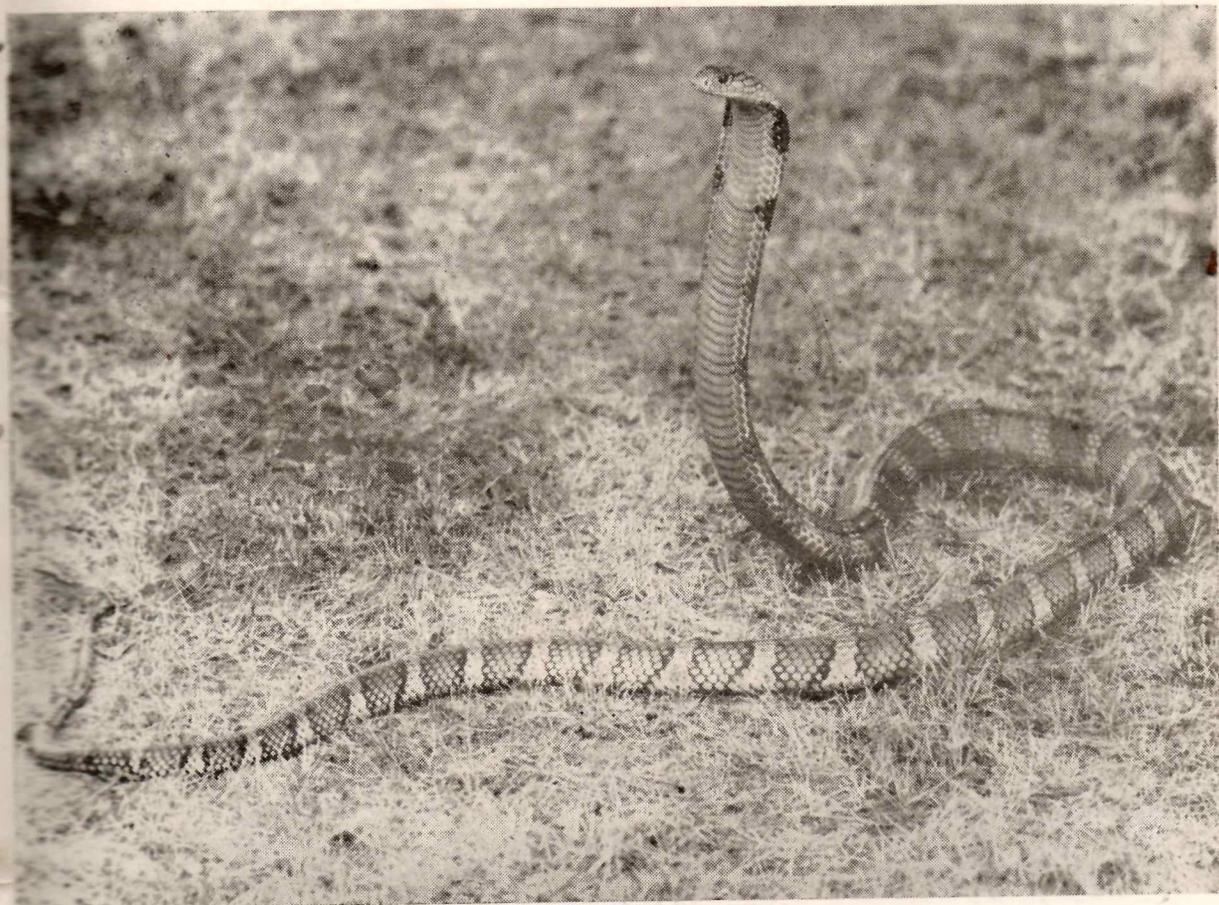


Cobra

Number 11

Quarterly Newsletter

Jan. - March 93



King Cobra (*Ophiophagus hannah*)

—Photo by : M. KRISHNAN.

Madras Snake Park Trust
Guindy National Park - Guindy
Madras - 600 022. - India

WELCOME TO MADRAS SNAKE PARK TRUST



- * The Madras Snake Park Trust was established in 1971 on a one-acre plot of forest land leased by the Govt. of Tamil Nadu at Guindy, Madras. Managed by a Trust, the MSPT is a centre for Education, Tourism, Conservation, Service and Research on Reptiles.
- * A variety of live Reptiles, both Indigenous and Exotic are displayed which include Marsh Crocodile, Giant Tortoise, Reticulated Python, South American Iguana and other species of Snakes, Lizards and Turtles. Besides, a Snake Lore Centre and a Museum of Reptile specimens are maintained.
- * The Park is open from 8-30 a.m. to 5.30 p.m. on all days of the year.
- * **Entrance fee :** Adult Re. 1/- and Child Re. 0.50.
- * Photography charges are Rs. 5 for still cameras and Rs. 50/- for Video Cameras. For commercial Video contact office.
- * Hourly Demonstration of a few kinds of live Reptiles with commentaries is conducted.
- * Nearly 12 lakh persons visit MSPT in a year.

COBRA

Quarterly Newsletter of the Madras Snake Park Trust

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Annual Subscription for 4 issues
of COBRA commencing from
the date of Subscription

Rs. 75/- Inland
US \$ 10/- Overseas
(including postage)

MADRAS SNAKE PARK TRUST PROGRAMME FOR "INDIA TOURISM YEAR 1991 - '94"

1. Special pamphlets on common poisonous snakes and non-poisonous snakes with special legends about them to be issued at Rs. 3/- and Rs. 5/-.

2. The regular hourly reptiles demonstration now being conducted in Hindi/Tamil/English will also be extended with special tapes in several Indian languages like Kannada, Telugu, Malayalam, Bengali, Oriya, Marathi, Punjabi, Gujarati, Goanese, Urdu, etc. and Foreign languages like Russian, Japanese, Spanish, German, French, Chinese, Italian etc.

Tourist groups could avail of these special demonstration at Rs. 50/- Indian and Rs. 100 or US \$ 5 for Foreign languages.

3. Opening of the Exhibition Building displaying—

—Reptile lore around the world.

—Myth, Mythology, Worship and other interesting facets of Reptile-lore in our Indian Culture to commemorate the India Tourism year 1991—1994.

Rs. 75/- Indian
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KRAITBITES

GENUINE PROBLEMS OF IDENTIFICATION AND MANAGEMENT

INDRAMANI JENA.**

Kraitbite deaths constitute the second highest fatality in the list of snakebites encountered in South-East Asia, specifically in India and the adjoining countries. The highest number of deaths are due to cobras and highest number of bites are due to vipers.

Basic clinical problem with any snakebite is identification of the biting species, may be due to preponderance of nocturnal bites, fear of the victim in identifying the snake immediately after bite or post-bite rapid escape of the offending species. These problems are much more in case of a kraitbite. Kraits pose a number of peculiarities, the actual figures of kraitbites are quite underestimated. Leave aside the cases of non-venomation and mild venomation, the cases with moderate and even severe venomation do not clearly recollect that they are bitten by a krait in night.

Peculiarities of both kraits, found in India, the common Indian krait (*Bungarus caeruleus*) and banded krait (*Bungarus fasciatus*) are (i) these are definitely nocturnal in habit (ii) their relatively docile day time appearance does not predict their unbelievable night time aggressive behaviour. The day time innocence is plainly due to visual problems or day blindness. The bites occur mostly during sleep of a person. (iii) highest number of bites in winter nights

for which thermo-philic causes of coming close to a sleeping man has often been attributed. and lastly (iv) lack of local signs of venomation at the site of bite, no persistence of marks of fangs even after 2 to 3 hours, no local swelling, no bleeding, whatsoever be the grade of neurotoxic features and how rapid may be the progression of respiratory failure and onset of death. This adds to the confusion of the sleep time bites.

