

Cobra

Number 10

Quarterly Newsletter

Octo-Dec. 92



The Common Toad in Amplexus

— Photo by H. V. Ghatе.

Kalivay

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—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

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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—
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AN ACCOUNT OF THE HERPETOFAUNA IN THE WESTERN GHATS OF KANYAKUMARI DISTRICT, TAMILNADU

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and

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The hills of Kanyakumari district are some of the least known areas of the Western Ghats with regards the herpetofauna. This part of the country is closest to the equator with a fairly widespread rainfall and tropical climate. Topographically the district varies from sea level to hills over 1000 m. Consequently, a wide range of habitats including dense tropical wet evergreen forests once prevailed over much of this landscape. Recently, however, with the widespread cultivation of plantation crops, especially rubber, much of these natural habitats are destroyed.

Since the early 1960s, we have been visiting the hills of Kanyakumari district rather frequently. As our visits were always during the summer holidays and hence coincident with the premonsoon rains, there was plenty of life around us that never ceased to enchant us. We have recorded at least 150 species of birds, mammals such as elephant, tiger, gaur, sambar, Nilgiri tahr, wild dogs, sloth bear, Nilgiri langur, liontailed macaque, besides the many smaller mammals and a wide range of reptiles and amphibians during these visits. Being fond of keeping anything as a pet (our parents never objected to it) we frequently brought home frogs, lizards and snakes and thus learnt more about these animals' natural history. In what follows, we give a brief account of the herps that we have

come across (and were able to identify correctly) in the hills of Kanyakumari since our childhood. Due to difficulty in identifying the herps, we gave most species common names (for instance, Kangaroo lizard for *Otocryptis beddomei*; see Daniels, 1991a, wiry frog for *Rana temporalis* and so on) till in recent years we got them identified.

AMPHIBIANS :

Bufo melanostictus :

The common toad can be seen around homesteads in the plains. We have observed dark specimens under stones and other debris. This species even breeds close to the sea in rain water puddles.

Bufo microtypanum :

One small toad that we collected at 400m altitude in an estate was later identified as belonging to this species.

Microhyla ornata :

This small frog is found along the drier plains and fields in this district.

Microhyla rubra :

We have seen this a few times along with *M. ornata*.

Rana temporalis :

The bronzed frog used to be common along the perennial streams and we have

frequently collected young frogs (which are brighter) from wet slimy rocks (see Daniels, 1991b).

Rana hexadactyla :

This used to be the common frog in our neighbourhood. Captive frogs readily ate dragonflies and also some of our aquarium fish. One individual which stayed with us for a long time decided to leave after we introduced a fairly large paddy field crab (*Paratelphusa* sp) into the aquarium. The 'green frogs' in our area are not green as those in Madras.

Rana crassa :

We recently collected a few young frogs belonging to this species from the Tirunelvely side of the district. The species was observed as common along paddy fields late in the evenings.

Rana tigerina :

We have seen the bullfrog breed in small pools beside streams and also crushed on roads by vehicles after a rainy night. Freshly metamorphosed frogs are bright green and yellow. One large frog (c. 15.0 cm, SVL) that we kept at home refused to eat and finally killed itself while attempting to leap into water of our 135 foot deep open well.

Rana limnocharis :

The paddy field frog is common in the plains as well as the hills. We have collected several in wet fields and short grass. They survive transport in small match boxes.

Rana keralensis :

This frog is rather common in the hills upto altitudes of 400m. Metamorphosing frogs are common in June. We have collected adults from water held in rock quarries (Daniels, in press).

Rana cyanophlyctis :

The Indian skipper is common all over from roadside ditches to hill streams.

Rana beddomei :

We have seen and collected adults from a water seepage beside dense forests at c. 700 m altitude. We also saw many tadpoles skittering on the wet rock faces above in the same site.

Tomopterna breviceps :

The Indian burrowing frog was observed on only one occasion near a large tank towards the Tirunelveli side.

Micrixalus fuscus :

We have seen and collected this small frog from forest litter after rains. One individual caught was at 400 m above sea level.

Nannobatrachus beddomi :

We have collected this small frog from roadsides (under rocks and within crevices) at 400m altitude (Daniels, in press). Males were calling both at night and day in June. The call may be described as a sharp *prring*. In captivity adults ate termites, drosophila and small grasshoppers.

Nyctibatrachus major :

We found adults and tadpoles in roadside seepage and channels at 400 m altitude (Daniels, in press). Frogs were active at night in swift waters.

Nyctibatrachus sp :

A small species that we found in rock crevices just above water in channels but could not identify. The males were calling. The calls may be described as sharp *taps*. We never found these frogs below 400m altitude.

Polypedates maculatus :

We have seen this common treefrog enter houses even close to the beach.

Polypedates cruciger :

We discovered this species for the first time in India while hunting frogs at night in June 1990. This treefrog was common in a clove plantation at 400m altitude (Daniels, 1991b; Daniels, in press).

Rhacophorus malabaricus : We have seen the green treefrog resting on *Ochlandra* leaves above water on more than one occasion in the lower hills.

