Cobra

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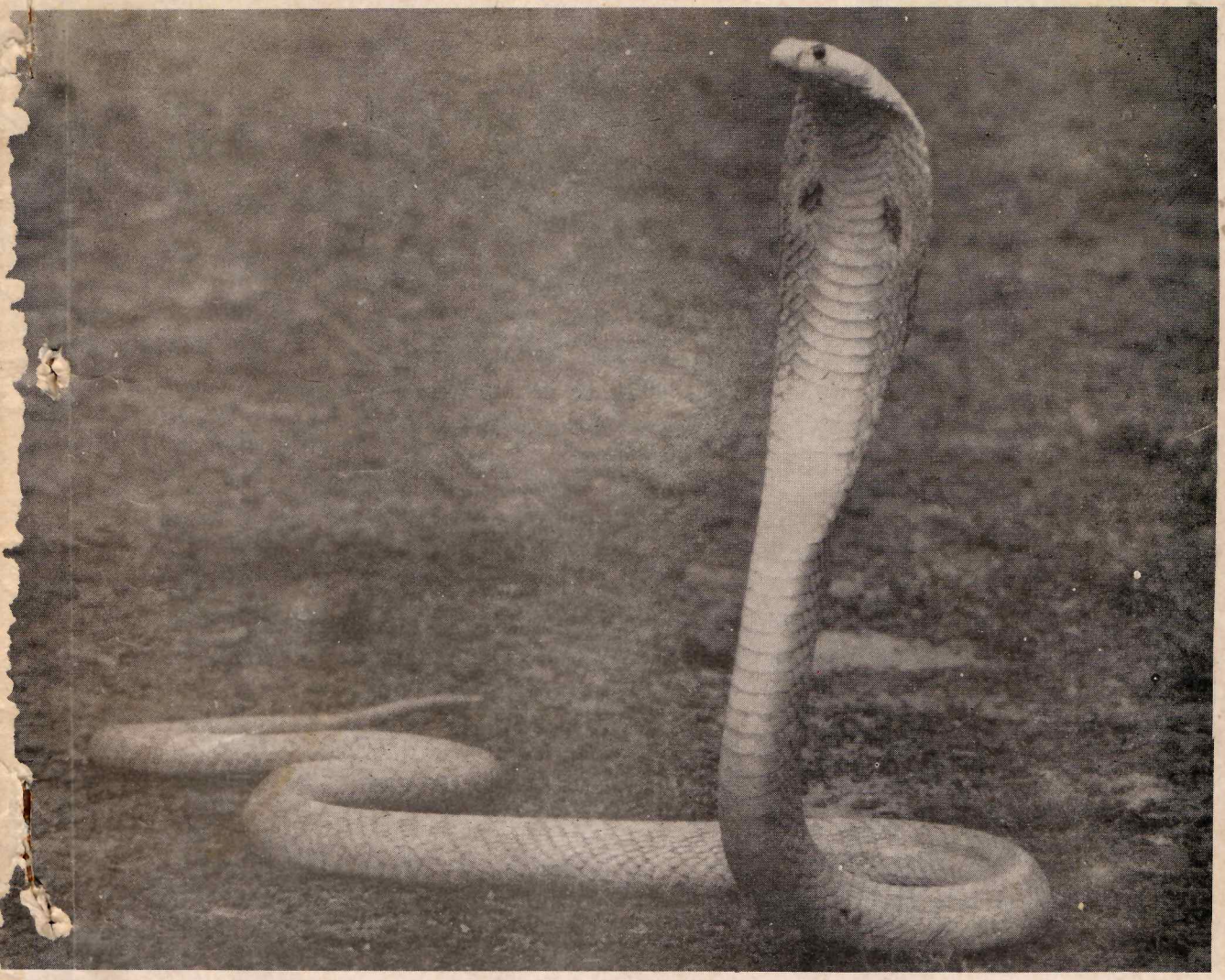

Madras Snake Park Trust
Deer Sanctuary - Guindy
Madras - 600 022. India

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 Rs.1/- and Child Rs. 0. 50 (awaiting approval of Govt. of TN)

* Photography charges are free for still cameras and Rs.100/- for Video Cameras. For commercial Video contact office.

* Hourly Demonstration of a few kinds of live Reptiles with commentaries is conducted.

* Nearly 12 lakhs persons visit MSPT a year.

COBRA

Quarterly Newsletter of the Madras Snake Park Trust

Contents

Annual Subscription for 4 issues of COBRA commencing from the date of payment	Rs. 50/- Inland US $ 5/- Overseas (including postage)

This first issue of Cobra is being sent FREE to you. Kindly subscribe for future issues

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

1. Special pamphlets on common poisonous snakes and non-poisonous snakes with special legends about them are being 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.

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 1991.

EDITOR'S PAGE

The Trustees of the Madras Snake Park Trust (MSPT) take pleasure in bringing out COBRA, a quarterly Newsletter of the Madras Snake Park Trust.

Neither the christening of the Newsletter as COBRA, nor the registered crest of the MSPT which is a hooded cobra, is any indication that the MSPT is interested solely in snakes. The Park maintains all the four groups of reptiles - snakes, lizards, turtles and crocodiles and the Newsletter also shall disseminate knowledge on all reptiles.

The objectives of COBRA are manifold, the most basic objective being to cater to the interests of herpetologists, naturalists, research students and amateurs and to let the outside world know of the activities of the MSPT and happenings worth knowing. And there are bound to be interesting happenings and worthwhile observations where a number of different species of snakes, lizards, chelonians and crocs are maintained all through the year! It is through COBRA that the research students attached to the MSPT shall publish their observations of the captive specimens pertaining to aspects of systematics, morphology, ecology, feeding and breeding biology. Conservation and status survey studies shall also find their rightful place in the Newsletter.

The Editorial Board will, from time to time, try to publish photographs (monochrome/colour) depicting interesting aspects in the life of reptiles and of rare or endangered species of herps.

Contributions are invited for publication from naturalists, students and amateurs. Any interesting observation or episode worthy of note on the life of reptiles may be communicated.

MSPT has no membership and has not received any grants till now from governmental or non-governmental bodies. The Snake Park Trust is sustained solely by the gate collections. It is hoped that the added financial burden brought upon the coffers of the Trust by the publication of this newsletter shall be offset, atleast partly, by the positive gains resulting out of the scientific utility and advancement of knowledge on captive herpetological species which, presently is all too scanty.

Suggestions for improvement of COBRA are solicited from discerning readers. The Editorial Board shall try its best to implement them.

Dr. R.S. Pillai
Editor

Cover : White Cobra

Snakes adapt themselves to the colouration of the surroundings. However occasionally they are completely white in colour. Here is a fully grown white Cobra (Symbol of Luck and prosperity) which was brought to the Park in 1976. It was not an albino as shown by the brown (and not red) eyes but only albinotic. The faint but definite binocellate mark was of wheat colour. Photograph by Shri. M.Krishnan, Trustee.

A PROPOSAL FOR RODENT CONTROL USING HARMLESS REPTILES

(A paper by Sri. A.N. Jagannatha Rao, Hony. Secretary and Founder-Trustee, Madras Snake Park Trust, Guindy, Madras 600 022, based on the ideas given by Dr. R.S. Pillai, Dr. M.V. Rajendran, Dr. G. Durairaj and other Trustees of the Madras Snake Park Trust, Madras.)

PREAMBLE

According to the Food and Agricultural Organisation, United Nations, Rome and Indian Council of Agricultural Research, India loses every year about 12%-20% of its food grains to Rodents both at the production and storage levels. Based on the recent figures of 175 million tonnes of food grain production during 1988/89, this loss works out to a staggering figure of Rs. 10,000 crores annually. Many methods of controlling the Rodents have been tried and we venture to suggest a project for biological control of rodents by using harmless reptiles like monitor lizards and non- poisonous snakes.

Rats multiply at an astonishing rate. It has been calculated that a pair of rats could multiply to about a thousand numbers in one year's time.

SCOPE OF THE PROJECT PROPOSAL

It is estimated that there are about 10 species of rats/gerbilles (Rodents) in India that bring about considerable damage to grains and granaries. A list of these along

	Common Name	Zoological Name	Distribution
1.	Indian Gerbille	*Tatera indica*	Whole of India
2.	Indian Mole-Rat	*Bandicota bengalensis*	Throughout India
3.	Bandicoot Rat	*Bandicota indica*	Whole of India
4.	The Soft-furred field Rat	*Millardia meltada*	Whole of India
5.	Indian Field mouse	*Mus booduga*	Whole of India
6.	The common House Rat	*Rattus rattus*	Whole of India
7.	Norwegian rat	*Rattus norvegicus*	Whole of India
8.	The House Mouse	*Mus musculus*	Plains of India
9.	Long tailed tree Mouse	*Vandeleuria oleracea*	Whole of India
10.	Short-tailed Bandicoot	*Nesokia indica*	Desert, Semi-desert zone of Northwest India

with and their distribution in India, is given below as gleaned from various records.

The snake and Monitor lizard are the prime controllers of rats in nature besides many birds of prey and some other creatures.

The proposal here is to try a pilot project of introducing harmless reptiles into agricultural fields and storage godowns for control of rats and thereby assess their role as predators of rats.