Most often a patient of kraitbite does not give a history of bite. Only the manifested neurotoxic features hint the possibilities of bite by a cobra or krait. Such cases are found in large numbers in many parts of India. Specifically the that h dwellers are poor victims of these treacherous species.

Nocturnal bites compose 87.5% of total kraitbites and these are divided into 23.75% cases as early night bites (6 PM to 12 PM.) and late night bites (12 PM — 6 AM) in 51.25% cases. About 12.5% cases who on clinical and circumstantial evidences are categorised as kraitbites did not give accurately the time of bite. The numerical higher figure in late night bites probably confirm the thermophilic nature of krait, that is snakes being homeo-thermic to temperature and the late winter nights with coolest environment the krait comes closer

** Dr. Indramani Jena, M.D. (Medicine), Presently working under Department of Health and Family Welfare, Government of Orissa. He has conducted a research on Snakebite in Orissa. Address : N/6 — 18, NAYAPALLI, Bhubaneswar, Orissa, PIN-751015.

TABLE — 1. ANALYSIS OF KRAITBITE CASES OBSERVED

1. Total number of kraitbite cases treated	— 80
2. Number of cases died from the series	— 19
3. Additional cases of kraitbite deaths analysed postmortem.	— 40
4. Identification of biting species :	
Snake killed and identified	— 25
Snake reliably identified	— 45
Circumstantial evidence and clinical confirmation	— 50
5. Time of bite	
Diurnal	— 40
Nocturnal — Early 6-12 P.m.	— 19
Late 12 P.M. to 6 A.M.	— 41
Not ascertained	— 10

to a sleeping person who is warm in the situation and incidentally biting to the exposed part on the instance of limb or body movement.

Diurnal bites noted in 12.5% cases include falling of snake spontaneously in 7.5% cases and rest 5% cases in dark rooms or during the thatch rearrangement.

The circumstantial factors observed in many of the cases are worth analysing. There are some environmental factors and socio-economic factors. The winter nights and the coolest part of the night usually predispose for these bites. Apart from the thermal position, the disturbances are least in respect of light, noise or domestic human movements. More than 10 localities studied by the author reveal the predominant opinion of the residents on kraitbites :-

- i) Kraits usually inhabit thatched roofs.
- ii) The bites during nocturnal sleep are by common Indian krait and almost always fatal.

These observations cannot be proved outright, we can observe a number of common Indian kraits inhabiting the interior of straw bundles that constitute the bulk of the thatch. Thus kraits have close domestic habitat exposing the inhabitants to the vulnerability of their bites. All the 80 cases of bites by common Indian krait had been bitten in thatched situations. Even three of the cases who gave their residence under R.C. roof were confirmed to be residents of attached cottages of the building with thatched roof.

Sites of bite by a krait are usually upper-limb, trunk, upper parts of lower limb, these point to non-provocative nature of bite not originated by walking over the snake. Some cases of bite on forehead have been observed. The snake is definitely aggressive. Majority of cases (70%) give local site of bite of arm or forearm which may be due to reflex movements in sleep, mainly the hands.

The behaviour of the biting krait is very peculiar after it has bitten a victim. In a

number of cases it has been observed to escape rapidly after the bite even though the victim is quite asleep.

The minimum local reaction after krait-bite is quite deceptive to the victim as well as to the clinician. Absence of local pain, swelling, oozing or bleeding raise doubt of bite. In these 80 cases fangmark(s) could be traced in as many as 45% of cases up to 6 hours post bite period and 15% cases up to 12 hour post-bite period. Eight from among the cases who rushed to the hospital within one to two hours after bite did not reveal any visible spot but examination by magnifying glass revealed punctate injury in some of them. Thus it can be inferred that the local feature in krait bite is virtually non-existent. Presence of irritant venom constituents in viperine venoms (*Vipera russelli* and *Echis carinatus*) and to some extent in cobra venoms cause local cellulitis.¹ Krait venom that contains very negligible amount of such constituents does not elicit local response. Again presence or absence of fang mark(s) do not bear a relationship with the appearance of neurotoxic signs or with grade of neurotoxic envenomation.

Peculiarly kraitbite has occurred in a village with 5 deaths within a short span of $\frac{1}{2}$ month, all cases bitten at night in winter and succumbed.²

PROBLEMS IN MANAGING A COMMON INDIAN KRAITBITE

Kraitbite poses a real challenge to the clinician due to paucity of evidence of offending species. Cases who are denied treatment develop serious grades of neurotoxicity that is not curable by antivenom administration.

On the otherhand without evidence of snakebite the physician is in dilemma whether he can use antivenom in a case not

declared as snakebite. In such instances it is advisable to keep such patient under observation until the patient develops first sign of neurotoxicity—usually ptosis. Then antivenom can be started preferably in intravenous infusion along with anticholinesterase group of agents.

The author had dealt 16 such cases of inconspicuous evidence of bite : 4 of them in grade III neurotoxic grade (respiratory failure), 5 in grade II with ptosis and glossopharyngeal palsy with dribbling of saliva and 7 mild cases with only ptosis. The cases were given antivenom and neostigmine.

PROBLEMS WITH BANDED KRAIT (Bungarus fasciatus) BITES

The number of banded krait bites dealt are 8 out of which 2 cases succumbed due to neuro-respiratory paralysis. This species is widely distributed in whole of South East Asia and most of the localities in India do not believe in the venomous nature of this snake that can be fatal. The bites are predominantly nocturnal, 6 cases bitten at night and 2 cases bitten in day time.

One of the fatal cases was seen in August 1991 in Sub-Divisional Hospital, Jagat-singhpur admitted just 30 minutes prior to death though bitten 14 hours back at 8 PM. The victim was worshipping Lord Siva and offering flower from the basket where the banded krait was hidden. Three hours after bite the victim developed severe pain abdomen; at 3 AM he developed drooping, at 5 AM dribbling of saliva and was hospitalised at 10 am with cyanosis. His heart, B.P. and pupils were normal but he was semiconscious and delirious due to respiratory failure. Administration of antivenom, mouth to mouth breathing and other supportive measures could not help the patient.

THE BASIC PROBLEM WITH BANDED KRAIT BITE IS NON-AVAILABILITY OF SPECIFIC ANTIVENOM. POLYVALENT ANTIVENOM IN INDIA DOES NOT CONTAIN ANY COMPONENT AGAINST BUNGARUS FASCIATUS (BANDED KRAIT) VENOM.

But use of the polyvalent antivenom available in India should not be stopped in banded krait bites. Some amount of cross-neutralizing capacity is expected from antivenom to common Indian krait (*Bungarus caeruleus*).

MANAGEMENT OF KRAIT BITE

Cases with history of krait (common Indian or banded) bite should be treated at once with 2 vials of antivenom, preferably by infusion with a pint of dextrose saline or solution. The case should be observed every 15 minutes for appearance of neurotoxic symptoms. Antivenom in same doses may be repeated for 3 more doses when neurotoxic symptoms appear or aggravate.

When neurotoxic symptoms manifest, a course of anticholinesterase should be used

as discussed in the article 'Anticholinesterase in neurotoxic bites' (Cobra. vol. 9)

Apart from antivenom and anticholinesterase other symptomatic measures such as antispasmodics for pain abdomen, manouvres of artificial respiration. Oxygen therapy, fluid and electrolyte balance should be utilized.

ANY CASE PRESENTING WITH NEUROTOXIC FEATURES BUT NO DEFINITE HISTORY OF BITE SHOULD BE ANALYSED IN TERMS OF RESIDENCE IN THATCHED HOUSE. NOCTURNAL BITE. WINTER OCCURRENCE CAN BE DIAGNOSED AS KRAITBITE UNTIL PROVED OTHERWISE.