Philautus sp :

We have come across these little treefrogs often though we could not correctly identify them.

REPTILES :**Lizards :****Hemidactylus frenatus :**

This small house gecko is common around human habitation.

Hemidactylus brooki :

This small warty gecko is seen under the tiles of the traditional mud compound walls.

Hemidactylus leschenaulti :

This large gecko is common under roofs and on trees all over the district.

Hemidactylus triedrus :

We have seen this elegant lizard under stones and bricks in urban situations.

Calotes versicolor :

The common garden lizard in the district.

Calotes calotes :

The green lizard in the hills. We have collected adults from pepper vines. Males

develop red heads when excited. Hatchlings often prefer lower vegetation and are common along forest roads. Captive lizards fed on grasshoppers and dragonflies.

Calotes rouxi :

We have only once collected an adult male in the hills.

Sitana ponticeriana :

Common in the drier plains. At night this lizard partly burries itself in loose soil and sleeps. This habit has often left it an easy prey to ants that raid unprotected cages.

Otocryptis beddomi :

We have seen and collected many during the 1960s. However, this species is no more found where it once used to be common (Daniels, 1991a). Captive lizards readily ate small black ants and termites.

Psammophilus blanfordanus :

We called this lizard the redheaded rock lizard. It is common in the hills. We have had them at home fed on termites. A pair readily mated and laid inside a cage made of a large biscuit tin. When we discovered the 5-6 eggs, they were ready to hatch.

Draco dussumieri :

We have seen and caught several individuals of this flying lizard. Flying lizards are easy to keep on a diet of black ants (*Catalaueus* sp).

Mabuya carinata :

This is the common skink in this area.

Mabuya macularis :

This small bronzy skink is common within the forests.

Riopa punctata :

We called it the redtailed skink. This species is fairly common especially along the streams.

Riopa sp :

We have on many occasions dug out slender skinks with reddish tails and very short legs from compost pits and deep leaf litter around our house. We have not been able to assign the specific identity to these skinks.

Varanus bengalensis :

The common monitor is fairly common and we once had a small lizard as a pet.

Chameleo zeylanicus :

The chameleon is common in the hills. One small chameleon (c. 8 cm.) that we brought home grew to be an adult on a diet of grasshoppers and dragonflies. It finally died of an injury caused by our neighbour when it strayed far from our garden into his.

Crocodiles :**Crocodylus palustris :**

We have never seen the mugger. However, there have been reports from Pechiparai and Perunjani reservoirs within the district.

Snakes :**Typhlops sp :**

The worm snake is common. However, we are not sure of its specific identity. When killed, we have often resorted to burning this small snake.

Uropeltis mahendrae :

We have once collected from the hills (< 100m altitude) a beautiful uropeltid. Based on the bright blue/purple and yellow colouration we identified it as *mahendrae*. The snake was crossing a forest road in the evening after a shower. At home it easily dug out of a cardboard box and escaped into our garden. However, we soon learnt that it had taken shelter in our manure pit

as it left clear trails after moving about during the night. Surprisingly, after a rainy night, the snake entered our house and was safely caught and released back in the hills soon.

Eryx conicus :

The common sand boa is frequently seen in the drier plains.

Python molurus :

We have not seen the rock python. However we know of burrows along streams from where snake charmers frequently collect young pythons.

Ptyas mucosus :

The rat snake is common.

Dendrelaphis tristis :

The bronzebacked tree snake is common around human habitations.

Ahaetulla nasutes :

The green vine snake made a good pet of itself eating garden lizards and geckos in captivity. We have once come across a large (female ?) adult which was over 2m in a tea estate. It never attempted to bite when we picked it up.

Lycodon anlicus :

The wolf snake is common and even enters homes. It lives under tiles and bricks and readily bites when handled. One small female that we caught, had eggs visible through its skin.

Xenochropis piscator :

The checkered keelback water snake is common in the plains as well as the hill streams. We have seen large snake bask on branches just above water.

Sibynophis subpunctatus :

One small snake that we caught from the foot hills was later identified as belonging to this species. The black pattern on the head was characteristic.

Naja naja :

The common cobra is frequently encountered in the plains as well as the hills. One large cobra that was once shot in the hills had just swallowed another snake. We could not identify the snake as we were not allowed to go anywhere close to a half-dead cobra.

Bungarus caeruleus :

We have never seen the krait in our neighbourhood. However, there are many reports of its common occurrence within the district.

Ophiophagus hannah :

The king cobra is not common in the hills. However, individuals are frequently encountered and killed during the rains. Of the two records that we know of, one entered a streamside hut and was shot. The other was killed by a person bathing in the river some time in the 1970s. The latter was about 12 foot and we have a photograph of it.

Vipera russelli :

The Russel's viper is common in the rocky foot hills.

Echis carinatus :

The saw-scaled viper is more frequently seen in the drier parts of the district.

