seeing its face, both the adult boars scampered away. The young continued to stand at a distance of about 20 metres from the mugger. It put one leg forward and postured threateningly towards the mugger. The mugger had now emerged more than half its body. The young boar grunted four times and ran away.

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Rajiv Saxena



6. SECOND RECORD OF THE FROG

Kaloula pulchra GRAY
FROM GUJARAT STATE

On August 28, 1991 at 1700 hrs. a few frogs were seen under crevices of a Pipal tree (*Ficus religiosa*) at Kanjata Village of Bevagdh Bariya, Panch Mahal district.

After careful watch under torch light we observed that a some of the frogs were creepings deep into the crevices of the tree trunk. Due to the torch light, a few of them were disturbed and moved into the deep. We observed that three-four frogs had a red-crimson coloured patch on the body. We caught a few of them with the help of a long thin hooked stick after half an hour of painstaking labour. They were identified as *Kaloula pulchra*, *Bufo melanostictus* and *Rana tigerina*.

Description of *Kaloula pulchra*

Snoutshort, fingers slender with well developed disks at tips, toe tips swollen, back skin smooth with tubercles, body colour light grey with dark-grey and black colour spots, a red-crimson coloured broad, long irregular patch, running from upper of eye to lateral side of back upto joint of hind legs, on both the sides, the marks were distinct with dark black colour border, few crimson colour spots on hind legs, snout to vent length 4.8 cm.

The *Kaloula pulchra* species was first reported by Naik et al (1993) from Mal-Samot, Bharuch (South to River Narmada and a part of Satpura hills) and present report is from Kanjata, Panch Mahal (North to River Narmada and part of Vindhya hills). Thus Kanjata Village, District Panch Mahal has this second report of the species from Gujarat State.

REFERENCE,

Naik, Y.M., Vinod, K.R., and Patel, C., (1993); Record of the *Kaloula pulchra* Grey 1831 at Mal-Samot, Bharuch Dist., Gujarat State. *J. Bombay nat. Hist. Soc.* 90:299.

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7. MATERNAL CARE AMONG PYTHONS

Pythons are amongst the few reptiles in which maternal care has evolved. A female Burnese Python (*Python molurus bivittatus*) was observed at Jersey Wildlife Preservation Trust during March 1993, while it laied and incubated eggs in a box provided in the exhibit. The process of laying eggs took more than four hours. After laying approximately 52 leathery, oval, white eggs, the female gathered her coils and the eggs were completely surrounded and covered by her body. When the surrounding temperature dropped, she began making spasmodic muscular contractions. Herpetologists call these contractions "shivering". Shivering was observed at 30 contractions per minute, which seemed to consume a lot of her energy. However the incubating female python often would not leave her eggs to search for food. She remained with the clutch until it was removed from the exhibit. The female went away briefly to drink water on a few occasions. Water was sprayed on her body twice in a day. This water was licked by the python.

Pythons give maternal care only to their eggs. Once a clutch hatches the young are on their own and get no further attention from their mother.

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8. RANDOM HARVEST

i. Endangered / Threatened Species

As on March 1, 1995, out of 845 species of world animals listed as endangered, 79 are reptiles. Out of 153 species of world animals listed as threatened, 33 are reptiles. (Source: "Endangered Species", Technical Bulletin of the U.S. Department of Fish and Wildlife Service, Washington - March / April 1995).

ii. New journal on reptiles

The Amphibia and Reptile Research Organisation of Sri Lanka (ARROS) has commenced a new journal LYRIOCEPHALUS, dedicated to the taxonomy, ecology, conservation and other aspects of amphibians and reptiles of Sri Lanka. The first issue is dated Sept. 1994. Two issues a year are planned.

iii. Turtles as air cargo

The Humane Society of the United States (HSUS), a premier animal protection organisation, has filed a complaint with Delta Air Lines for their handling of a shipment of 2000 turtles on flight from New York to the Netherlands. The International Air Transport Association (IATA) has several regulations governing packaging of live animals during air transport. These cover material to be used for packing boxes, packing density, ventilation and labelling. These are alleged to have been violated in the case reported. In another similar case of transport of

puppies, Delta was fined \$ 140,000 by the U.S. Department of Agriculture for violation of the regulations. (Source: "HSUS News Release" - Feb. 7, 1995).