REFERENCES

1. Snake Venoms and Envenomation Ed. Minton S.A., Mercel Dekker, New York (1967)
2. Snakes of Medical Importance and Treatment of Snakebite. Jena and Sarangi Ashish Publishers, New Delhi (1993).
3. Cobra, Vol. 9.

PAPERS ON AMPHIBIA

In deference to the wishes of a number of herpetologists, it has been decided to enlarge the ambit of COBRA to incorporate articles and papers on Amphibia as well. Contributions on ecology, conservation, fauna, behaviour and other aspects on Amphibia may be sent to Dr. R.S. Pillai Editor, COBRA, Madras Snake Park Trust, Guindy, Madras-600 022.

MISCELLANEOUS NOTES

COBRA invites contributions under "Miscellaneous Notes". Short notes and interesting personal observations on Reptiles and Amphibians are invited for publication. Myths, lores and beliefs which highlight these animals from the cultural and traditional point of view are also welcome.

—Editor.

REPTILES OF NARMADA VALLEY GUJARAT

Y.M. NAIK, K.R. VINOD and P.K. PRADEEP

Department of Zoology, M.S. University of Baroda, Baroda 390 002, Gujarat.

Introduction

The area under investigation comprises nearly 1600 sq. km spanning about 20 km from the river on the right bank (about 927 sq. km) and the entire Shoolpaneshwar Wildlife Sanctuary (675 sq. km) on the left bank. In the entire study area, especially in Shoolpaneshwar Wildlife Sanctuary, there are a large number of streams and rivulets. The area has not been explored for any taxonomical studies. Faunal survey of the study area was made over a span of two and half years, and during this period we have recorded 15 species of reptiles belonging to 12 genera and 9 families.

Systematic account

FAMILY : GEKKONIDAE

1. Brook's Gecko (*Hemidactylus brrooki*, Gray)

Material — 4 examples

Body length — 128 mm

Remarks : This lizard lives on trees, rocks, understones and is found in many parts of the study area.

2. Northern House Gecko (*Hemidactylus flaviviridis*, Ruppel)

Material — 5 examples

Body length — 172 mm

Remarks : Many of them were found on the walls of guest houses at Sagai and Mal-Samot.

FAMILY : AGAMIDAE

3. Common Garden Lizard (*Calotes versicolor*, Daudin)

Material — 5 examples

Body length — 478 mm.

Remarks : Many were found throughout the study area.

4. Forest Calotes (*Calotes rouxi*, Dum. & Bibr.)

Material — 3 examples

Body length-240 mm

Remarks : Very common in the study area.

5. Fan-Throated lizard (*Sitana ponticeriana*, Cuvier)

Material — 4 examples

Body length — 193 mm.

Remarks : A common species on the study area.

FAMILY : CHAMELIONIDAE

6. Indian Chameleon (*Chamaeleon zeylanicus*, Laurenti)

Material — 3 examples

Body length — 360 mm.

Remarks : Sighted in many parts of the study area.

FAMILY : SCINCIDAE

7. Common or Brahminy Skink (*Mabuya carinata*, Schneider)

Material — 2 examples

Body length — 274 mm.

Remarks : Recorded in Waghumar, Sagai areas.

8. Little Skink (*Mabuya macularia*, Blyth)

Material — 1 example

Body length — 63 mm.

Remarks : Only one specimen was recorded at Fulsar.

FAMILY : COLUBRIDAE

9. Buffstriped Keelback (*Amphiesma stolata*, Linn.)

Material — 1 example

Body length — 574 mm

Remarks : Collected from a rivulet near Kukurda village.

10. Checkered Keelback (*Xenochrophis piscator*, Schneider)

Material — 3 examples

Body length — 1.14 m.

Remark : Most common water snake in the study area.

11. Rat snake (*Ptyas mucosus*, Linn.)

Material — 5 examples

Body length — 1—75 m.

Remarks : A number of them were found in rocky areas as well as in plains. The availability of plenty of frogs is one reason for the large population in the study area.

FAMILY : ELAPIDAE

12. Indian Cobra (*Naja naja*, Linn)

Material — 5 examples

Body length — 1.49 m.

Remarks : Recorded in heavy jungles as well as in plains.

Population is fairly large.

13. Ocellate Shield-tail (*Uropeltis ocellatus*, Beddome)

Material — 1 example

Body length — 511 mm.

Remarks : Inhabits the moist soft soils of dense forest in the study area.

FAMILY : VIPERIDAE

14. Sawscaled Viper (*Echis carinatus*, Schneider)

Material — 2 examples

Body length — 450 mm.

Remarks : Recorded from Namgir and Sisha areas.

FAMILY : TYPHLOPIDAE

15. Blind snake (*Typhlina bramina*, Daudin)

Material — 1 example

Body length — 158 mm.

Remarks : Recorded only from Sagai area.

ACKNOWLEDGEMENT

This work was carried out under the research project "Eco-environmental and Wildlife management studies on Sardar Sarovar Submergence area in Gujarat." Immense help provided by Prof. Bonny Pilo for the field studies is greatly acknowledged. The authors are also thankful to Prof. S.D. Sabnis, Project Director, for his encouragement and to S.S.N.N.L; N.P.G. Gujarat Govt. for the financial assistance provided during the tenure of the research work.

**SOME OBSERVATIONS ON THE COMMON HOUSE LIZARD
HEMIDACTYLUS FLAVIVIRIDIS, RUPPEL**

**(FAMILY : GEKKONIDAE, ORDER : SQUAMATA, SUB-ORDER :
SAURIA**

P.P. SINHA, *Locust Warning Organisation, Jodhpur*

S. CHANDRA, *Directorate of P.P.Q. & S, Locust Unit, Faridabad*

Some interesting observations on food, feeding and reproduction of the common House Lizard were recorded from June 1988 to February, 1993 at Jodhpur. They are nocturnal and lurk in the glow of fluorescent tubes and bulbs.

The lizards are mainly insectivorous and prefer to eat insects like flies, cockroaches, crickets, beetles, bugs and ants. Sometimes, they were seen devouring spiders and their own eggs. These Gekkonids are voracious feeders. It was noticed that feeding was minimum during March to May while it remains optimum from June to August. A few lizards were visible during winter and as the summer approached more and more came out of their hides. The lizards discarded dead insects including ants, cockroaches, flies and crickets which were placed on their approach. The predatory act was restricted to live creatures (mainly insects),

Before copulation, the male raises its head in a vertical direction and stretches its forepart of the body towards the female.

On getting response of female, the mating chase starts which continues till the female submits to copulation. The female then starts twisting the abdomen till the male genital organs develop contact with her genitalia. During coition the male holds the female with its jaws firmly just below the shoulders. The period of copulation and mating may vary from $1\frac{1}{2}$ hours to $2\frac{1}{2}$ hours. It was observed that one pair, on being disturbed managed to go under a hideout in the copulating position. Mating was noticed generally between 8 and 11 p.m. During breeding season, fights among the males are frequent. During fight they assume a threatening posture by erecting their body upwards while keeping the head straight vertically and forelegs stretched to the maximum. The mouth and forelimbs are used during scuffle and sometimes they inflict deep wounds to each other by biting savagely.

Two eggs are laid generally which are turbid white in colour. Eggs were noticed from April onwards.

INDIAN WILD LIFE IN TRADE

T.P. VYAS,

P.G. Department of Zoology, Govt College, Dhar-454 001 (M.P.)

Many species of wild animals and plants and their derivatives are used for trade, both within the country and for export.

Although export of snake skin from India was banned in 1978, export of manufactured articles was permitted to liquidate declared stocks of skins available with private traders and seized stocks. In 1987 and 1988, the agency exported articles manufactured using 1,53,328 and 63,388 skins respectively. Currently even these exports have been stopped under the new export policy. Monitor lizard skin is another favoured item of trade of skin dealers. The stock position of skin held by some traders gives an idea of the volume of this trade.