Trimeresurus malabaricus :

The Malabar rock pit viper is common along the hill streams. One individual that

we tried to catch from a rock leaped into water and swam across. The pit viper rests frequently in large numbers on the base of tea bushes. These snakes frequently bite the garden workers in the estates.

Tortoises/Turtles :

Melanochelys trijuga :

The common pond turtle is frequently seen in streams and tanks. The individuals that were brought home thrived well on boiled rice and raw fish.

Indotestudo forsteni :

A juvenile Travancore tortoise was once collected by us at over 400 m in the hills. It made a good pet of itself till it accidentally got killed.

Lissemys punctata :

The common flapshell probably occurs in all tanks in the district. Though we have never seen one in the wild, we had one brought to us from a local tank.

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ECOLOGY, BIOLOGY OF THE SPINY-TAILED LIZARD (*Uromastix hardwickii*)

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The Spiny-tailed lizard (*Uromastix hardwickii*) is one of gravely endangered lizard of Thar desert, largely because of its poaching by some gypsy tribe men who illegally catch the lizard from burrows to sell their melted-fat as a general and aphrodisiac tonic. This lizard is of notable ecological and ethological importance being an inhabitant of extreme arid rocky calcareous areas, inhospitable for majority of fauna. Being a herbivore and much relished by carnivores it has notable importance in food-chain in the desert ecosystem. It is very timid, and docile although appearing very ferocious. The developed spines on the body, serve as defence, not offence.

Ecological, biological and conservation aspects of the Spiny-tailed lizard was largely studied in Jodhpur division of the western Rajasthan Thar desert. The study continued for seven years from 1984 to 1991.

DISTRIBUTION AND HABITATS

Its distribution was observed wide in extreme desert regions of the Thar desert, western Rajasthan, more concentrated in very arid districts Jaisalmer, Bikaner, Barmer etc.

Its burrow colonies were observed largely in heavy hard clay and calcareous soils, rich with pebbles. Density of its colonies was observed to be more in saline regions; it is very tolerant to high salinity of the soil. Vegetation around its colonies are *Capparis decidua*, *Tephrosia purpurea*, *Con-*

chorus depressus, *Cyperus bulbosus* etc. *Zizyphus nummularia* and *Salavadora* spp are also common in such areas.

ANNUAL AND DAILY ACTIVITIES

From early spring about mid February it becomes active after the hibernation in winter. It was observed that even in the winter, it is not in complete hibernation except on cold-wave days and it emerges out of burrow to bask in the sunlight. It was noted that it comes out of its burrow in search of food when there is enough brightness of the day and goes inside before darkness sets in. It is quite tolerant to mid-day hot sunlight and is active during that period of the day when most animals would like to take shelter under shade or in burrows. Early in the rainy season they migrate to nearby elevated mounds to avoid flooding and returns to lower areas only in autumn or spring.

FOOD AND FEEDING :

It was observed living mainly on the sappy stem of *Capparis decidua* which grows around its colonies. Its droppings exhibit high content of *Capparis* stem fibres. Besides that it takes fallen flowers of *Tephrosia purpurea*, flowers and fruits of *Capparis*, stem of *Corchorus depressus* and bulbs of *Cyperus bulbosus*. that grow around its colonies. It was also observed picking fruits of *Zizyphus* and *Salavadora*.

Besides a vegetarian diet, it was observed relishing termites readily available there in the autumn, spring and the rainy season,

hoppers, ants and beetles are also consumed.

BREEDING :

The young were observed in autumn (October) and spring (March). Considerable parental care is exhibited which is rather unusual among lizards. Upto four young were observed accompanying the mother near their burrows. Subadults were observed excavating their own burrows nearby.

PREDATION AND DEFENCE

This lizard has excellent camouflage colour. Ordinarily one cannot notice this lizard until it moves and even after that when it becomes stationary it is very difficult to locate it, if not carefully watched. Such extraordinary camouflage colour and shape are very useful in defence against predators.

It does not move far away from its burrow, and rushes in on slightest alarm. It is on report that when a snake tries to catch it, it partly enters the burrow and violently lashes its spiny tail to deter the snake. Flat burrow mouth and zig-zag oblique tunnel also check entry of snake and other predators. The fox, wolf, jackal, stray dogs of nearby villages and also the Jungle cat and mongoose often attempt to hunt it; they scarcely succeed as it escapes briskly into the burrow. Falcons have been observed occasionally to hunt it. Ground soil of the burrows is very hard and calcareous and hence cannot be easily excavated by dog and other animals. In the rainy season dogs may scrape the burrow when the soil is comparatively less bonded.

POACHING AND CONSERVATION :

Poaching is a serious problem for its survival. Jogi and Kalbelia gypsies are the main poachers. They dig them out with long pointed iron-bars. They dislocate the vertebral column by twisting the lizard or by a blow on the back. These tribals also flood their burrow by pouring water in it which compels the lizard to come out.

It is also reported that poachers make sound like hiss of the snake and when the lizard tries to lash its tail in defence it is picked out by the tail with hand by using a handkerchief.