iv. Trade in turtles/tortoises in U.S

The Humane Society of the United States (HSUS) has, in Nov. 1994, published a preliminary report on 'Live Freshwater Turtle and Tortoise Trade in the U.S.'. According to U.S. Fish and Wildlife records, over the past five years, at least 25 million live turtles and tortoises have either been exported from or imported into the U.S. to meet the needs of the international pet trade. Most scientists and conservationists say the actual number is probably two to three times higher. Many of these animals die during transport or because of improper care at the hands of the pet keepers. The legally traded species of turtles and tortoises have come down from 80 in 1970 to 38 in 1994, mostly because of ban on trade in some of the species. (Source: "HSUS Preliminary Report: Live Freshwater Turtle and Tortoise Trade in the U.S.").

v. Captive breeding of reptiles in pet trade in U.S.

Captive breeding of snakes, lizards and turtles and tortoises to cater to the pet trade is becoming a big industry in the U.S. The increasing popularity of this is seen from the response to the National Reptile Breeders Expos in Orlando, Florida. Five years ago, the first Expo attracted barely 100 exhibitors. In 1994, there were 350 exhibitors and hundreds of potential exhibitors had to be turned away. Over a two-day period, 10,000 customers paid \$ 10 just to get in. Prices ranged up to \$ 1,000 for a baby Galapagos tortoise. (Source: Ibid).

vi. The Box Turtle in pet trade

The U.S. Fish and Wildlife Service has learnt that tens of thousands of North American box turtle (*Terrapene Spp.*) are being taken out of the wild for the international pet trade, sometimes fetching as much as \$ 100 each. The export figures from the U.S. roughly stood at 27,000 in 1992 and 18,000 in 1993. The main demand centres are Western Europe, Canada, and Japan. It is assumed that all box turtles in the pet trade are wild-caught since it is not commercially feasible to breed box turtles in captivity to marketable size due to the fact that they are slow-growing and take 10 to 20 years to reach sexual maturity. (Source: "Endangered Species", U.S. Fish and Wildlife Service Technical Bulletin - Sep/Oct 1994).

At the November'94 conference of the Convention on International Trade in Endangered Species of Fauna and Flora (CITES) held in Fort Lauderdale, Florida, box turtles of the entire Northern American genus *Terrapene* have been brought under the protection of Appendix-II of CITES. (Source: "Notes from NOAH" the Northern Ohio Association of Herpetologists" - November 30, 1994).

vii. The giant tortoises of Galapagos

The Galapagos islands are situated about 1,000 km. off the west coast of South America and now belong to Ecuador. Of the seven main islands, four are inhabited and three are not.

The different species of reptiles and birds found on these islands are unique in many respects and a study of them sparked Darwin's theory of evolution which made the islands famous.

The marine iguana found here is the only sea-going iguana in the world.

There are eleven different species of giant tortoises on these islands. Each of the larger islands has its own species. The population of some of these tortoise species is small and their existence precarious.

In 1994 a great deal of destruction was caused to the tortoises of Galapagos by fires and slaughter.

'Galapagos' is an old spanish word meaning 'tortoise'. (Source: "Voice of the Turtle", the monthly newsletter of the The San Diego Turtle and Tortoise Society, U.S.A., April, 1995).

viii. Conservation of Kemp's ridley

The Kemp's ridley sea turtle (*Lepidochelys kempii*), one of the most imperilled animals in the world, normally nests at only one spot on earth: Playa Rancho Nuevo on northern Mexico's Gulf Coast.

The United States Fish and Wildlife Service national Sea Turtle Coordinator's office in the Albuquerque Regional Office, the Gladys Porter zoo in Brownsville, Texas and the Institute national de pesca, Mexico have been working together to save this species. The project has often been identified as one of the best examples of international

cooperation for the conservation of an endangered species. (Source: 'Endangered Species' Technical bulletin of the U.S. Fish and wildlife Service, Nov./Dec.1994).

ix. Geckos

Next to the skinks, geckos constitute the largest family of lizards with a minimum of 650 and possibly 1000 species. Most species occur in tropical and subtropical regions. (Source : "Dactylus" - Dec. 1993).

x. Of geckos' tails

In the book Australia's Reptiles: A photographic reference to the terrestrial reptiles of Australia (1988) by Wilson, S.K. and D.G. Knowles, it is stated that a severed regenerated tail of the chameleon gecko (*Carphodactylus larvis*) produces a loud, squeaking noise. (It is not stated whether a broken, original tail does the same). The jewelled gecko (*Diplodactylus elderti*) ejects a sticky fluid from the tail glands that apparently protects it from predation. (Source: "Dactylus", Journal of the International Gecko Society, Apr1994).