SNAKE

Place	Dealers	Stocks
1. Delhi	40	23,041 skins
2. Bangalore	1	70,66,000 ,,
3. Calcutta	43	29,58,000 ,,
4. Madras	17	22,90,000 ,,

MONITOR LIZARD

1. Delhi	4	1,248 skins
2. Bangalore	1	66,364 ,,
3. Calcutta	38	27,68,000 ,,
4. Madras	7	19,30,000 ,,

In November 1987, an illegal consignment of 60,000 monitor lizard skins is reported to have been intercepted near Delhi.

Snake and Monitor lizard skin export has been banned during 1978. However, cruel killing of these useful creatures of nature by private traders is still continuing. The skin traders from different big cities come to Madhya Pradesh also during Nag-Panchami period. Just after Nag-Panchami, these traders purchase snakes at a very nominal rates from Snake charmers who want to return to their homes. If the Government become watchful, these illegal traders could easily be caught.

The method of killing snakes in the South is very cruel. Live snakes specially Python, Biocellate Cobra, Monocellate Cobra, Vipers, Rat snake, Krait, including other beautiful snakes are collected in huge numbers to be slaughtered. The snake is suspended by driving a nail through the head on a tree. A longitudinal incision is made on the ventral side. The whole skin from the head and body is peeled off quickly leaving the bleeding body to die slowly. The skin is tanned and sent to international markets. I have seen this cruel practice at Tanjore in South India.

In addition to snakes, there are other wild animals also facing danger from illegal traders. Ivory carving is a traditional industry. Smuggling of Indian elephant ivory is also continuing. Export of articles made of skin and fur of animals such as jackal, jungle cat, desert cat, civet, hill fox and common fox is also continuing. Frogs, the most kind animals in nature were

also under being butchered for their legs. Hundreds of tons of froglegs exported every year has since been banned. Monkeys have been exported for drug testing in medical research. Thousands of cave birds are also exported every year. 50 to 100 rhinoceros are killed by poachers annually for their horns. The poaching pressure on musk deer is difficult to estimate. Even the national bird, peacock, is hunted by poachers.

Illegal hunting in National Parks, Sanctuaries and protected areas has resulted in reduced populations of a number of wild species. Strict rules and regulations should not only be framed but enforced for conservation and propagation of our precious wildlife. People's participation and movement for conservation of Indian Wildlife is also essential.

CONTRIBUTIONS ON REPTILES INVITED

COBRA solicits papers on snakes, lizards, turtles and crocodiles for *quick* publication.

Papers may be on any aspect : Ecology, Biology, Natural History or Conservation. Faunal and Behavioural aspects are also welcome.

Snake-lore, Myths and interesting personal observations are also accepted for publication under Miscellaneous Notes.

Contributions may be sent to Dr. R. S. Pillai Editor, COBRA, Madras Snake Park Trust, Guindy National Park, Madras-600 022.

REPTILE LORE

A number of traditional proverbs and adages are available, both in English and Indian languages, depicting reptiles. While a few are innocuous, most of them depict evil or vice.

The legendary Dragon is a mythical monster—a combination of crocodile and snake, with wings (reminiscent of the prehistoric flying reptile, *Pterodactylus*, and claws (monitor lizard—like) often breathing fire. Even Satan is referred to as the old Dragon.

Such adages are many, a few of which are given below.

1. "Snake in the grass" refers to a hidden enemy or lurking danger.
2. "Speak with a forked tongue" is to talk indiscreetly and volubly.
3. "Caught in the coils of a serpent" (*Pambu pidi*) describes a helpless victim of difficult circumstances.
4. "Hearing like a snake" (*Pambu chevi*) is an attribute of alertness and hearing. (However, snakes are known to be deaf for music and sound)
5. "Hiss like a snake and spew venom"—an avengeful revolting posture.
6. "One snake recognises another" (*Pambinkal pambarium*) One crook recognises another.
7. "Monitor lizard hold" (*Udumbupidi*)
8. "An overfed python" (*Yera tinna malaipambu*) is a lazy glutton.
9. "Keep a tortoise in the house and the court bailiff follows. (*Aamai pugunda veedil amena pugundividuvaan*). Bad luck comes to one who keeps a pet tortoise.
10. "Skink bite leads to instant death" (*Aranai kadithal oru nimishathil maranam*). (This imputation is unfortunately erroneous since skinks have no poison glands or poison)

11. "A statement solemnised by the call of the gecko" (*Pallikural shubham*).
12. "Even an army shivers at the mention of a snake". (*Pambu endraley padayum nadungum*).
13. "Who can tell which anthill harbours which snake"—The futility of pursuit and limitations of human endeavour.
14. "Shedding crocodile tears". (*Muthalaikkaneer*).
Fraudulent display of compassion and sympathy.
15. "Turning turtle"—overtaken or upside down vehicle.
16. "A viper in one's bosom"—nurturing a secret desire for revenge.
17. "Changing colours like a chameleon" refers to one who changes opinion depending upon the prevailing circumstances.
18. "To see snakes" is to have delirium tremens.
19. "To raise or wake snakes" is to start a violent quarrel or revolt.

— Gleaned from snake-lore literature of MSPT by A.N. Jagannatha Rao.

REPTILE NEWS IN PRESS

THE HINDU (6.2.93)

Radioactivity found in snake venom (6-2-93) London

A large part of the former Soviet Union is so contaminated with radioactivity that it is turning up even in snake venom, according to a report published here on Thursday.

The contamination stems from planned releases of radioactive waste from nuclear fuel plants, accidents at atomic power stations and surface and underground nuclear explosions.

Some of this venom is being exported to the West to be used in medicines.

Andrey Nedospasov of the Institute of Molecular Genetics, Russian Academy of Sciences said that a two kilogram consignment of snake venom was recently impounded by customs officials in Russia because of its high radioactivity.—Reuter

THE HINDU, (15-2-93) Madurai

Crocodile caught

From Our Staff Reporter

A 2.5-foot-long crocodile was found in a sewage running in a residential area of the city on Saturday evening. The reptile, with dark stripes on its scaly skin, was sighted by a resident, Kandan, who came out of his house in S.S. Colony to throw a dead rat into the gutter when it leapt to catch the prey. It was caught after removing the cement slabs covering the drain.

It is suspected that the crocodile could have been washed away in the November floods from the Vaigai Dam and that it could have entered the city through the stormwater channels.

THE HINDU

'Police have clues on snake park arsonists' 15-2-93, Kozikode

From Our Staff Reporter

An unspecified number of persons believed to have been involved in the attack and massacre of rare snakes, birds and animals at the snake park at Parassinikadavu has been taken into custody and are being interrogated.

The Inspector General of Police (Intelligence), Mr. Krishnan Nair, told this reporter today a number of persons suspected to be behind the incident were taken into custody in the past 24 hours and interrogated. Police had obtained definite clues about those behind the attack and what transpired at the snake park on February 10 night when it was torched and the animals and reptiles burnt and beaten to death.

The IG said the police got a breakthrough when the driver of a jeep which was used by the mob that attacked the snake park, was arrested. He said more arrests would be made in the next few hours and a clear picture regarding the incident could be made available to the public.

The snake park is strewn with the carcasses of the slain animals. Set up in 1982 at the initiative of the Cooperation Minister, Mr. M.V. Raghavan, when he was a front-line CPI(M) leader the park had a rich collection of rare reptiles, birds and animals. Extraction of poison and research on snakes were the main activities at the park which has been a major tourist attraction in Kannur.