SOME PROBLEMS TO BE OVERCOME

The very mention of the snake, whether poisonous or non- poisonous, sends shivers down the spines of the people. In fact, this blind fear is the first problem to be overcome. The Madras Snake Park Trust is visited by nearly 10 to 12 lakhs of people every year. Ever since the commencement of the Park in 1971, "The snake-phobia" is slowly vanishing in the minds of the people, when they see how the snakes are handled by our staff. This is an important factor to be taken into account. The ecological importance and role of snakes should also be explained to the people. They should be educated on matter of rodent control in a natural way. In biological control, we use a natural enemy of the pest to control it.

HOW TO MAKE A BEGINNING

Common, non-poisonous snakes and Monitor lizards should be taken round to the villagers and food grain storage centres. The common man should be allowed to slowly touch and feel the snakes to overcome the fear. Then the role of the snake in the control of rodents should be explained through Video presentations in local languages. Small experimental project should also be initiated as a people's programme. This will make them shed their fear and they shall then be prepared to try the experiment to their own advantage.

At first, one should try to estimate the average grain production commensurate with the rainfall. Study areas of say 5 acres should be chosen. On convenient places on the bunds where the field is divided into smaller zones, a few artificial burrows or underground chambers should be constructed with trap doors. A few Rat Snakes, Sand Boas or Python babies should be released into the burrows and trap doors closed. For the first few days rats should be let into these holes to be fed by the snakes. The trap door should be left open during night when the snakes will hunt for rats for themselves and get established in these underground chambers.

Some concealed observation platforms should also be built near the snake burrows to watch them during night whenever needed. A comparison of the grain production should be computed at the end of harvest with earlier estimated production with a view to assess the quantum of the loss of grains due to rats.

WAREHOUSES AND STORAGE GODOWNS

In each of the godown, certain well designed niches should be constructed and young pythons and sand boas should be released. Similar as above these also should be acclimatised as explained. The reduction of stored grain could be computed by weighment of grain leaking from bags and also for the chaff left over.

OTHER TYPE OF REPTILES

Monitor lizards also destroy rodents. In the same manner as explained above a few of these could be released into coconut plantations where they will control the arboreal species and also the burrowing rats.

ADVANTAGE OF BIOLOGICAL CONTROL OVER CHEMICAL METHODS

In biological control, chemical toxins are not pumped into the soil in the form of rat poisons or other injurious chemicals. It is less expensive and more effective. The population of snakes will not increase

similar to population of rats. In nature, the population of predator species is governed by the availability of prey species. A natural equilibrium will thus prevail and the crop damage will soon be reduced.

TYPE OF REPTILES THOSE COULD BE USED

1. Python young ones *(Python molurus)*
2. Sand boa *(Eryx johni and Eryx conicus)*
3. Banded racer *(Coluber Sp.)*
4. Rat Snake *(Ptyas mucosus)*
5. Monitor lizard *(Varanus bengalensis)*

HOW MANY REPTILES PER ACRE

At first, for every one acre, one could start with four reptile homes one for each species and about 3 numbers in each house, that is about 12 snakes and 3 monitor lizards per acre of land.

FOLLOW UP OF PROGRAMME

The experiment should be evaluated and the results tabulated. Also the population of snakes in the burrows should be estimated. The design of the reptile home should be made carefully to see that it does not get flooded during the rains or when fields are watered.

Similarly some opening with glass windows should be made to observe these while they are resting during day time. Most reptiles hunt only after darkness sets in. It may be possible that some reptiles may escape. One should not really worry since these are totally harmless to human beings.

CAUTION

People should not be complacent about snakes since sometimes, there may be natural occurrences of Cobras, Russells viper and other poisonous snakes. Hence they should be taught how to distinguish the poisonous ones from the non-poisonous snakes, when they look at them and in any case they should desist from disturbing them.

CONCLUSION

If we are able to establish biological control of rats by reptiles, then we should have made a start in right direction. If we are able to slowly bring down the loss of food grains from a staggering 10,000 crores per year even by a 100 crores, then the social relevance of this project could be appreciated.

The Madras Snake Park Trust would be only happy to co-operate and associate with any organisation or society desirous of initiating the project as a joint venture.

SNAKES AND THEIR CONSERVATION

R.S.Pillai

Myths and superstitions have made the snakes dreaded by human beings - the other single reptile that is more feared is, perhaps the crocodile. Crocodiles however, are seldom encountered while snakes do share their habitats with man with the result, that the fear of being bitten by a snake looms large.

Snakes live practically everywhere, jungles, villages, towns, cities, and in a wide variety of habitats, even upto elevations of 5000 metres.

The arrangement, nature and number of scales on the body, particularly the larger ones on the head, vary in different species of snakes and provide the basis of its identity. A transparent scale covers the eye. A snake cannot blink since it has no movable eyelids. Snakes cannot hear air - borne sound, such as music, since it is devoid of the external ear. The dancing cobra is concentrating on the moving end of the snake - charmer's gourd, and not on the tune pouring out of it. They can however, easily pick up earth-borne vibrations. The efficacy of using a heavy stick to tap the ground while walking in the fields at night is known to the rural folks. The forked tongue which protudes through a notch at the tip of the snout serves the functions of touch, smell and taste. Snakes are confirmed carnivores. They are unable to chew their food but swallow prey much larger than the size of the mouth by a peculiar system of loosely jointed jaw bones. They need not eat every day, one big meal will serve for weeks. Most of the Indian snakes lay eggs while some produce their young, alive.

There are about 235 species of snakes in India out of which only 50 are venomous. Many of the poisonous ones live in unpopulated or sparsely populated areas. About 20 species of venomous snakes live in the seas. Even among the poisonous ones, many have their venom not potent enough to kill human beings. The only common snakes that we should fear are, the Cobra, Krait, Russell's Viper and the Saw-scaled viper.

Should snakes be conserved ?

Modern thinking has it that all animals, whether it is a lowly worm or an elephant has its assigned role in nature. Along with the other living group, viz., the plants, they constitute an intricate system where one is dependent on the other in the complex cycle of the earth's life - supporting system, with man at its apex. With his powers to change the biosphere radically, man has little sense in controlling it. An estimated 25,000 plant species and more than a thousand vertebrate species are today threatened with extinction, not to mention, the very many thousands of smaller species of invertebrates. Estimates suggest that a million species will have been extinct by the end of this century, mainly as a result of habitat destruction. We are morally obliged to our future generations and to other creatures to preserve what have inherited. We cannot predict what species may become useful to us in future. What appeared to be a dispensable mould gave us the life-saving Penicillin. The Armadillo was an unwanted animal till it has been proved that it is the only one, other than the human being, to contract leprosy. All future research on *Micobacterium leprae* depends on the preservation of armadillos. Some Eurphorbiaceous plants might possibly give us the substitute for diesel, when natural diesel has ceased to be available. This goes to prove that we have to preserve all life forms. The concept of Biosphere Reserves arose only out of this, where we try to leave all forms of life to themselves. Nature is capable of taking care of them. And thus snakes which constitute the most important and successful component of all reptiles need to be conserved.

As stated earlier, only four common species are dangerous to man out of the 235 species, and anti-venom serum is available to counteract the bite of all the four. A large percentage of bites are not fatal at all and some deaths are solely out of the shock and fear rather than the result of venom. Exaggereated tales about Cobras and King Cobras attacking man and beast without provocation, or out of revenge are prevalent. In reality they are timid, and try their best to escape to avoid a confrontation. When cornered or caught or trodden on, they bite in self defence.

The venom from snakes is useful, both in medicine and modern research. Anti-venom serum is prepared from the snake venom. One illuminating feature is that the snake need not be sacrificed for the extraction of poison. After "milking" they are released.

To kill it instantly is the only response that occurs to us on sighting a serpent - even if it is a harmless one. We tend to forget their role in controlling the population of rodents. For every rat-snake killed, about 200 rats are saved every year ; such is its efficacy as a rat killer. With a prodigious capacity to multiply, rats devour or damage grains and other crops worth several thousand crores of rupees annually. Up to 10 kg of grain has been seen to be stored in a single rat burrow. Rat-snakes, are not the only snakes that prey upon rats and mice. Boas, Pythons, Wolf-snakes, Cobras, Kraits, Vipers are all effective as rodent controlling candidates. The harmles sand boas which are common in dikes in paddy fields, and manure dumps, live chiefly on rodents. The red sand boa is credited with the ability to enter even blocked burrows of the infamous paddy destroyer, viz the mole-rat. More than the adults it is the baby rats inside the burrows that are preyed. The body of the snake is admirably adapted for slithering down the rat holes and do what of rodenticides and traps fail to do. Pythons are kept as pets in granaries Burma and Thailand to combat rat-menace.

Granting that snakes need conservation on the facts stated above, how we go about it ? Who are the enemies of snakes. The prime enemy is man himself. More than killing them out of fright, destruction of their habitat for various purposes like cultivation, industrial,housing and mining purposes, coupled with poisoning of their environment by pumping toxic wastes and effluents have proved detrimental to their survival. Some recent surveys show that the rat-snake population has fallen from 286 in 1982 to a mere 6 per hectare in 1989. Similarly the saw-scaled viper has fallen in number from about 2400 in a 34 hectare plot in 1977 to as low as 25 in 1989 due to such reasons.