There are 19 species of the gecko genus *Pristurus* which occur in southern Arabia and north-eastern Africa. They are commonly known as 'semaphore geckos' because they signal to each other by flagging their tails. The tail signals of the more advanced species of *Pristurus* are complex. (Source: "Dactylus" - Oct.1994).

xi. Of the Iguana's tail

The green iguana (*Iguana iguana*) is a large (maximum size: 6'7") herbivorous neotropical forest lizard found in Mexico, Central America, Southern Brazil, Paraguay and the Caribbean islands. A colony thought to have been started by escapees or released pets exists in southern Florida.

In parts of central America, the name iguana is used only for the female and the male is known as gorrobo or guacho.

Autotomy is the escape mechanism resorted to by many lizards by shedding their tails when attacked by predators. In due course, the tail may be regenerated. In the iguana, only the young ones employ this ruse. As the iguana matures, the caudal vertebrae get fused and the tail does not get severed any longer. This is a matter of costs and benefits. The iguana uses the tail for storage of fat, as a weapon of attack and as a paddle for swimming. If an adult loses its tail it forfeits a sizeable store of fat. It will not be able to escape with ease and it will not be able to defend itself against predators. In the young, the shedding of tail facilitates escape, and the loss of fat is little comparatively. Also, in the young iguana, the tail is little used as a weapon or as a paddle. (Source: "Notes from NOAH", Nov.30,1994).

(The Madras Snake Park has a male iguana and we are on the lookout for a female).

xii. Dangerous to man

In the U.S., about 7000 people are bitten by venomous snakes each year of whom only seven to fifteen die from the bite. In the U.S. every year, 40,000 to 50,000 deaths are caused by automobiles. (Source: "Notes from NOAH" Jan.29, 1995).

Corresponding figures for India?

xiii. Zoonoses

'Zoonoses' is the name for diseases transmitted from animals to man. In the U.S., many cases of salmonella poisoning in humans have been attributed to handling of infected reptiles, particularly turtles, iguanas and varanid lizards. The percentage of reptiles harbouring salmonella spp. is reported to be as high as 84 to 94%. Hand contacts with reptiles should be limited and, after handling reptiles, hands should be washed thoroughly with disinfectant soap. (Source: "Notes from NOAH" Dec.29, 1994).

xiv. Beware the irregularis

Sometime during the 1950s, the brown treesnake (*Boiga irregularis*) a native of New Guinea, Northern Australia and the Solomon islands, found its way to the island of Guam, 1500 miles north of New Guinea. It is suspected to have reached there as a stowaway on cargo planes. Having no natural predators and few competitors for food on the island and being a prolific breeder, the snake has multiplied fast and has caused havoc on the island's ecosystem. Eight of the twelve

species of birds native to Guam are extinct or nearly so and the oceanic gecko (*Gehyra oceanica*), the island monitor lizard (*Varanus indicus*) and the Marianas fruit bat are on the verge of extinction thanks to predation by this snake. They climb power lines and electrical towers resulting in the lines getting short-circuited. 1200 power outages have been caused by the snake on the island since 1978. It is feared that the large snake population may also have an adverse impact on the sizeable tourist trade on the island.

There seems to be no way to eliminate the snake from Guam because of its nocturnal habits. The major effort now is to prevent its dispersal to other parts of the world, particularly Hawai. (Source: "Notes from NOAH" - Dec. 29, 1994).

Compiled and processed by B. Vijayaraghavan

AIMS AND OBJECTIVES OF THE MADRAS 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 promote knowledge on snakes and other reptiles and dispel the erroneous beliefs about them.
- iii) To undertake captive breeding of vulnerable species of snakes and other reptiles.
- iv) To aid and assist research in herpetology.
- v) To provide facilities for the identification and classification of snakes and other reptiles and, for this purpose, maintain a museum of study collections.
- vi) To maintain a library of books and other literature on herpetology.
- vii) To publish scientific and semi-scientific literature on snakes and other reptiles.
- viii) To undertake survey on the distribution and status of snakes and other reptiles.
- ix) To provide consultancy services on snakes and other reptiles.
- x) To provide a common forum for amateur herpetologists to interact.