The mob killed two king cobras and about 90 other snakes by pouring kerosene over them and setting them on fire. Some of

the snakes were kept under controlled temperature conditions in special cages. The cages were also destroyed.

A porcupine was badly hacked, two peacocks, two eagles, a kite and a few cranes were beaten to death. A lion-tailed macaque was badly wounded in the attack. Seven tortoises were burnt to death as also three civet cats. About a hundred rabbits have disappeared from their cages. The telephone line to the park was snapped by the mob before they started the attack.

The incident has shocked nature lovers. Lamenting over the vandalism at Parassinikadavu, poetess Sugathakumari today said "our children may be the next in their list." Like other visitors to the snake park she was shocked by the destruction of many rare species of snakes and animals.

The poetess who heads the Society for Environment Education in Kerala (SEEK) said at a press conference in Kannur on Sunday after visiting the snake park: "today they have killed birds and snakes. Tomorrow it might be our children" She added that the presence of criminal elements had darkened the future of democracy. Ms. Sugathakumari said that SEEK had been engaged in generating a mood of love and affection but she was disillusioned by the recent communal strife and the shocking massacre of innocent animals.

The rampage has been widely condemned. Mr. M.V. Raghavan, who was instrumental in establishing the park, was so benumbed by the event that he said "they should have killed me instead." The violence that followed the election to the AKG memorial hospital was targeted at many establishments controlled by Mr. Raghavan and his party, the CMP.

There are allegations that the CPI(M) activists were behind the vandalism, who

were reported to have gone on a rampage after the defeat of their party in the election to the AKG memorial cooperative hospital. An ayurveda cooperative hospital in Parassinikadavu, also controlled by its political rival—the CMP led by Mr. Raghavan, was also seriously damaged in the attack the same day.

The CPI(M) leaders broke their strange silence on the incident by blaming some newspapers for orchestrating a smear campaign against their party by linking it to the incident. Now the party has issued a statement denying that its workers were behind the attack. In a curt and brief statement the CPI(M) district secretariat denied the party was involved in it.

MP accuses media : The CPI(M) MP. Ms. Susheela Gopalan, also accused the media of carrying on a smear campaign against the party under the pretext of condemning the snake park incident. She was quoted by the marxist party newspaper, *Desabhimani* as saying that while it was all right for the newspapers to condemn the incident it was not fair for them to turn a Nelson's eye to the 'subversion of democracy' committed in the election to the hospital named after her husband the late A.K. Gopalan.

THE HINDU

Vandalising snake park—19-2-93

Sir, — This has reference to the report on the arson at a snake park. This heinous crime needs to be condemned in the strongest possible terms. The fact that petty political avarice must have fuelled lumpen elements to act is equally deplorable. It is sad, indeed, that a country that produced some of the tallest men and women who have walked this earth can also produce such criminals.

Air Cmdr. M. Vania (retd.) Coimbatore

Vandalsim—27-2-93

Sir, — This has reference to the report (*The Hindu* Feb. 14) about the burning down of a reptile park in Cannanore, Kerala. It was one of the most uncivilised, brutal acts of recent times. Poor, speechless animals and birds being torched and beaten to death for absolutely no fault of theirs. Does the basic fault lie with us Indians that we cannot stand anything beautiful, or is it that we are out to prove that we are amongst the most violent races on earth. On the one side we have people who have dedicated their lives for the cause of animal rights and nature conservation and on the other those who senselessly go around destroying whatever is remaining. The Government should at least see to it that the guilty are punished.

Sohel Mohamed Hyderabad

THE HINDU

28-2-93

The island of giant turtles

It is rare to see very young land turtles. Hidden in the grass, their small size most often makes them invisible. They measure 3-4 cm at birth but triple in volume in six months.

On their little shell, darker than that of the adults, small nipples mark the future escutcheons, and the still soft plastron dilates with every breath. It is at this stage of their growth that the elephantine turtles are most vulnerable; they are easy prey for ibis or coconut crabs. But if they are spared by predators they will live more than a 100 years, if of course they escape the dangers of an atoll full of ambushes.

Adult giant turtles have no predators since wild dogs have now disappeared from the atoll. Only crabs, rails, and rats destroy a few nests to eat the eggs.

During the hot hours of the day, the turtles go to shady, muddy areas so as to avoid the sun. Often turtles die in the sun if they have walked too far away from such areas. Others who adventure on the "mushrooms" forever remain imprisoned on the anfractuosiities of the coral.

One afternoon I helped a tortoise to get out of such a trap, despite orders not to interfere in the life course of Aldabra's ecosystem. That desire to preserve nature's cycle from man's intervention can only be positive. On the Aldabra atoll, like in any place where life is present, the death of one being encourages the survival of another. Thus the tortoise I was able to save would no doubt have served as food for ibises, crabs and other necrophagous animals had I not intervened.

On Aldabra certain land turtles are "tagged". Contrary to marine turtles these tags are not placed on one of the members of the animal but on their shell. To do so, scientists make a hole in the shell with a drill. Then they glue a small steel plaque on it with a special cement; on it a number is engraved. That number will, supply precious indications on the growth or longevity of the turtles. It will also make it possible to study their movements in certain parts of the atoll.

Before arriving on Aldabra I had heard a good many anecdotes about the longevity of giant turtles. A man from the Seychelles, no doubt originally from Marseilles, who however had never left Mahe, said that certain tortoises of Aldabra were so old that small trees had taken root on their shell and that they thus walked around with a little forest on their backs...

According to credible estimates, land turtles could live 150 to 250 years, perhaps even much more. Such longevity can only be seriously determined after a long-term

study. But the earliest reasearch was only undertaken a few decades ago. In 1766 Marion Dufresne took back a giant turtle to the British Museum—where it died by accident in 1918, after 152 years of captivity. Since its age at the moment when it was captured had been estimated at 100 years, it would thus have died after a life-span of 252 years! And without that unfortunate accident it might perhaps still be alive today...

Gamma

THE HINDU

4-3-93

Probe into snake park fire

The Kerala Government has decided to conduct a joint enquiry by the departments of forest and police to ascertain the circumstances leading to destruction of renowned Parassinikkadavu snake park in the northern Kerala district of Kannur by vandals, the Rajya Sabha was informed today.

The Centre is sending the Deputy Director, Wild-life Preservation, from Madras to expedite the joint enquiry, the Minister of State for Forests, Mr. Kamal Nath, told Mr. S.P. Mishra, in a written reply.

An interim report from the Chief Wild Like Warden, Kerala, revealed that out of 163 animals in stock on the date of incident, 92 died, 44 were reportedly missing and 27 survived. — PTI

THE HINDU

6-3-93

Vandalism

Sir, — The report on the burning of snakes and other animals at the Parassinikkadavu Snake Park in Kerala (*The Hindu*, Feb 15) was horrifying. Human behaviour never ceases as a political vendetta demonstrates what sick minds are involved here.

It is hoped that the Government of Kerala will do two things, one is to make the culprits pay for what they have done and the other is to ensure that the Parassinikeri Vishachikilsa Society gets sufficient grants to rebuild their hospital and to make another good exhibit. This snake park has an important role in saving lives in the event of snakebite and creating an awareness in people of the usefulness of snakes.

Romulus Whitaker, Madras Crocodile Bank

THE HINDU

12-3-93

Turtle smuggling

TOKYO : A Thai man tried to smuggle 121 rare turtles into Japan by hiding them in the pockets of a specially designed vest, police said. Chopradit Pichest, 35, also had 14 turtles in a whisky bottle and 40 in a flight bag when he arrived last week at Tokyo's international airport from Bangkok. Police in Chiba Prefecture (State), just north of Tokyo said. He was arrested under the Washington Convention protecting endangered species. All the turtles were alive, they said. Japan is a leading importer of turtle shells. — AP.