Yet another reason for their decline is the trade in snake skins which command high prices in international markets. Unfortunately the favoured skins belong mainly to the rat-eating snakes. Though a ban on killing snakes for skin was imposed in 1976, illegal trade continued to flourish and we have read in the papers about the huge catches of contraband skins lying with tanners. Even today about 3 million such snake skins are pending disposal. Why should our snakes be sacrificed for the sake of vanity and ornamental articles in foreign lands ?

The useful role of snakes in nature should be taught to school children and villagers. Myths and superstitions about snakes should be removed and the fact that most of the snakes are non- poisonous should be stressed. Snake Parks could contribute much in this. The utter dread for snakes in the minds of the people could also be overcome by the sight of snakes being handled by the demonstrators. *"You take my life when you do take the means whereby I live" - Merchant of Venice.*

CAPTIVE BREEDING OF THE RETICULATED PYTHON *(PYTHON RETICULATUS)*

V. Kalaiarasan

INTRODUCTION

Madras Snake Park Trust has reared and bred in the past, both endemic and exotic reptiles such as Rock Python *(Python molurus)*, Reticulated Python *(Python reticulatus)*, Star Tortoise *(Geochelone elegans)*, Madras Pond turtle *(Melanochelys trijuga)*, Indian Chamaeleon *(Chamaeleon zeylanicus)* and South American Iguana *(Iguana iguana)*. Among these, the reticulated or Malaysian python is one of the rare species found in Burma, Malaysia, Indonesia and Thailand. Within the Indian subcontinent, it is found in the border areas of North Eastern India and Nicobar Islands (Smith, 1943).

Several species of pythons have been successfully bred in captivity in many zoos all over the world. There are a few accounts (Van Mierop and Barnard, 1976; 1978; Acharjyo and Misra, 1976; and Dun, 1979) on the breeding behaviour,gestation and incubation periods, clutch size, and thermoregulation on several species of pythons. However, such studies on the reticulated python, though found in many zoos in India and abroad, are rather scanty (Smith, 1943; Stidworthy, 1969; Gans, 1978 and Daniel, 1983).

MATERIAL AND METHODS

A male reticulated python was obtained by the Madras Snake Park Trust in exchange for a female from Ahmedabad Zoo. This has mated with a female which was available in the park. The size of the pair was about 4 metre in length and 25 kgs in weight. The pair was housed in a cage (5 X 3 X 2 m) with concrete roof and stone sidewalls on the back and sides, and wire mesh-fencing in front. The floor was paved with rock and stones. Water was provided in a trough. Some logs and dry litter were also provided.

The first breeding of this python, recorded in 1985 is as follows. It laid 11 eggs on 3.3.85 and after 82 days of incubation, 9 babies hatched out. The young ones measured about 45 cm. Out of these, one pair was given to Ahmedabad Zoo and another pair died. Again in 1989, the female laid 26 eggs on 26th April. Unfortunately she discontinued the incubation in the 4th week and none of the eggs hatched.

On 25th of January 1990, both in the early morning (6-9 a.m.) and evening (4-6 p.m.) the pythons were observed mating. The female laid eggs on the night of 10th April. The eggs were removed the next day as it was felt that conditions within the cage were unsuitable and were kept in a wooden box (60 X 50 X 30 cms) containing sand, debris and fallen leaves. The temperature was maintained between 29 and 31^{o}C and 80-100 % relative humidity by sprinkling water or switching on an electic bulb inside the box. Two eggs were x-rayed after 45 days. On 14.6.90 and 30.6.90 two eggs were dissected to assess the stage of development of the embryo.

OBSERVATION AND RESULTS

39 eggs were laid on the 76th day after mating and the python remained coiled around the eggs. The mother exhibited aggressiveness while the eggs were removed. Egg measured about 10 X 7.5 cms and weighed 174 gm. The x-ray picture taken on 45th day did not show any development of

embryo. One egg which was opened on 65th day showed a live embryo of 42 cm. However, the one opened on the 80th day showed total lack of development. On 18.7.90, ie on the 99th day, 11 hatchling were seen crowded in a corner of the box. Their mean length was 77.9 cm (range 69-79.5) and mean weight 99.5 gm (range 75-115). Out of a total of 39 eggs, only 11 hatched while 21 had dead embryos; 6 were infertile and 1 live embryo sacrificed for dissection. The aggressive behaviour of the babies was evident from the first day itself. Inside a big glass-fronted cage, all the babies took to water inside the trough on the very first day itself; only head was visible above.

DISCUSSION

Daniel (1983) mentions that a reticulated python in Hagenbeck collections in Germany laid 100 eggs out of which 45 hatched in the month of January. Loveridge (1974) records 103 eggs with a hatching success of 88. The contention of Smith (1943) and Gans (1978) that the clutch is directly proportional to the size of the mother is borne out in the present female which laid 11 eggs in 1985, 26 in 1989 and 39 in 1990.

Incubation period varies from 56 to 87 as per the few available records (Smith, 1943; Stidworthy, 1960; Gans, 1978 and Daniel, 1984). Variation in the period between natural incubation and artificial incubation has been recorded in the rock python, *Python molurus*. It was 57-66 days for the mother-incubated eggs (Pope, 1961) and 60-93 days in the artificially incubated eggs (Wagner, 1975). It may be noted that the present data on the reticulated python shows that the incubation period of eggs is 82 days in natural incubation (1985) and 99 days by artificial means (1990). Such a phenomenon was seen in the rock python also by Vinegar (1973) where eggs hatched in lower temperature of 27.5° C, have both longer incubation period and lower hatching success than those hatched at 30.5° C. In the present study the hatching success is low and the period of incubation is noted to be longer. Period of gestation in the reticulated python is about 75 days in the present case. First moulting of the baby pythons took place between the 5th and 8th day and their first feeding was on the 15th day after birth.

CONCLUSIONS

1. Breeding season of the reticulated python extends from January to July.

2. The mating was observed in January.

3. Gestation period was 75 days.

4. Incubation period was noted to be 82 days in natural incubation and 99 days in artifical incubation.

5. Clutch size was seen to be directly proportional to the size of mother.

6. The babies had a mean length of 77.86 cm and weighed 99.46 gm

7. First moulting was between 5th and 8th day.

8. First feeding was on the 15th day after birth.

9. Females exhibited aggressiveness during removal of eggs.

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ON THE NESTING BEHAVIOUR OF THE INDIAN CHAMAELEON

(CHAMAELEON ZEYLANICUS)

R. Aengals

INTRODUCTION

The Indian chamaeleon, *(Chamaeleon zeylanicus)* is perhaps, the queerest of all Indian reptiles, both in appearance and behaviour, particularly in movement and capture of food. However its nesting behaviour is similar to that of the garden lizard *(Calotes versicolor)*.

Except for a few observations and notes by Trench (1912); Whitaker (1978) and Singh, Acharjyo and Bustard (1984), there does not exist any serious study on the bio-ecology of this strange lizard. The Madras Snake Park Trust hopes to embark upon a serious study on this soon. The present account is a casual observation on the nesting and laying habit of the chamaeleons which were being maintained at the Park.

I am thankful to the Madras Snake Park Trust, for all the facilities and to Shri. M. Krishnan, Shri. A.N. Jagannatha Rao, and Dr. R.S. Pillai for encouragement.

The chamaeleons were reared in a large circular enclosure, 3 metres across, in a shady area with fairly loose, soil. A clump of ornamental plants were grown inside the enclosure for the animlas, from which they seldom descend (except perhaps for laying eggs) and the roof was made of wire-mesh to let in light. During the time of this study, there were 3 males, 8 females and 3 juveniles inside the enclosure and were being fed regularly on grasshoppers. Eggs were laid in November and December, 1989. Clutch size was determined by digging them out. After counting, measuring and weighing, they were replaced in the same nest and covered as before.

OBSERVATION

On being found gravid in November 1989, the eight females were tagged and marked as F1 to F8 for further observations

Details on the size and weight of the female along with date of laying and clutch size are gives in Table.

Table

SIZE OF THE EIGHT FEMALE CHAMAELEONS AND THEIR CLUTCH SIZE.

Female chamaeleon Nos	Total Length (mm)	Body weight (gm) before egg laying	Date of Egg laying	No. of eggs laid
F 1	320	107	16.11.1989	18
F 2	330	105	30.11.1989	18
F 3	300	101	1.12.1989	18
F 4	360	130	1.12.1989	22
F 5	370	127	2.12.1989	20
F 6	350	132	5.12.1989	20
F 7	350	108	13.12.1989	14
F 8	365	137	13.12.1989	24

Egg-laying commenced in the second week of November and continued till the middle of December. Before oviposition the females grew restless and moved about in an exploratory manner on the ground searching for suitable spots. There appeared to be a preference for spots near the boundary wall, under stones and well shaded areas. Digging activity of the females was more pronounced between 11 a.m. and 5 p.m. and it took about two days for a hole to be dug out and eggs laid. Both the fore and hind limbs and head were used for excavation. They were seen to take rest for intervals of 10-15 minutes in between digging. There was total cessation of feeding activity till the nest was completed and eggs laid. The nests were all dug in a slanting manner. The mouth of the hole had a diameter ranging from 6-7 cm; the depth from 13 to 19.5 cm. The bottom was wider than the mouth (9 to 11 cm). While digging the animals were seen to enter and come out of the burrow for checking the depth. When satisfied, they entered the burrow tail first and laid the egs, the head alone sticking out. The laying took about two hours. Thereafter, the excavated sand was shovelled in to fill the burrow - and roughly levelled by using head. The entire operation of excavating the burrow and oviposition and filling took two full days.