Spiny-tailed lizard with a fractured back-bone are kept for long to convince customers that the oil they sell is genuinely of the lizard. The lizard is cut and boiled in any vegetable oil and sold by the tribals as Sansi, Jogi and Bhil at road sides. The oil is recommended as highly aphrodisiac taken orally or used as an ointment. Their customers are largely illiterate rural people. They also feed the lizard-oil mixed with forage to their camels and oxen assuming that it increases running ability of the animals.

It is protected under the Indian Wildlife Protection Act; there is a ban on its catching, hunting and selling of its oil. Several raids on road-side sellers of oil of the lizard by the Flying Squad of Wildlife and Forest Department, Rajasthan have been made during the last seven years. Although there is no public sale it is reported that some clandestine selling of the lizard oil is still in vogue. It is heartening to note that the ban and control have saved the lizard from the verge of extinction.

OTHER DANGERS TO THEIR SURVIVAL

Agriculture extension with the aid of efficient heavy duty agriculture machines and ground water and irrigation canal extension in the desert are destroying many habitats of the lizard and may endanger its survival. Panchayats of villages should be directed and persuaded to preserve their habitats and also other endangered faunal habitat. Live stock population, particularly the goat and sheep is on the increase. Burrows of the lizard get trampled and damaged by hoofs of live-stock. Shepherds should be educated to avoid grazing and passing through colonies of this lizard, to reduce the negative factor for survival of this unique and endangered species of lizard. ●

DAY TIME SPAWNING IN *BUFO MELANOSTICTUS*

H.V. GHATE

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Recently, on 27th July 1992, I was attracted to our garden 'pond' at the college by a loud chorus of calling male toads (*Bufo melanostictus*). It was 11.00 A.M. and when I went to the pond I found a single female (SV length 110 mm) and nine male toads (average SV length 85 mm) at various places on the edge of the pond. Between 12 to 1 P.M. there was a lot of activity and loud calling and four or five males were chasing the female in water. The scene was similar to what has been appropriately described as "rigger scrum with the female buried under a mass of struggling, kicking males.." (see Daniel, 1963). Around 2 P.M. I found that the female was very much exhausted and was almost drowning. I intervened at this stage and separated the female from that group. Later I placed a large male close to that female outside the water body. They immediately formed amplexus, the typical axillary amplexus seen in many other anurans. It was 2.30 P.M. After about 15 minutes the amplexed pair went back to water and started moving about for some time. At this time any approaching and calling male was ably kicked away by the amplexing male. The kicking action, using both the hind-legs, was quite vigorous and effective and none of the other males was successful in dislodging the amplexed male. By 3.30 P.M., in broad sunshine filtering through the clouds, the pair started spawning and was busy moving about the weeds depositing a long translucent thread containing eggs. The process continued for over one and half hour.

Over the last 10 years, I have often noticed this toad spawning in broad daylight, at

various times between 9 A.M. and 4 P.M. Though it has been mentioned that this toad as well as *Bufo stomaticus* can be seen moving around at day time during breeding season, it has not been clearly mentioned that the toads spawn during day-time (see Daniel, 1963; Mahapatro & Dash, 1990). Though I must state that I have not scanned the vast literature on our amphibians. Diurnal spawning behaviour has been, however, clearly pointed out in the natterjack toad *Bufo calamita* which has been recorded to be spawning in bright sunshine (Banks and Beebe, 1987).

Attempts to dislodge the amplexed male have also been observed to be unsuccessful in *Bufo stomaticus* (Mahapatro and Dash, 1990). Duellman and Trueb (1986) have clearly stated that observations of unmated males attempting to dislodge amplexing males indicate that most mated males maintain amplexus and therefore are effectively monopolizing the mated females.

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VERNACULAR NAMES OF INDIAN SNAKES AND THEIR TAXONOMIC VALUE

T.S.N. MURTHY

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It is customary that any snake, or for that matter any animal/plant, should be called by its scientific name. However, we often tend to ignore the significance of the vernacular names. I restrict here myself to some of the most commonly used Telugu names for some snakes only to highlight their utility in confirming the identity of a snake and to know something about its possible area of occurrence.

The common blind snake is most appropriately called 'Guddi Pamu' in Telegu which is a clear indication of the degenerate eyes of the snakes. The sand boa is called 'Poda pamu' signifying the blotched-pattern of the snake's colouration. The giant of the harmless snakes, the Indian python is called 'Konda chiluva' which indicates that the snake is a denizen of the hills or rocky tracts. The better-known Rat snake bears an apt Telugu name 'Jerri pothu', meaning a stocky snake that moves like a *Jerri* (centipede in Telugu). The common green whip snake is known as 'Pasinika pamu' to notify the grass-green colouration of the snake. Many of us are aware of the so called flying powers of the Golden tree snake but it is

little known that some other tree-dwelling snakes such as the Bronzebacks do indulge in the act. It is, therefore, interesting to know that the common bronzeback tree snake is known as 'Chetturiki pamu' which clearly means that the snake can jump from tree to tree or from bush to bush. The dreaded Russell's viper is aptly called 'Katuka rekula poda' in Telugu indicating the similarity of the dorsal oval spots of the snake to the painted eyes of a lady. How many of us know that the Telugu name 'Bungaram pamu' (Golden snake) used by Russell for the banded krait has given origin to the scientific name of the genus *Bungarus* ?