THE HINDU

14-3-93

Animals pay for human sins

"THERE is an antidote for snake poison but no cure for political venom," reads a poster outside the locked gates of the Parassinikkadavu snake park near Kannur. But it is too late to warn the animals and birds, which were done to death here on February 10.

The most shocking aspect of the outrage was its deliberate and wanton cruelty. The king cobras and monocolled cobras were burnt alive after they were drenched in

kerosene. Vultures and storks in their cages were beaten to death with iron pipes. A Nilgiri langur which was also beaten died of its wounds a few days later. Mounds of ash are all that remain of the tortoises. All these animals and birds belonged to rare and 'protected' species; that they were protected by human laws did not protect them from humans.

And all this cruelty to what end? To make a petty point in a petty political drama between petty leaders of local parties. The feud which is currently in progress between the CPI(M) and a breakaway faction now called the CMP is being carried on in the traditions of that party with country bombs and other weapons. Policemen have therefore been deployed in sensitive areas, at party offices and other likely targets of attack; the snake park made an easy victim and the attack on its inhabitants went unchallenged.

Senior politicians are said to be worried about the growing culture of political violence and electoral malpractice which has vitiated the conduct of partymen. They have no one to blame but themselves. The police claim to have ample evidence that CPI(M) workers were behind the attack: 21 activists of that party have been arrested and 57 more are sought. The party leadership though remorseful, is trying its best to play down the incident—without, fortunately, much success.

The image of the CPI(M) has taken a beating. Its humanist, conservationist face is now seen as a sneering mask. Party State Secretary E.K. Nayanar has been trying to get out of the situation by hitting out at the 'bourgeois' press. "Pressmen gobble up roasted meat delicacies every day and then shed crocodile tears about the killing of a few snakes," he jibed. To carry the animal metaphor further, in Malayalam, a hypocrite is referred to as a '*poocha* (cat)

sannyasi'; leaders of leftwing conservationist groups are not amused by the application of this term to them

The snake park was a showpiece of Kannur district until its destruction. It attracted some 500 visitors daily, and the income from entrance fees more or less met the maintenance expenses. There were plans to produce antivenom here; so the vandalism has not only harmed the cause of animals directly, but that of humans indirectly.

Since the vandalism more than a month ago, a non-political, non-official committee has been formed to collect funds for setting up the snake park again. It may eventually rise, better than before. But the senseless violence has proved again that it is not animals who are 'brutal' and 'inhuman', it is men who are. Animals never perpetrate such atrocities on their own or any other kind.

THE HINDU

26-3-93

Punish the vandals

Sir, — It was heartrending to know that the famous Pappinassery snake park in Kerala's Kannur district was burnt down by vandals in what was essentially an act of political revenge-taking. It resulted in the destruction of king cobras and other reptiles most of them venomous and some rare species. After this shameful and heinous crime committed on these helpless, mute animals. I wonder how human beings can be called civilised. Animals in many cases behave better than human beings and many of them are no less intelligent than human beings. After all, they do not cheat their own kind, or commit rape, animals do not pretend or practise duplicity even when attacked.

Although investigation should reveal the facts in the present case, the culprits responsible for the grisly death of the snakes and animals must be dealt with firmly.

Sita Ram Behaoi, Calcutta Society for the Prevention of Cruelty to Animals, Calcutta

THE HINDU

29-3-93

Chinese snap up snake snacks

Chinese gourmands are munching through at least 10 tonnes of snake meat each day in Guangzhou and new snake markets are opening all the time to keep up with demand, the *Chinese Daily* said today.

"Snake dishes have slithered out of the big hotels and into street snack stands and

family dining rooms around the city," the official daily said.

"Housewives can buy snakes in the city's large agricultural market now to slake the appetites of their husbands and children

Daily turnover in the largest snake market in Guangzhou, capital of booming Guangdong province in southern China, tops 10 tonnes, the daily said. Rising incomes meant more snake meat was wolfed down at banquets and parties.

Poisonous snakes, prized by the local cantonese for their warming properties in winter, retail at between 100 yuan (17 dollars) and 120 yuan (21 dollars) per kg. while non-poisonous varieties are cheaper, the Daily said. — Reuter.

COMMENT BY IMPORTANT VISITOR TO MADRAS SNAKE PARK TRUST

Thanks for the great hospitality of Indian counterpart shown towards us. With best compliments & heartiest wishes for prosperous India.

Sd.....

Minister Aizhi Sharg

Ministry of Radio Film & T.V.

The Peoples' Republic of China

Feb. 7—1993.

NEWS FROM MADRAS SNAKE PARK TRUST

5-6th January '93

Mr. A.N. Jagannatha Rao, Hony. Secretary, participated and delivered a talk on "Wildlife as a Resource" symposium on "Sustainable Development and Utilization of Natural Resources" at Loyola College, Madras.

6th January '93

M.S.P.T Research team participated in a one day seminar on "Guindy National Park" at WWF, Madras.

29-30th January '93.

T. Ravindra Babu Research Scholar participated in the National Symposium on "Reproductive biology and Comparative endocrinology" at Sri Venkateswara University, Thirupathi and presented a paper on "Reproduction and growth of Indian Python in captivity".

30th January '93

Mr. A.N. Jagannatha Rao, Hony Secretary attended the seminar on "The Law and Environmental protection", at C.P.R. Environmental Education Centre, Madras.

26-28th February '93.

Mr. R. Aengals Research Scholar participated in the All India Symposium on "Seashore Ecosystem Diversity in India with Special Reference to Marine Algae" held at Presidency College, Madras.

10-13th March '93

Mr. V. Kalaiarasan, Mr. R. Aengals and Mr. R. Rajarathinam Research Scholars participated in a workshop on "Freshwater Turtles and Land Tortoises Conservation, Research and Management in India" held at Gwalior and National Chambal Sanctuary, Madhya Pradesh Organised by Wildlife Institute of India, U.S. Fish and wildlife service, USA and Government of India at Dehra Dun.

22nd March '93.

Mr. A.N. Jagannatha Rao, Hony Secretary delivered a guest lecture on "Role of Reptiles in Ecosystem" at A.V.C. College, Mayiladuthurai.

24-26th March '93

Mr. R. Aengals, Mr. T. Ravindrababu, and Mr. Rajarathinam participated in the workshop on "Water Quality Assessment" at A.V.C. College, Mayiladuthurai.

CURRENT RESEARCH PROJECTS AT MADRAS SNAKE PARK TRUST

1. Ecology of Reptiles in scrub jungles of Tamil Nadu" by Mr. V. Kalaiarasan for his Ph.D. Programme under the guidance of Dr. R. Kanakasabai, Prof. and Head, Dept. of Zoology A.V.C. College Mayiladuthurai. This project is being co-ordinated by Mr. A.N. Jagannatha Rao, Hony. Secretary and Dr. R.S. Pillai, Research Officer, Madras Snake Park Trust.

2. A research project on "Rodent control using harmless Reptiles" is being undertaken by Mr. T. Raveendra Babu for his Ph.D. Programme under the guidance of Dr. P. Vivek Raja, Lecturer in Zoology, Govt. Arts College, Madras-35 co-ordinated by Shri A.N. Jagannatha Rao, Hony. Secretary and Dr. R.S. Pillai Research Officer Madras Snake Park Trust.

3. Mr. R. Aengals is working for his Ph.D. on "Studies on Iso-enzymes of Snakes"

under the guidance of Dr. E. Prabhakaran Selection Grade Lecturer in Zoology, Presidency College (Autonomous) Madras 600 005. This project is being co-ordinated by Shri A.N. Jagannatha Rao, Hony. Secretary and Dr. R.S. Pillai Research Officer, Madras Snake Park Trust.