The single female which Trench (1912) has observed took two days for digging the hole; oviposition was on the third day. All the eight females on which these observations were made died 6 to 10 days after oviposition. Such a phenomenon was also noticed by Singh, Acharjyo and Bustard (1984) where the spent females died within 1 to 42 days. Is the Chamaeleon is a single generation lizard?

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NEWS FROM MADRAS SNAKE PARK TRUST

1.ZOO-VETERINARY CONFERENCE AT CHANDIGARH

For the first time Veterinary Doctors from various zoos in India came together to discuss matters of medical management of captive animals in zoos. Madras Snake Park Trust was represented by Doctor P.D. Jagannathan and Hony. Secretary Mr. A.N. Jagannatha Rao. Dr. P.D. Jagannathan, read a paper on Treatment of Reptiles in captivity. The conference was held on 7th Nov. 1989 at Chandigarh, Haryana. Field visits were arranged to the local zoo also. This visit has helped the trust to plan for a hospital in our new premises at Kottivakkam.

2. NATIONAL SYMPOSIUM ON RECENT ADVANCES IN BEHAVIOURAL SCIENCE, CONDUCTED BY THE DEPARTMENT OF ZOOLOGY, UNIVERSITY OF RAJASTHAN, JAIPUR, BETWEEN 27TH OF NOVEMBER TO 29TH OF NOVEMBER 1989.

The Madras Snake Park Trust made a 30-minute video presentation of a collection of video snippets of observed behaviour in reptiles from India and other countries. These included feeding behaviour of King Cobra, defensive behaviour of Common Cobra, Star tortoise etc., and adaptive behaviour of Sand Boas, Calotes and Iguanas. Some types of special behaviour of the Pipe Snake of Sri Lanka, Shovel-nosed Lizard of the desert were also included in the presentation. Hony. Secretary Mr. A.N. Jagannatha Rao, and Research Scholar Mr. V. Kalaiarasan attended the symposium. The delegates appreciated the novel way of the video presentation instead of the conventional reading of paper.

3. THE UNIVERSITY OF AGRICULTURAL SCIENCE, BANGALORE HELD A NATIONAL SYMPOSIUM ON CONSERVATION AND MANAGEMENT OF LIVING RESOURCES BETWEEN JANUARY 10TH TO 12TH 1990.

The MSPT participated in this symposium by presenting a paper on "Rodent control by using Harmless Reptiles in India". The paper highlights the use of harmless snake like Pythons, Sand Boas. Banded Racer, Rat Snakes and Monitor Lizards to biologically control the rats and similar rodents in their burrows. Mrs. Shakunthala Sridhara of UAS Bangalore and her team organised the seminar. The Trust was represented by Shri. A.N.Jagannatha Rao, Dr. M.V. Rajendran, Mr. V.Kalaiarasan, Mr.R. Aengals and Miss.R. Chithra. Live specimens of Python, Sand Boa, Rat Snake and Monitor Lizard were displayed at this symposium. At the request of the Vice-Chancellor, one more snake display was conducted specially for the residents of the campus.

4. THE INDIAN IMMUNOLOGICALS, HYDERABAD : A UNIT OF THE NATIONAL DAIRY DEVELOPMENT BOARD.

A snake venom extracting unit from Cobra, Krait, Russells Viper, and Saw Scaled Viper is being set up for the production of anti-venom for snake-bite treatment. The technical advice was followed up by field visits and four snake-pits and a venom extraction centre were established during January to March 1990. This project has the unique feature of extraction of venom on a harvesting basis without endangering the life of the snake which has been the practice,

hitherto in India. This technical consultation is a feather in the cap of Madras Snake Part Trust.

5. FORMATION OF EXPERT COMMITTEE BY THE GOVERNMENT OF TAMIL NADU TO EXAMINE REVIVAL OF SNAKESKIN-TRADE IN TAMIL NADU.

The Secretary of Madras Snake Park Trust Mr. A. N. Jagannatha Rao, Dr. M.V.Rajendran, Shri P.Kannan, and Dr.R.S.Pillai were some of the members of the expert committee constituted by the Government of Tamil Nadu to study and give recommendation for possible exploitation of Rat Snakes *(Ptyas mucosus)* to help the snakeskin-trade. The Committe met at the Office of the Chief Wildlife Warden, Coimbatore on 15.2.'90. and gave its recommendations and justifications for the continuation of the existing ban on killing of snakes for the skin-trade.

6. SEMINAR ON MANGROVE AWARENESS IN INDIA CONDUCTED BY THE WORLD WIDE FUND FOR NATURE AT BOMBAY BETWEEN 21st To 23rd FEBRUARY 1990

Reptiles of mangrove swamps were highlighted by the Madras Snake Part Trust through a half hour video presentation by its Secretary Mr.A.N.Jagannatha Rao and Dr. M. V. Rajendran. The reptiles of the mangrove ecosystem are the Sea Turtles like Olive Ridley, the Hawksbill and the Green turtle which use the mangrove for egg laying. Besides the saltwater crocodiles, the mangrove ecosystem also harbours the King Cobra, Monitor Lizard, Rat Snakes and Pythons. Sea Snakes also utilise the mangrove ecosystem. Hence to conserve these reptiles, the mangrove ecosystem should be protected. Mr. S.P. Godrej the noted industralist gave the keynote address. Mrs. Geetha Srinivasan of the World Wildlife Fund and Dr.Untawale and Mr. Ranjan Biswas of the National Institute of Oceanography, Goa conducted the semmar efficiently and field visits were arranged to Mahim and other places. A Mangrove Society of India was also formed.

7. SNAKE AND HUMAN WELFARE - A TRAINING PROGRAMME ORGANISED BY THE ZOOLOGICAL SURVEY OF INDIA AT JODHPUR FROM 5 TO 9TH MARCH 1990.

Prof. M. S. Jairajpuri, Director of Z.S.I. highlighted the roll of snakes in Human welfare by bringing together leading Herpetologists, Doctors, and other Organisations in the above Training Programme. The Madras Snake Part Trust was represented at this training programme by its Hony.Secretary Mr.A.N. Jagannatha Rao, Mr. V. Kalaiarasan, Research Scholar, and Mr. Prabhakaran, Research Scholar, Toxicology studies, Zoology Department, Madras University. The Madras Snake Park Trust made a one-hour video presentation which was much appreciated by the delegates. Field Visits were arranged to deserts and to the Centre for Arid Zone Research (CAZRI). Dr. R.C. Sharma and his team conducted the seminar well. There were talks on snakebite treatment, Indian Mythology, Rodent control, etc. Dr. Roonwall lent dignity by overseeing the programmes.

8. NARMADA VALLEY DEVELOPMENT AUTHORITY, VARIOUS MEASURES TO PROTECT THE REPTILES OF THE PROPOSED INDIRA SAGAR DAM IN M.P. - WORLD BANK SEEKS EXPERT OPINION ON STATUS OF REPTILES - COLLABORATION BETWEEN FONS, BHOPAL AND MADRAS SNAKE PARK TRUST TO "PRESENT STATUS AND FUTURE STATUS OF REPTILES AROUND NARMADA VALLEY" PROJECT

The Friends of Nature Society of Bhopal which was awarded the task of studying the submergeable areas of the Narmada river in

M.P, in the wake of construction of the Indira sagar Dam, has approached the Madras Snake Park Trust to make a detailed survey of the reptiles of the area during October 1990. Hence a preliminary field visit was made by the Hony.Secretary, Mr. A.N. Jagannatha Rao, and Mr.V.Kalaiarasan, Research Scholar during 12th to 14th March 1990. Shri J.J. Dutta, Principal Investigator of FONS and other officers accompanied our team during the preliminary survey. We covered a distance of 900 kms in three days, of which nearly 300 kms was forested. A preliminary checklist of reptiles of the area was prepared earlier by our Research department for confirmation in the field. The team for the one-month survey to be undertaken by the Madras Snake Park Trust will include Herpetologists, Research Scholars and snake catchers led by the Hony.Secretary during October 1990. The preliminary survey reveals the occurrence of River Turtles, Fresh Water Turtles, Marsh Crocodiles and some other species of snakes including Python. There are also a few interesting Rock Lizards which are restricted to areas of submersion.

9. KING INSTITUTE OF PREVENTIVE MEDICINE - MADRAS. ESTABLISHMENT OF SNAKE VENOM EXTRACTION UNIT

The Madras Snake Park Trust has colloborated with the King Institute of Preventive Medicine, Madras to construct snake pits and give technical advice to maintain them as part of the programme of the Institute to extract venom from poisonous snakes. The Institute proposes to produce Anti-Snakebite venom on a large scale. The project is likely to be completed by September 1990.