It is hoped that the foregoing piece will stimulate the fellow ophiologists and other enthusiasts to dig in for more information on the local names of Indian snakes in other major Indian languages so as to assess their role in the taxonomic studies.

I wish to thank Dr. A.K. Ghosh, Director, Zoological Survey of India, Calcutta for encouragement.

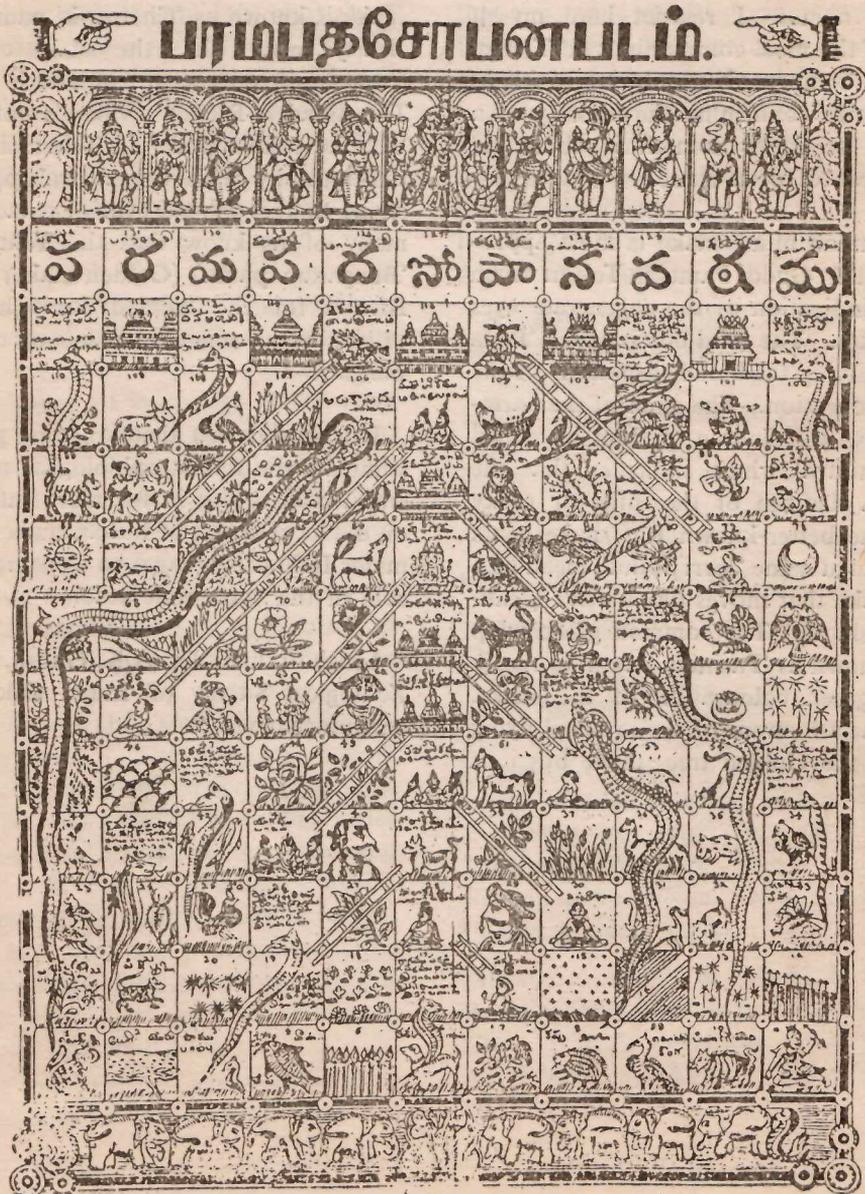
PARAMAPADA SOPANAPADAM

(Snake and Ladders)

Most Indians from children to adults have played with dice on Snakes and Ladders Game. It shows the progress in Life—its ups and downs. The Ups are Ladders and the Downs are Snakes. Many animals and birds are represented. But good deeds are associated with noble association with Saints, Dharma, etc. Bad deeds are represented by squares with numbers like 17—Ravana's desire for another's wife, Square 26—Anger with revenge, Square 43