4. The following Research programmes on captivity studies are being undertaken

a) Studies on Chamaeleon—R. Rajarathinam and R. Aengals.

b) Studies on Turtles and Tortoises—R. Rajarathinam and V. Kalaiarasan

c) Captive breeding in Green Iguana (*Iguana iguana*)—R. Rajarathinam and T. Raveendra Babu

d) Correlation between morphology and habits of Snakes—Mrs. R. Chitra.

SURPLUS REPTILES AVAILABLE AT MADRAS SNAKE PARK TRUST IN EXCHANGE

(Subject to approval by the Government)

WE OFFER

Snakes

1. Indian Python (*Python molurus*)
(Babies and Sub-adults)
2. Reticulated Python (*Python reticulatus*)
(Single specimen not pair)

Turtles, tortoises and Crocodiles

3. Pond turtle (*Melanochelys trijuga*)
4. Star Tortoise (*Geochelone elegans*)
5. Marsh Crocodile (*Crocodylus palustris*)
(7 year old)

WE ARE LOOKING FOR

Snakes

1. Black Cobra (*Naja naja oxiana*)
2. King Cobra (*Ophiophagus*)
3. Banded Krait (*Bungarus fasciatus*)
4. The Indian Egg-Eating Snake
(*Elachistodon westermanni*)
5. Flying Snake (*Chrysopelea ornata*)

Monitor Lizards

6. Desert Monitor (*Varanus griseus*)
7. Yellow Monitor (*Varanus flavescens*)
8. Water Monitor (*Varanus salvator*)
9. Common Indian Monitor (*Varanus bengalensis*)

Turtle

10. Fresh water turtles-any species.

Crocodile

10. Estuarine Crocodile (*Crocodylus porosus*) (Juveniles and sub-adults)
11. Preserved specimens of 5 species of Sea turtles
 - a) Leatherback turtle (*Dermochelys coriacea*)
 - b) Green turtle (*Chelonia mydas*)
 - c) Logger Head turtle (*Caretta caretta*)
 - d) Olive Ridley turtle
(*Lepidochelys olivacea*)
 - e) Hawksbill (*Eretmochelys imbricata*)

An Appeal

The Madras Snake Park Trust has obtained, with the help of the Govt. of Tamil Nadu, 2.5. acres of land in the old Mahabalipuram Road on the outskirts of the city of Madras to establish an elaborate Reptilium on modern scientific lines to promote Tourism, Conservation, Education, Service and Research on Reptiles.

The proposed layout and estimates of the various units are shown on the next page. The total cost of the project is estimated around Rs. 180 lakhs or 6,00,000 \$(US).

The MSPT now seeks financial contributions from various organisations and individuals to fulfil this ambitious future programme unit/block-wise.

Grants and donations are exempted by the Income Tax authorities under 80G vide Ref. No. DITE/1146/(34)/78 dated 1-4-89 to 31-3-92.

Generous contributions are solicited. Contributions may be sent to "The Madras Snake Park Trust" Guindy National Park—Guindy, Madras-600 022 India.

Trustees of the Madras Snake Park Trust, Madras-600 022.

DETAILS OF COST OF CONSTRUCTION AND DISPLAY

Building 1 and 2 (3 floor)

Each floor has 40' — 40' area and will house Rooms, Mess, Recreational area for Research students, each building 12 students.

Cost per floor Rs. 6 lakhs or \$ 20000.
Total cost of building 18 lakhs or \$ 60000.

Building No. 3 and 4 (3 floor)

Each floor has 70' — 40' area and will house Research Division, i.e., Library, Laboratory etc.

Cost per floor Rs. 10 lakhs or \$ 35000.
Total cost of each building Rs. 30 lakhs or £ 105000.

Pit No. 5 and 6 (1000 sq. ft.)

Specially designed, natural setting with pond etc., to house 3 species of Indian Crocodiles

Cost Rs. 1,50,000 or \$ 5000.

Pit No. 7

This will house exotic reptiles like Iguanas, etc., in 500 sq. ft. area.

Cost Rs. 75,000 or \$ 2,500.

Pit No. 8 and 9 (area 1000 sq. ft.)

Skunks, Chamaeleons, Monitors etc., will be exhibited in these enclosures in specially designed habitats.

Cost Rs. 1,50,000 or \$ 5000.

Pit No. 10 and 11 (area 1000 sq. ft.)

Specially landscaped to display land tortoises, marine turtles and fresh water terrapins.

Cost Rs. 1,50,000 or \$ 5000.

Pit No. 12 (Area 500 sq. ft.)

Giant tortoise of Seychelles, Komodo dragon etc., will be displayed.

Cost Rs. 75,000 or \$ 2500.

Building No. 13 and 14 (area 1000 sq. ft.)

Different poisonous and non-poisonous snakes of India will be exhibited in specially designed habitats. King Cobra will find a special habitat cooled by air cooler.

Cost Rs. 1,50,000 or \$ 5000

Building No. 15 and 16.

Indian snake lore and myths which are in plenty will be elegantly brought out and made interesting and attractive for tourists. Simple hall 40' × 40' with a sloping roof.

Cost Rs. 6 lakhs or \$ 20,000 — each building.

Building No. 17 (Demonstration shed—3000 sq. ft.)

To educate the public on reptiles. Hourly display of live reptiles with commentaries in English, Tamil and Hindi. Tapes in 10 Indian languages and choice of 6 Foreign languages will be available for large groups for a special fee.

Cost Rs. 10,00,000 or £ 35,000.

Building No. 18 and 19.

40' × 40' to house preserved specimens of Indian and exotic reptiles for Research purposes. Sloping roof.

Cost Rs. 6 lakhs or \$ 20,000 each building.

Building No. 20.

This is a storeyed building. The ground floor to be used by visitors as a Rest-shed. The second floor for the Administrative Office of the Madras Snake Park Trust. 3rd floor for Guest house.

Each floor is 70' × 40' Cost Rs. 10 lakhs or \$ 35000. Total cost of the building would be 30 lakhs or £ 105000.

Building No. 21

3 floors each of 70' × 40'. To house an auditorium, a conference hall and a records room.

Each floor cost Rs. 10 lakhs or \$ 35000 and the total cost of building Rs. 30 lakhs or \$ 105000.

Building No. 22 and 23.

These are quarters for watchman, on either side with 300 sq. ft area.

Cost Rs. 1,00,000 or \$ 3500. The 2 units cost Rs. 2,00,000 or \$ 7,000.

Building No. 24 and 26

Open wells of 6' diameter each costing Rs. 37,000 or \$ 1250. Together they cost Rs. 74,000 or \$ 2500.

Building No. 25

General store Room of 20' × 10'.
Costing Rs. 75,000 or \$ 2500.

Building No. 27 and 31

Large underground storage tanks to hold water, each 15,000 litres capacity.

Cost Rs. 75,000 or \$ 2500/- each 2 sumps together would be Rs. 1,50,000 or \$ 5000.

Building No. 28 and 30

10' × 10' rooms for electric meters and water pumps, each room Rs. 37,000 or \$ 1250.

Cost of 2 room Rs. 75,000 or £2500.

Building No. 29

10' × 10' Security room. Cost Rs. 37,500 or \$ 1250.

No. 32 and 33

IN and OUT gates Each cost Rs. 15,000 or \$ 500. Cost of 2 gates Rs. 30,000 or \$ 1,000.

All costs are worked out on present exchange rate of US \$ — 30.00 as on date March 1993.

ALL GRANTS WILL BE DISPLAYED ON A MARBLE SLAB ON THE RESPECTIVE FLOOR/BUILDING.