10. VISIT BY ESTIMATES COMMITTEE, GOVT. OF TAMIL NADU

The Estimates Committee, Govt. of Tamil Nadu headed by Sri.Ganapathy and a group of 20 MLAs and dignitaries visited the Madras Snake Park Trust on 1.6.90. They went round and evinced keen interest in the way the Trust is contributing towards conservation of reptiles. The team also assured the Trust of necessary help towards fulfilling its new projects and programmes. We are thankful to them for this gesture.

11. ENHANCEMENT OF ENTRANCE TICKET FEE

The Madras Snake Park Trust has sought permission from the Govt. of Tamil Nadu for enhançement of the present entrance ticket fee from 25 np. to 50 np. for children and 50 np. to 1 Rupee for adults. The old rates were fixed in 1971 and rising cost all round has compelled the Trust to seek this increase. The Govt. have formally agreed to consider this request favourably and their permission is awaited.

12. TRUSTEE'S APPOINTMENT

Dr.R.S.Pillai Retired Joint Director and Officer-in-charge of Zoological Survey of India, Madras has been co-opted as a Trustee with effect from 1st July, 1990. He will also help in Research Projects on Reptiles as the Scientific Officer.

13. EDUCATIONAL PROGRAMMES

The Madras Snake Park Trust has continued its educational programmes on reptiles by giving talks at

1. Bharat Scouts and Guides camp Madras, March/April 1990.
2. Ramachandra Medical College, Madras, April 1990.

14. EMPLOYEE'S WELFARE

The Madras Snake Park Trust has recently finalised new measures to its employees by introducing of welfare fund similar to Provident Fund, Medical Benefits, and fixation of wage scales and other welfare measures.

15. TRADE FAIR 1990

As before, the Madras Snake Park Trust, collaborated with The Tourism Dept., Govt of Tamil Nadu by participation in the Annual Trade fair. We have been doing this for the past 10 years. This year also the visitors evinced keen interest in reptiles.

16. EXPANSION AND DEVELOPMENT OF MADRAS SNAKE PARK TRUST IN THE NEW PREMISES - AN APPEAL

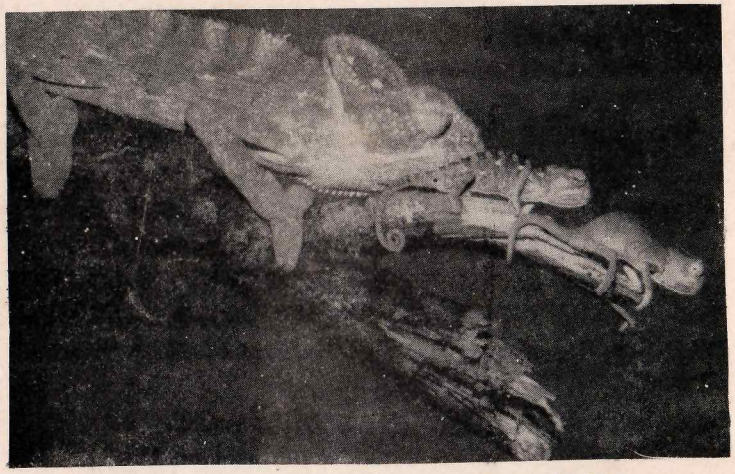
The Trustees have taken up the expansion and development programme of the Madras Snake Park Trust on its own land at Kottivakkam on the outskirts of Madras City (1 Km from Lattice Bridge near Tiruvanmiyur South). The layout and master plan, approved earlier, was revised on new lines. The new layout drawings and estimates are in progress. The total cost is estimated at more than 125 lakhs. The Trust proposes to approach the various Government bodies like the Tourism Department, Govt. of India; Tourism Department, Govt. of Tamil Nadu; Dept. of Environment, New Delhi; University of Madras; Forest Department Tamil Nadu; W.W.F., Switzerland; IUCN (Switzerland); F.A.O. Rome, Fish & Wildlife Service USA; Smithsonian Institute USA; Jersey W.L. Trust (UK); Bombay Natural History Society, Bombay and other Public and Private Organisations all over the world for grants towards construction.

The Trust has received exemption under Sec. 80g. of the Income Tax. We appeal through this Newsletter to all organisations to help us with grants. The detailed layout and drawings are shown on the last page. Grants, may be given on a block-wise or floor- basis or building-basis. Grants may be made in favour of Madras Snake Park Trust (Development Project). Kindly HELP us to achieve this objective.

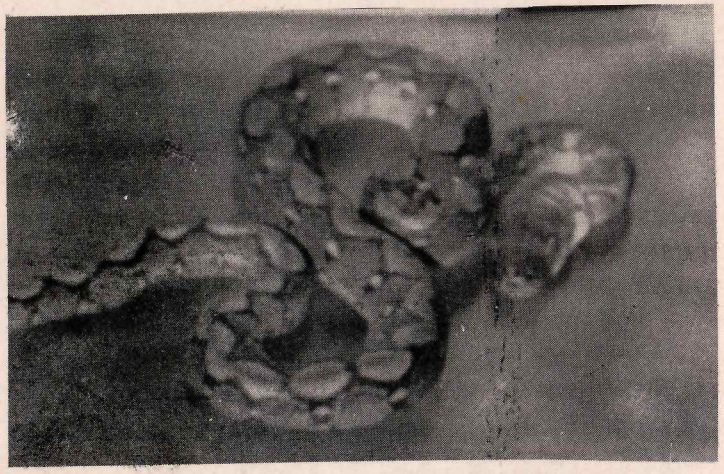
REPTILE LORE

After a hearty feast, Lord Ganesha has a snake around his paunch for a belt. Amused by this, the Sun and the Moon make fun of him. Angered over this, Vinayaga orders the snake to swallow both the sun and moon. And the world becomes dark. The Gods and others pray and get them released, on condition that they will be swallowed only on certain days, which we call as Eclipses or "Grahanams".

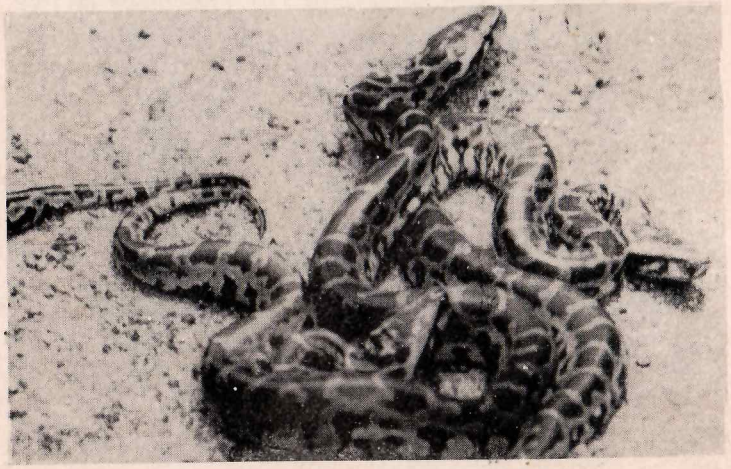
- K. Krishnan Murari Rao



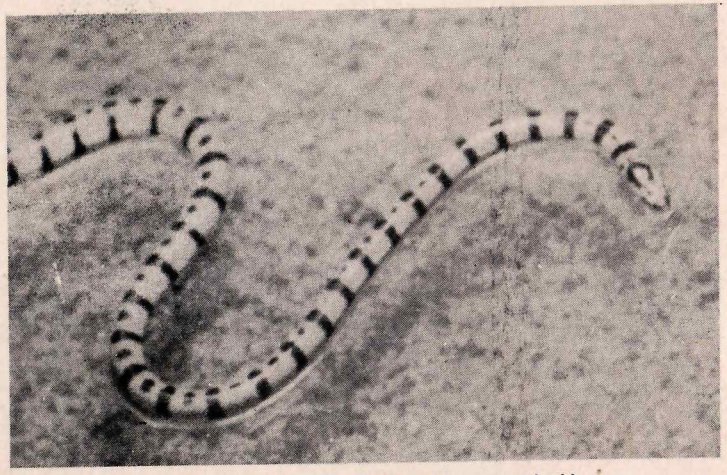
Adult female Chamaeleon *zeylanicus and 28 day-old infants*



Reticulated Python-infant Photographed 26.7.'90.



Python molurus - infants. Photographed 17.7.'89

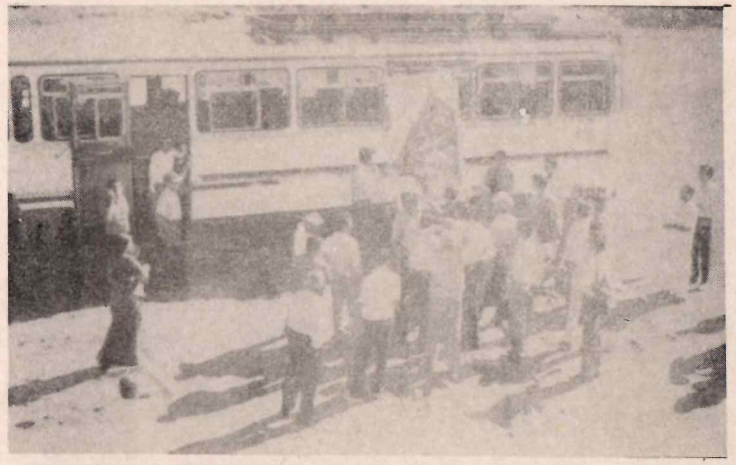


Sea snake *(Hydrophis spiralis)* About a month old.