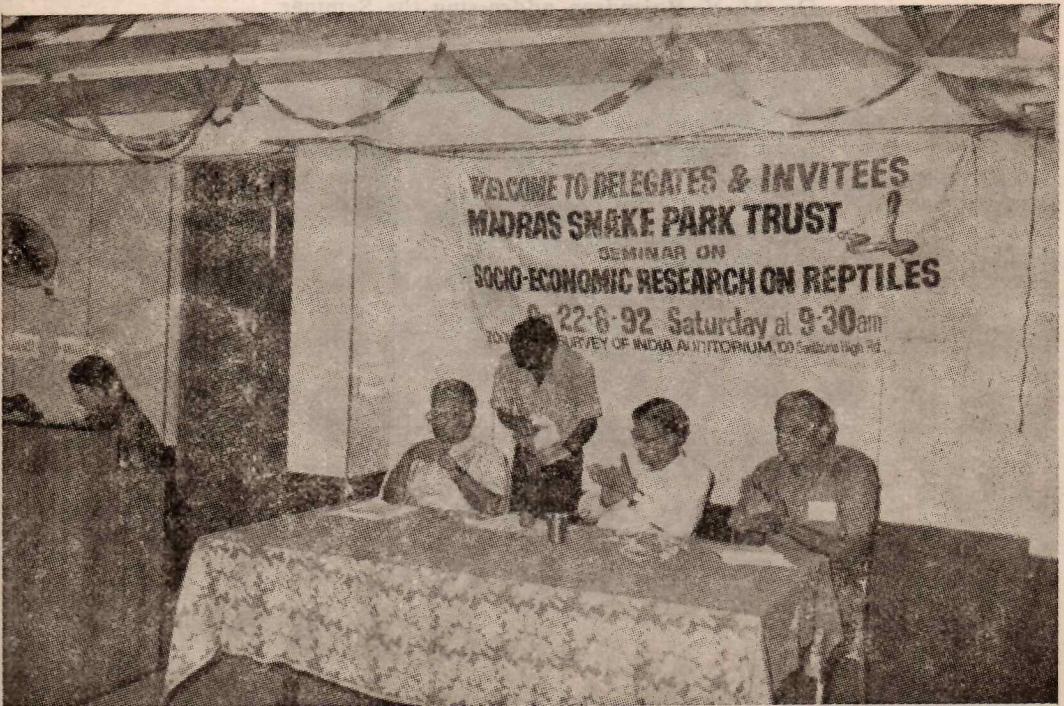
—Lust and hell, Square 47—Abduction. Some good association are also in square 63—Bhakti, square 61—Swargalokam, square 83—Bramhalokam, square 87—Vairagyum i.e. Detachment, Ultimate goal is Vaikuntam in square 115. In short, life's pathway is indicated with its strengths and weaknesses. Only good acts and determination to be good will get one to Vaikuntam.

Shri A.N. JAGANNATHA RAO.