*A New Extensively Color-Illustrated Book From
Society For The Study of Amphibians And Reptiles (SSAR)*

HERPETOLOGY OF CHINA

by Er-mi Zhao and Kraig Adler

China, with 661 species of Amphibians and reptiles in 164 genera and 34 families, possesses one of the largest and most diverse herpetofaunas of any country, and it occupies a strategic geographic position, as it bridges the Oriental and Palaearctic biogeographic zones. Despite the size and relative importance of China's herpetofauna, however, there is no existing work—in Chinese or in any other language—that comprehensively reviews all recognized species, until now.

The purpose of this new, 500-page book, written in English by Er-mi Zhao (Chengdu Institute of Biology) and Kraig Adler (Cornell University), is to summarize the current taxonomic status and distribution of all Chinese species. The geographic coverage includes all of mainland China, plus Macao, Hong Kong, Hainan, and Taiwan.

The book contains **48 COLOR PLATES** (371 individual photographs of animals and habitats), *including all genera and 330 species*. Due to the high cost of producing extensively color-illustrated works, this book will be issued in a relatively small edition, a significant part of which is destined for scientists and libraries in China and East Asia.

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Annotated Checklist of Genera, Species, and Subspecies (including synonymies)

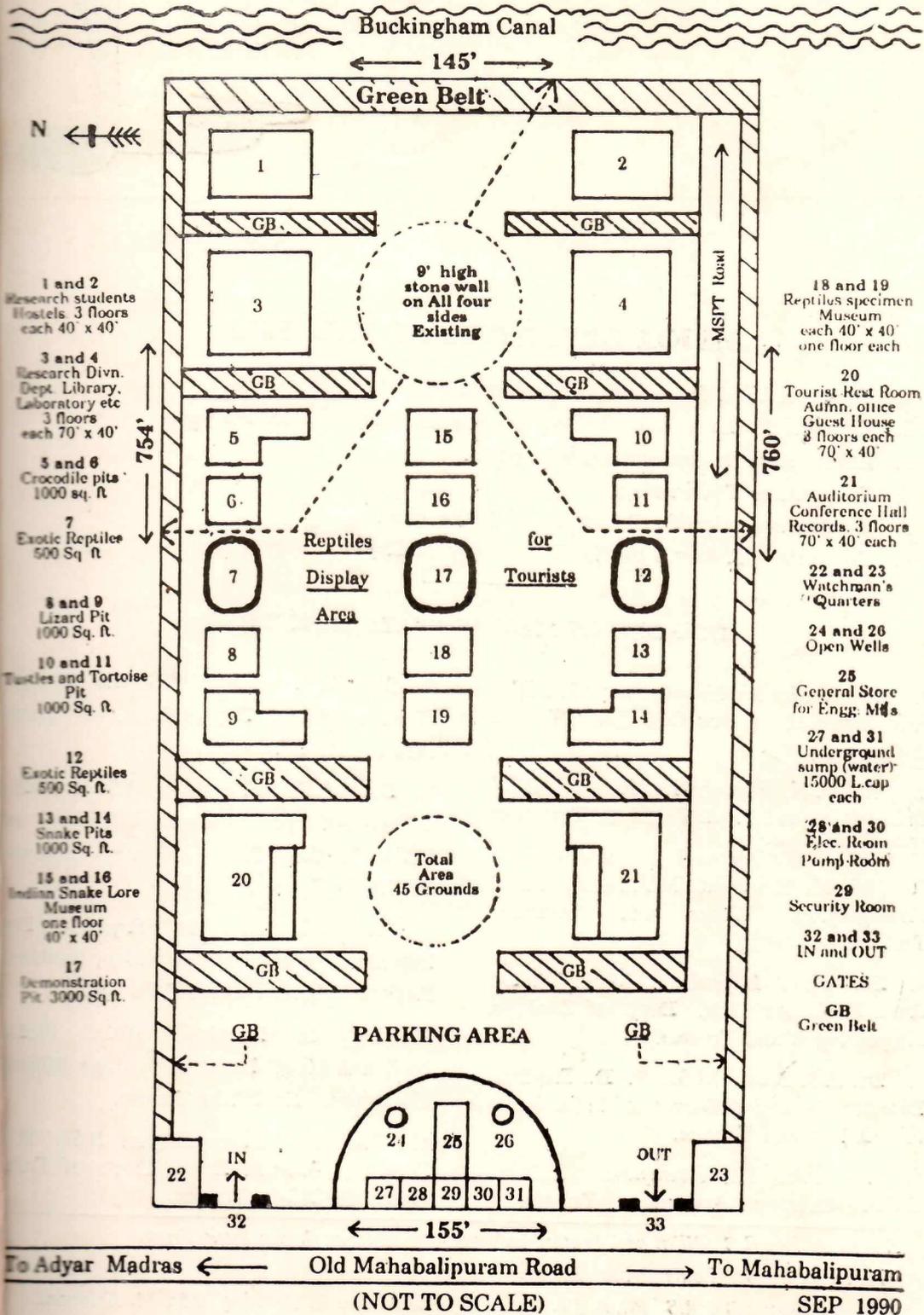
Distribution of Chinese Amphibians and Reptiles (including charts of distribution by province)

Annotated Bibliography (containing 1825 references)

Appendices (gazetteer of localities; collecting and preserving techniques; Chinese herpetological journals)

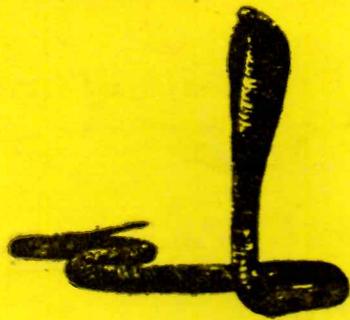
Indices to Names of Authors and to Scientific Names

Proposed Layout of Madras Snake Park Trust at Kottivakkam, Madras



- 1 and 2 Research students Hostels 3 floors each 40' x 40'
- 3 and 4 Research Divn. Dept. Library, Laboratory etc 3 floors each 70' x 40'
- 5 and 6 Crocodile pits 1000 sq. ft.
- 7 Exotic Reptiles 500 Sq. ft.
- 8 and 9 Lizard Pit 1000 Sq. ft.
- 10 and 11 Turtles and Tortoise Pit 1000 Sq. ft.
- 12 Exotic Reptiles 500 Sq. ft.
- 13 and 14 Snake Pits 1000 Sq. ft.
- 15 and 16 Indian Snake Lore Museum one floor 40' x 40'
- 17 Demonstration Pit 3000 Sq. ft.

- 18 and 19 Reptiles specimen Museum each 40' x 40' one floor each
- 20 Tourist Rest Room Admn. office Guest House 3 floors each 70' x 40'
- 21 Auditorium Conference Hall Records. 3 floors 70' x 40' each
- 22 and 23 Watchman's Quarters
- 24 and 26 Open Wells
- 25 General Store for Engg. Mf's
- 27 and 31 Underground sump (water) 15000 L. cap each
- 28 and 30 Elec. Room Pump-Room
- 29 Security Room
- 32 and 33 IN and OUT
- GATES
- GB Green Belt



MAJOR OBJECTIVES OF THE TRUST

1. To dispel blind fear of snakes in people
2. To highlight the usefulness of reptiles in controlling rodents and pests.
3. Efforts towards conservation of reptiles.
4. To promote Tourism.
5. To promote scientific Treatment of Snake bites.
6. To conduct Research on the Eco-biology of Reptiles.

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- | | |
|--|---|
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Edited by Dr. R.S. Pillai and Printed on behalf of Madras Snake Park Trust.

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Editorial Board Dr. R.S. Pillai, Dr. M.V. Rajendran, Dr. G. Durairaj, Mr. M. Krishnan.

Dr. P.T. Cherian, Mr. Sankaralingam and Mr. A.N. Jagannatha Rao.