Photes by Sri M. Krishnan

Snakes catching service by the MSPT in Madras.
A cobra was caught at T.I. Diamond chain
factory, Ambattur, July '90.

W.W.F. Seminar at Bombay 'On Mangroves Ecosystem' - Field Visit

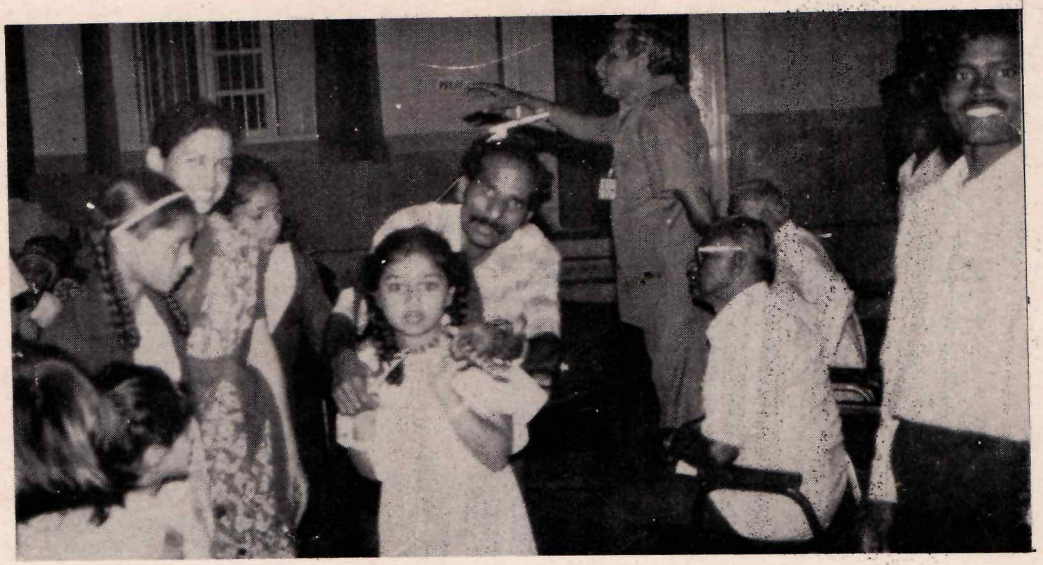


W.W.F. Seminar at Bombay 'On Mangroves Ecosystem' - Field Visit

Photos by MSPT

The MSPT team investigating in the
Narmada Valley area in M.P.

A view of the placid Narmada River before the project work is taken up in 1990



MSPT team at Bangalore Symposium on Natural Resources.
Children handling Non-poisonous snakes, Nov '89.

Valedictory function "Snakes and Human Welfare"
conducted by ZSI Jodhpur - March 1990.

REPTILES IN THE NEWS

SNAKE IN THE CLOTHES BITES WOMAN FATALLY

- THE HINDU - APRIL 4, 1989

Salomy (40), a housewife in Agaram, a suburb of Madras, was fatally bitten by a snake yesterday.

It is stated she had washed her clothes, put them in a bucket and gone out. It is belived that a snake got into the bucket then. After returning home, the woman was squeezing dry the wet clothes unaware of the snake entwined in them when she was bitten. She died on way to the KMC Hospital.

'CHAMELEON FIGHT'

- THE HINDU 12.4.1989

Sir- In Padmanabha Nagar (Adyar) I saw two chamaeleons (onan) held by thin threads tied tightly around their necks, set against one another to fight to the finish. Urchins were twisting their tails and beating them with sticks to enrage them. There was the usual crowed to watch the 'fun'.

I persuaded the boys to stop the cruel game and freed the helpless animals. But I was shocked to see that this was not a solitary incident. Dozens of urchins were dragging these poor creatures to make them fight. Many could not be saved, as the thread had already cut into their tender throats.

I find that this new kind of cruelty is now spreading. I call upon people coming across such acts of cruelty to persuade the urchins to desist from such acts, and in case of stubborn resistance, report to the nearest police station for action.

Cruelty to animals is an offence both under the Prevention of Cruelty to Animals Act (PCA Act) as well as the Madras City Police Act 1888 (as modified upto April 1, 1960 - passed by the Governor on the April 12; new edition 1978), Art. 53 of which states:

- whoever cruelly beats, ill-treats or tortures, any animals or causes any animal to be cuelly beaten ill-treated or tortured shall be liable on conviction to a fine not exceeding one hundred rupees, or imprisonment not exceeding 3 months or both. The Home Department has already issued circulars to all police stations in Tamil Nadu in this regard.

CAPT. V. SUNDARAM
(Blue Cross of India)
1, 5th Avenue, Besant Nagar,
Madras 600 090.

SI COBRA SCARES COPS

Madras. July 2, 1989: The police station within the permises of the Kilpauk Medical Hospital had an unusual visitor on Friday - a small Cobra that petrified the baton-wielding policemen.

Around 7 pm, an outpost guard noticed the cobra on the sub- inspector's chair with its hood raised. The reptile immediately slipped into the sub-inspector's shoe on the floor.

Even as the guardians of law began to pray, a few ward boys entered the scene. They shook the shoes causing the little serpent to come out. They then hit it with a stick.

VIPER POPS OUT FROM MAIL BAG

-INDIAN EXPRESS - JUNE 6, 1989

Express News Service

Villupuram, June 6 : The officials at the RMS Office here had a bizarre 'mail' to deliver. On Saturday night, a viper popped out from a mail bag from Panruti.

The frightened employees killed the snake and now an enquiry is on as to how the snake got into the bag.

HE TRIED TO PLAY GOD AND FAILED

-- EXPRESS PALGHAT JULY 9, 1989

A devotee of Siva who tried to pose with a Cobra around his neck, imitating his favourite deity, died of snake-bite on Friday.

Murugan an active worker of the Tamil Sangham had purchased the Cobra from a snake charmer. He sported a beard and let his hair grow long like the Lord. When he wanted to take a photograph with the Cobra around his neck the snake bit him. He was taken to the Thatchampara Hospital when he died - **Our Staff Reporter.**

MAN AND SEA TURTLE

- INDIAN EXPRESS - 10.3.90

Sea Turtle often grows to a weight of 850 to 900 pounds, but they average about 300 to 400 pounds depending on the species. They inhabit temperate and tropical waters and the females are well known for their ability to navigate unerringly every year through trackless oceans to tiny islands where they were born. There they lay eggs in the sand and return to the sea to wander thousands of miles before returning to the same island the next year.

Sometime back, a young Korean sailor fell overboard off the Pacific Coast of Nicaragua. No one on board the ship noticed this accident and his cries for help could not be heard above the sounds of the ship and other noise.

Some fifteen hours later the Swedish ship 'The Citadel' was sailing in the same area when a crewman saw what looked like a man's head in the ocean. He called others, but at first they did not believe that it could be a man. But then a neck and shoulder appeard above the ocean water. Then they made arrangements to rescue them.

When, finally, the young Korean sailor was rescued, he told a startling fact to others. He said that shortly after falling over board, a large sea turtle came by and he climbed on its back. Fortunately, or as we are led to believe, providentially, the turtle did not dive below the surface even once during the fifteen hours he clung to his back.

Wonderful are the ways of nature but more surprising are the behaviour of some of the animals about whom we least think of. One is at a loss even now to reason out why the fifteen hours? Is it because that it felt a weight on its back and it was too much to risk a dive or is it because of an inner urge of the turtle to save a human being from drowning. It is strange that while a man takes the first chance to kill an edible animal for his table, here is an innocent turtle which thinks of only saving the same man. It is baffling - **P. DEVANBU.**

ALLEGED ATTEMPT ON HOUSEWIFE : ACCUSED GETS BAIL

Express News Service - *28.3.90*

Madras, March 28 : The High Court has granted bail to three persons, who had allegedly induced a snake to bite Sudha, wife of Dr. Rajamayail, a doctor in GH, on Dec. 15 to murder her.

Justice T.S. Arunachalam granted bail to Palanisamy, father-in- law of Sudha, Arumugam, a snake-charmer, and his associate, Muniyammal, subject to condition that they execute a personal bond for Rs.2,000 each, with two sureties each for the like sum, to the satisfactiion of the Judicial Magistrate, Tirupathur, North Arcot District.

According to the police, the 23 year-old woman was harassed by Palanisamy for more dowry. Sudha's father, a business man in Surat, had given jewels worth Rs. 8 lakhs as dowry at the time of marriage in July last year. On December 15, after Dr. Rajamayil left for work, Palanisamy allegedly brought the Snake-charmer, tied up

Sudha, gagged her and let loose the snake on her. When they tried to induce the snake to bite her, she struggled free and raised an alarm and the neighbours rushed in and saved her. The three were arrested.