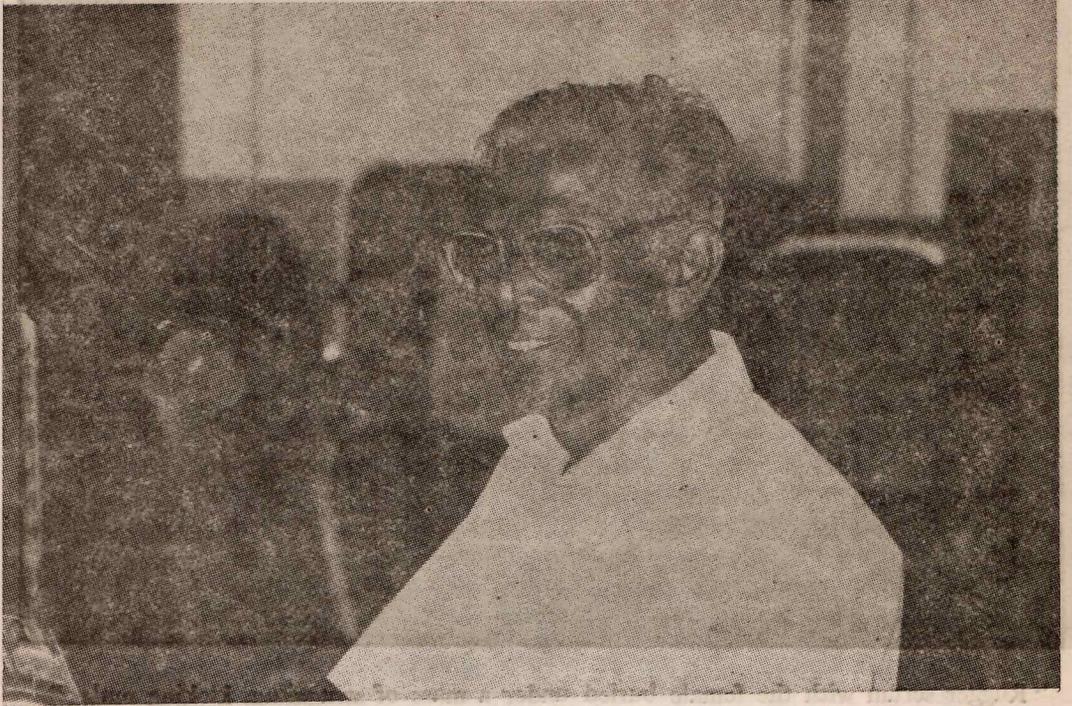




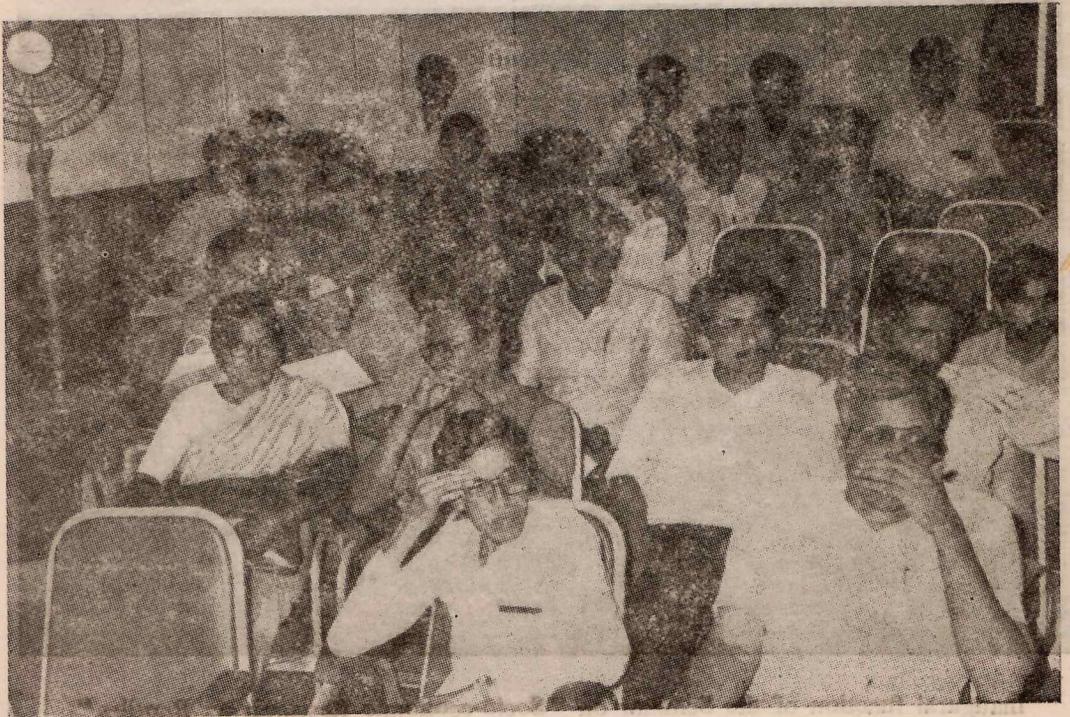
“Rugger scrum with the female buried under a mass of struggling, kicking males”.



Inaugural function of the Seminar on “Socio-economic Research on Reptiles” organised by the Madras Snake Park Trust on 22nd August, 1992.



Dr. M. V. Rajendran addressing the Seminar.



A Section of the audience.

REPTILE NEWS IN PRESS

The Hindu 26-12-92

BIG CATCH OF ENDANGERED TURTLES IN HOOGLY MARKET

Calcutta, Dec. 25

The wildlife wing of the West Bengal Forest department on Thursday seized over 1,000 turtles, regarded as endangered species from a market at Konnagar in Hooghly district.

Mr. M.K. Nandi, Conservator of Forest, told PTI that the personnel, acting on a tip-off, raided the market and seized the turtles weighing over 1,300 kg. which cost nearly Rs. 60,000.

They were of two varieties—Ganges soft shell turtle, popularly known as 'Ganga cachim and Indian soft shell turtle, known as 'Sundari'.

The turtles were brought from Uttar Pradesh mainly by truck and off-loaded at Konnagar.

In view of stepped-up vigilance in the city and adjoining Howrah area, those engaged in this illegal trade avoided the markets there, and instead sold turtles in the adjoining districts.

This was the second big catch of endangered turtles this year. Earlier, over 1,100 turtles were seized from Dankuni, also in Hooghly district.

24.11.92

PREGNANT WOMAN DIES OF SNAKE BITE

Hindu, Madurai Nov. 23.

A pregnant woman was fatally bitten by a snake while she was offering money at a temple hundi at Senthimangalam in Tirunelveli-Kattabomman district yesterday.

Police here said the snake, which had managed to get into the coin box, bit the woman's fingers while she tried to push in coins that got stuck at the slit.

The woman had visited the temple, situated on the banks of a tank and surrounded by bushes, on her way to hospital for delivery.—PTI

The Hindu 25.11.92

TORTOISE-SHELL SUBSTITUTE

In what could be good news for hundreds of traditional craftsmen. Japanese researchers say they have developed a tortoise-shell-like material from silk that could replace the shell of the hawksbill turtle. Japan has agreed to comply at the end of this year with a ban by the *Convention on International Trade in Endangered Species* on imports of hawksbill turtle shells.

According to the Ministry of International Trade and Industry (MITI), Japan will have imported 7.5 tonnes of hawksbill turtle shells between August 1991 and the end of 1992. Making combs, brooches and frames for eyeglasses from tortoiseshell is a traditional Japanese handicraft.