THE BITE PROVED FATAL FOR THE SNAKE

- THE HINDU, MADRAS, APRIL 1, 1990.

What would one normally expect when a snake bites a man? If the serpent was a poisonous one, may be death of the person.

But what happened in the hutments abutting the Loyola college campus in Nungambakkam, was totally the opposite. A snake, a 45 cm banded Krait, got killed when the 27-year old man bit it, while he was asleep, suddenly rolled over and crushed the reptile under the weight.

The incident came to light when the man, Muthukrishnan, woke up and found swelling in different parts of his body. He was immediately rushed to the General Hospital, when he was treated and later discharged.

CROCODILE ESCAPES FROM ZOO, RECAPTURED

- THE HINDU, COIMBATORE - APRIL 19, 1990.

A two-year-old three-foot-long crocodile, which managed to give the slip from its abode in the Children's Zoo at the VOC Park here on Wednesday night, went up to Avanashi Road, a distance of about 200 metres, before being recaptured and brought back to its place by midnight.

Some of the small-sized crocodiles had been shifted to a temporary enclosure within the zoo two months ago, with wire mesh erected on all four sides. A permanant shed for housing the crocodiles is coming up at a different place within the zoo.

Last night one of these crocodiles managed to crawl up the mesh and moved out through a small gap. It then crossed the road inside the park and reached Avanashi Road. A passerby, on seeing it, informed the Police Control Room. The police then contacted the Zoo authorities who rushed to the spot. The crocodile was driven into a wooden box and brought back to the zoo.

This morning all the small crocodiles which had so far been kept separately were removed to their original tank-like spot with two other big crocodiles. They will remain there till the permanent enclosure for them is ready - *Our Staff Reporter.*

MAN SHOT DEAD BY SNAKE

The Hindu - 24.4.90

Teheran, April 24 : An Iranian man who tried to trap a snake with the butt of his rifle was shot dead when the viper coiled around the gun and pressed the trigger.

Mr. Ali-Asghar Ahani was picnicking at an artificial fishing pond on the outskirts of Teheran with his wife, children and three other families, the Iranian News Agency IRNA said on Monday.

"We were chasing a rabbit when two snakes attracted our attention", said a friend of the dead man. "Pressing the butt of his rifle. Ali-Ashar tried to take the snake alive. But the viper coiled around the rifle butt and in the ensuing struggle, the trigger went off". Iranian police are investigating *- DPA*

COBRA RESCUED FROM WELL

Indian Express - May 5, 1990

Express News Service

Madras, May 5 : A three-foot-long cobra which fell into a well in the backyard of a house in Somasundara Bharati Nagar was rescued thanks to the timely intervention of a conservator of forests.

On Saturday morning, residents of the Somasundara Bharati Nagar, close to K.K. Nagar, confronted Mr. Ponnusamy, Conservator of Forests and Former Director,

Vandalur Zoo about the snake. They feared that the well water would be rendered unfit for drinking, if it died.

Mr. Ponnusamy rushed to the spot and suggested that a long wooden plank be lowered, so that the snake could get a grip and be guided upto the surface. Alexander of the Vandalur zoo, adept at catching snakes was also called in to assist in the operation.

The cobra slithered onto the plank and was hauled up to the surface. It was taken to the Children's Park at Guindy and released into the Snake House opened recently. According to Mr. Ponnusamy, the Cobra must have found its way into the well from the adjoining wasteland near the housing colony.

SYDNEY : CROCODILE EATS ENGINEER :
THE HINDU - 15.5.90

A crocodile ate an engineer just hours. after the man arrived on a remote island of Northern Australia to service telephone lines, police said on Monday. In a bizarre twist, police said they were questioning a man in connection with the theft of the crocodile carcass in which the engineer's remains were found - *Reuter.*

COMMENTS BY SOME IMPORTANT VISITORS TO MADRAS SNAKE PARK TRUST DURING 1990

1. A very interesting and informative visit. Learnt a lot about snakes. - **Rahul Gandhi** - *7.1.1990*

2. I visited Madras Snake Park and it looked very impressive. the work they are doing on Snake and literature and Culture is very interesting and I wish them well. - **Dr. P. Gopalakrishnakone, Singapore.** - *28.2.90*

3. Visted the Snake Park for the second time. First time I visited the Park as one of the forest trainees in 1975. Now as a professional Forester from Sri Lanka. Very pleased to see that this park is maintained well and in good conditions. A little disappointed to see that I could'nt see the Venom extraction. Which would serve a good cause. Delighted with hospitality of the officer-in-charge. - **S.Sahjanantham - Deputy Conservator of Forest, Department of Forest, Colombo** - *22.3.90*

4. Visited Madras Snake Park, was impressed. Is being maintained well and I have seen lot of interest and devotion and dedication being exhibited in the in-charge of the Manager. Besides providing entertainment and fun to the children it is educative. Demonstrations arranged add to the basic knowledge about the snakes. Ideas of musuem is good. Once completed and fully equipped, it will be a great attraction and will provide fund of knowledge. I wish the trust maintaining the park all luck. - **P.N. Pandits I.F.S, Director of Forest Research Institute, Jammu and Kashmir** - *1.5.1990.*

5. The Chairman and Honorable members of the Estimate Committee of Tamil Nadu - Legislative Assembly visited the Snake Park today. Had a good and educative go round. Learnt new matters about the snakes and other reptiles. Varieties of snakes could be found in the park. The snake park trust deserves more help and assistance as well as patronage. The snake park deserves all praise, whatever may be the visitors knowledge they get new ideas in seeing and losing fear of snakes. - **N. Ganapathy, MLA., Chairman, Estimates Group of MLA's Committee, Tamil Nadu.,** *1.6.90*

6. It was a pleasure to visit this only scientifically maintained snake park. The way these curious creatures are kept and maintained is simply splendid and most excellent. I am absolutely confident that if enough funds are provided and sufficient land is given for the habitats - This snake park will serve a most useful and educative purpose. Mr. Jagannatha Rao is busy in this venture with devotion. - **Dr. R. C. Sharma, Desert Regional Station, Zoological Survey of India, Jodhpur (Rajasthan).** *6.7.90*

7. Mr. A.N. Jagannatha Rao and his team of Herpetologists deserve highest praise for maintaining such a fine snake park. In spite of financial constraints the team is able to do a wonderful job. - **Dr. A.N.T. Joseph, Zoological Survey of India, Madras - 28.** *6.7.90*

8. It is very much educative to know about the snakes. I found it better to educate people and rural hospitals to keep Anti snake- bite serum through the State Government. It was also interesting to see the turtles and lizards. It is a wonderful work carried out by showing about the snakes. I wish it a very success. - **Surandar Pallsingh, Former Minister of Agriculture and Forests, (Punjab).** - *12.7.1990*

SURPLUS REPTILES AVAILABLE AT MADRAS SNAKE PARK TRUST IN EXCHANGE

(Subject to Approval by The Government)

Lizard

1. South American Iguana *(Iguana iguana)*

Snakes

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

Turtles, tortoises and Crocodiles

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

WANTED IN EXCHANGE

Snakes

1. Black Cobra *(Naja naja kaouthia)*
2. King Cobra *(Ophiophagus hannah)*
3. Banded Krait *(Bungarus fasciatus)*
4. The Indian Egg-Eating Snake *(Elachistodon westermanni)*

Monitor Lizards

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

Turtle

9. River turtle *(Hardella thurgi)*
   or
   Fresh water turtle - any species.

Crocodile

10. Gharial - *(Gavialis gangeticus)* (Juveniles and subadults)

11. Preserved specimens of 5 species of Sea turtles

1. Leatherback turtle *(Dermochelys coriacea)*
2. Green turtle *(Chelonia mydas)*
3. Logger Head turtle *(Caretta caretta)*
4. Olive Ridley turtle *(Lepidochelys) olivacea)*
5. Hawksbill *(Eretmochelys imbricata)*

CURRENT AND PROPOSED RESEARCH PROJECTS AT MADRAS SNAKE PARK TRUST

1. Status, distribution and Ecology of Reptiles pertaining to Tamil Nadu by Mr. V. Kalaiarasan M.Sc., M.Phil. For his Ph.D Programme under the guidance of Dr. R. Kanakasabai, M.Sc., M.Phil, Ph.D. Prof. and Head Dept of Zoology. A.V.C. College, Mayiladuthurai and field guidance of Dr. M.V. Rajendran M.A., Ph.D.

This project is being co-ordinated by Mr. A.N. Jagannatha Rao, Hony. Secretary of Madras Snake Park Trust.

2. Studies on chamaeleon by R. Aengals M.Sc., Mr. B. Rathinasabapathy M.Sc., M.Phil and Mr. P.Tamilarasan, M.Sc., Under the guidance of Dr. R.S. Pillai M.Sc., Ph.D., Dr.M.V.Rajendran M.A. Ph.D, Dr. G. Durairaj. M.Sc, Ph.D., Dr.R.Kanakasabai M.Sc, Ph.D, Mr. M. Krishnan M.A., B.L., and Mr. P. Kannan M.Sc. Mr. A.N. Jagannatha Rao is the co-ordinator of the project.

3. Haematological studies on Reptiles by Mr. S. Meganathan M.Sc., for his M.Phil degree under the co-ordination of Mr. A.N. Jagannathan Rao, and Guidance of Prof. S. Venkatachalam M.Sc, M.Phil., Dept of Zoology, A.V.C. College, Mayiladuthurai.

4. Proposed research on Rodent control programme by using harmless Reptiles.

5. Relationship between Morphology and habitats of Reptiles will also be proposed soon, *by Miss. R. Chitra B.Sc.*

An Appeal

The Madras Snake Park Trust has obtained, with the help of the Govt. of Tamil Nadu, an extent of 2.5 acres of land on 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.125 lakhs or 60,000 $(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" Deer Sanctuary - 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' X 40 ' area and will house Rooms, Mess, Recreational area for Research students, each building 12 students.

Cost per floor Rs.4 lakhs or $20000. Total cost of building 12 lakhs or $60000.

Building No.3 and 4 (3 floor)

Each floor has 70' X 40' area and will house Research Division, ie. Library, Laboratory etc.

Cost per floor Rs. 7 lakhs or $35000. Total cost of each building Rs. 21 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.1,00,000 or $5000.

Pit No.7

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

Cost Rs.50,000 or $2,500.

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

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

Cost Rs.1,00,000 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.1,00,000 or $5000.

Pit No.12 (Area 500 sq. ft)

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

Cost Rs.50,000 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.1,00,000 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 attactive for tourists. Simple hall 40 ' X 40 ' with a sloping roof.

Cost Rs. 4 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.7,00,000 or $35,000.

Building No.18 and 19.

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

Cost Rs. 4 lakhs or $ 20,000 each building.

Building No.20.

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

Each floor is 70 ' X 40 '. Cost Rs.7 lakhs or $35000. Total cost of the building would be 21 lakhs or $105000.

Building No.21.

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

Each floor costs Rs.7 lakhs or $35000 and the total cost of building Rs.21 lakhs or $105000.

Building No.22 and 23.

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

Cost Rs.75,000/- or $3500. The 2 units cost Rs.1,50,000 or $7,000.

No. 24 and 26

Open wells of 6' diameter each costing Rs.25,000/- or $1250. Together they cost Rs.50,000/- or $2500.

Building No.25

General store Room of 20 ' X 10 '. Costing Rs.50,000 or $2500.

Building No.27 and 31

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

Cost Rs.50,000/- or $2500/ each. 2 sumps together would be Rs.1,00,000 or $5000.

Building No.28 and 30

10 ' X 10 ' rooms for electric meters and water pumps, each room Rs.25,000/- or $1250.

Cost of 2 rooms Rs.50,000 or $2500.

Building No.29

10' X 10' Security room. Cost Rs.25,000/- or $1250.

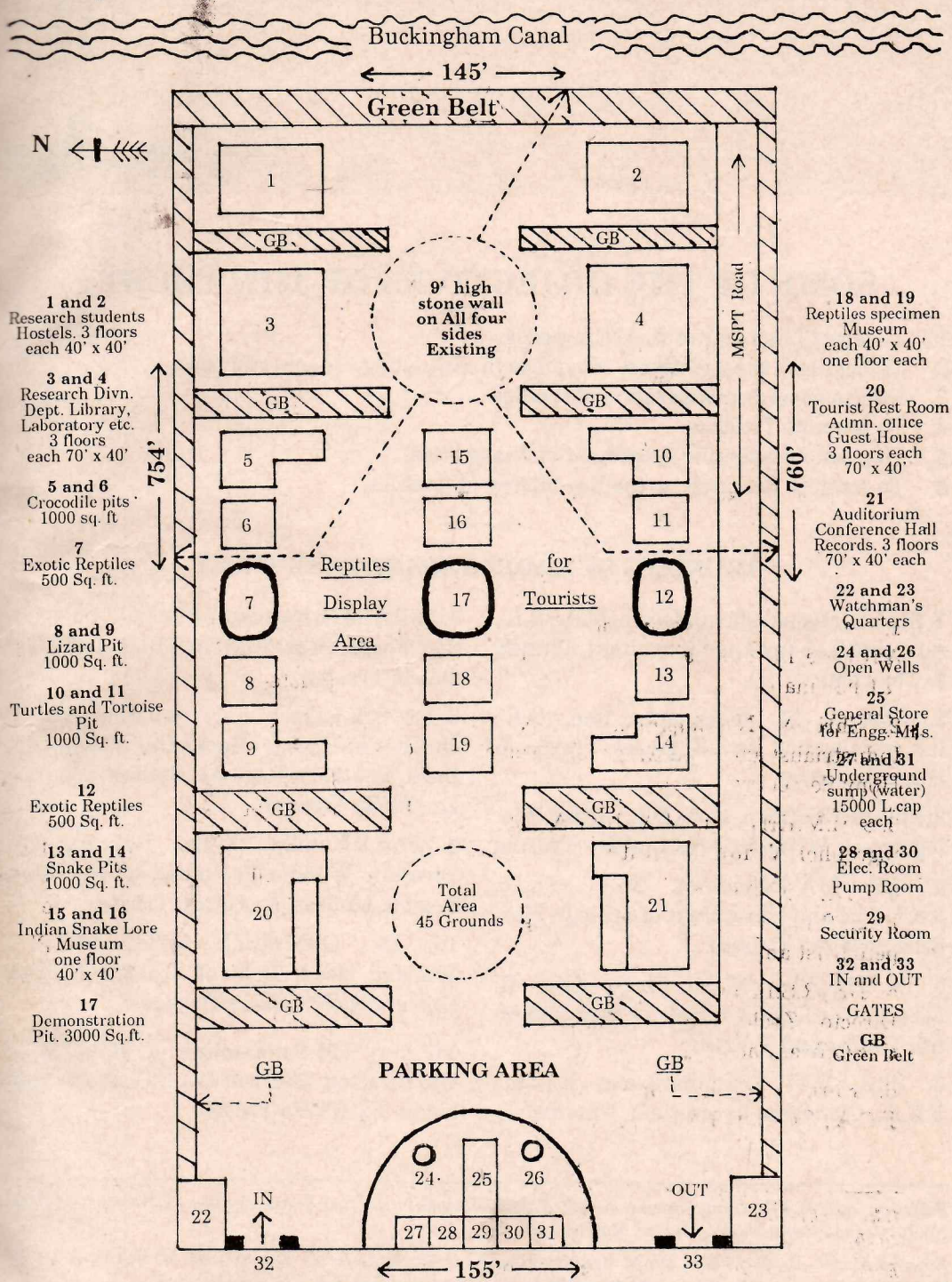
No. 32 and 33

IN and OUT gates. Each cost Rs.10,000/- or $500. Cost of 2 gates Rs.20,000/- or $1,000.

All costs are worked out on present exchange rate of US $ = 18.50 as on date 1.9.1990.

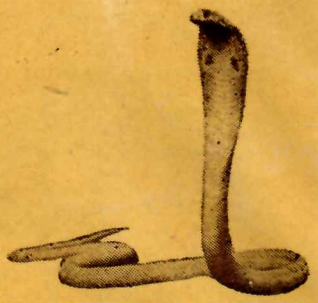
ALL GRANTS WILL BE DISPLAYED ON A MARBLE SLAB ON THE RESPECTIVE FLOOR/BUILDING.

Proposed Layout of Madras Snake Park Trust at Kottivakkam, Madras



To Adyar Madras ← Old Mahabalipuram Road → To Mahabalipuram

(NOT TO SCALE) SEP 1990



SOME OF THE 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.

TRUSTEES OF MADRAS SNAKE PARK TRUST

1. Shri. S. Meenakshisundaram, M.A., B.L., Advocate, Labour Law Consultant, Trustee & Chairman

2. Shri A. N. Jagannatha Rao, B.E., Industrialist and Retd.Engineer, Trustee & Hony Secretary

3. Shri.M.Krishnan, M.A., B.L., Artist, Photographer, Writer and Naturalist - Trustee

4. Dr. M.V.Rajendran, M.A., Ph.D., Retd. Prof and Head, Dept of Zoology, Herpetologist and Trustee.

5. Dr. R.S.Pillai, M.Sc., Ph.D., Retd. Jt. Director, Zoological survey of India, Scientific Officer and Trustee

6. Shri. P.V. Laxminarayana B.Com., F.C.A., Chartered Accountant, Trustee.

7. Shri S. M.Srivastava, I.F.S. Wild-life Warden, Forest Dept. Govt. of Tamil Nadu, Ex. Officio Trustee

8. Dr. K.V.Lakshminarayna, M.Sc., Ph.D., Officer In-charge, Zoological Survey of India, Southern Regional Station, Madras. Ex-Officio Trustee

9. Shri.P.Kannan, M.Sc., Regional Dy. Director, Wildlife Preservation, Southern Region, Madras Ex.Officio Trustee.

10. Dr. G.Durairaj, M.Sc., Ph.D., Prof.and Head, Dept of Zoology, Madras University. Ex-Officio Trustee.

11. Shri S.M.Sankaralingam, B.Sc., B.L., Dy. Director, Tourism Dept. Govt of Tamil Nadu, Ex-Officio Trustee.

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