The new tortoiseshell-like material was developed by a team of researchers led by Jun Hosokawa of the national Shikoku Industrial, Research Institute in conjunction with the Japan Bekko Association, comprising 292 makers of tortoiseshell products. The search was commissioned by MITI. The researchers noted the similarity of protein composition between silk and hawksbill turtle shells.

To produce the material, silk is melted in a concentrated calcium chloride solution and processed into a 0.1 millimetre

thick film. Between 20 and 30 sheets of the film are then pressed together under steam to form the tortoiseshell-like material.

Like real tortoiseshell, the new material can be bent or stuck together by applying steam at about 90°. The natural colour is yellow but the film can be dyed before being pressed to form a pattern similar to tortoiseshell. Adding fine particles of gold in the solution will turn the material lavender, the researchers said.

According to the researchers, the new material can be produced at about half the cost of tortoiseshell, which is traded at about 100 yen (83 cents) a gram (0.035 ounces). Before the material can be put to commercial use, however, it must be made harder, and ways to eliminate air bubbles between the layers of film must be devised, the researchers said.

“Even when we save as much as we can, by reusing scrap pieces of shell, the domestic stock will last us only three years,” said Munco Funabashi of the Japan B.kko Association. “We are counting on the material in a situation where no substitutes are available.” —**Asahi News Service.**
28.10.92

HC RESTRAINS COLLECTION OF ROYALTY ON SNAKES EXPRESS NEWS SERVICE

MADRAS—The High Court has restrained the state government from collecting Rs. 10 per krait and Re. one per viper as royalty from snakecatchers.

Justice K.S. Bakthavatsalam granted the interim stay while admitting a writ petition from Mrs. Revathi Mukherji, member and former president of the Irula Snake Catchers Industrial Co-operative Society, Madras, challenging a GO dated. Sept. 15 this year which among other things, levied the royalty.

According to the petitioner, the government, in 1989, granted permission to the society to extract venom from 2,000 kraits and 20,000 saw-scaled vipers annually, for three years from April 1989. On Nov. 30 1990, the government issue a GO levying a royalty of 25. per cent on the gross value of venom sold by the society. Aggrieved, the society moved the High Court which stayed its operation. Since the stay order was still in force, the GO dated Spet. 15, 1992, levying royalty was violative of the stay order, the petitioner contended.

Seeking to quash a portion of the GO imposing royalty, the society prayed for a direction to the Environment and Forest Secretary to follow the proper and just scheme with regard to the society to ensure its smooth functioning and permit it to catch the four types of poisonous snakes—cobra, krait, saw-scaled viper and russells viper.

The judge directed the respondent to grant licence and permission to the society to catch snakes and to ensure its smooth and uninterrupted functioning.

VISITOR'S COMMENT

I have visited the Snake Park. It is quite educative

K. Sai Prasad
Senior Assistant
A.P. Forest Department

NEWS FROM MADRAS SNAKE PARK TRUST

1. October 5th and 6th

Madras Snake Park Trust, Research Department participated in the National Seminar on "Natural Resource Management" organised by the Postgraduate and Research Department of Zoology, Loyola College, Madras 34.

2. October 9th — 11th

Mr. T. Raveendra Babu, one of our Ph.D. scholar, currently working on the project of Rodent control by using harmless reptile, participated and presented a paper on "Comparative study on Burrow ecology of Indian Mole-rat *Bandicota bengalensis* (Gray) and Indian Gerbille *Tatera indica* (Hardwicke)" in the National symposium on Life Sciences, organised by Quaid-E. Millath Government College for Women and Indian Society of Life Sciences at Quaid. E. Millath Government College for Women, Madras 2.

3. December 15th

Madras Snake Park Trust Research team participated on "Behavioural Plasticity" "Gambling" and Social evolution" at the Entomological Research Institute, Loyola College, Madras 34.

4. December 18th

Madras Snake Park Trust Research Department participated in the National Symposium on "Biological diversity of Insects" at G.S. Gill Research Institute, Guru Nanak College, Madras 32, organised by the Indian Academy of Entomology.

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.

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.

— Editor

CURRENT RESEARCH PROJECTS AT MADRAS SNAKE PARK TRUST

1. "Ecology of Reptiles of 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*)
(4 year old)

WE ARE LOOKING FOR

Snakes

1. Black Cobra (*Naja naja oxiana*)
2. King Cobra (*Ophiophagus hannah*)
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

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

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 not exceeding 8 typed pages may be sent to Dr. R.S. Pillai Editor, COBRA, Madras Snake Park Trust, Guindy National Park, Madras-600 022.

An Appeal

The Madras Snake Park Trust has obtained, with the help of the Govt. of Tamil Nadu, 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" 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. 4 lakhs or \$ 20000.
Total cost of building 12 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. 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.)

Skunks, 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 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 attractive for tourists. Simple hall 40' × 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' × 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-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. 7 lakhs or \$ 35000. Total cost of the building would be 21 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 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.

Building 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' × 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' × 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' × 10' Security room. Cost Rs. 25,000/- or \$1250.

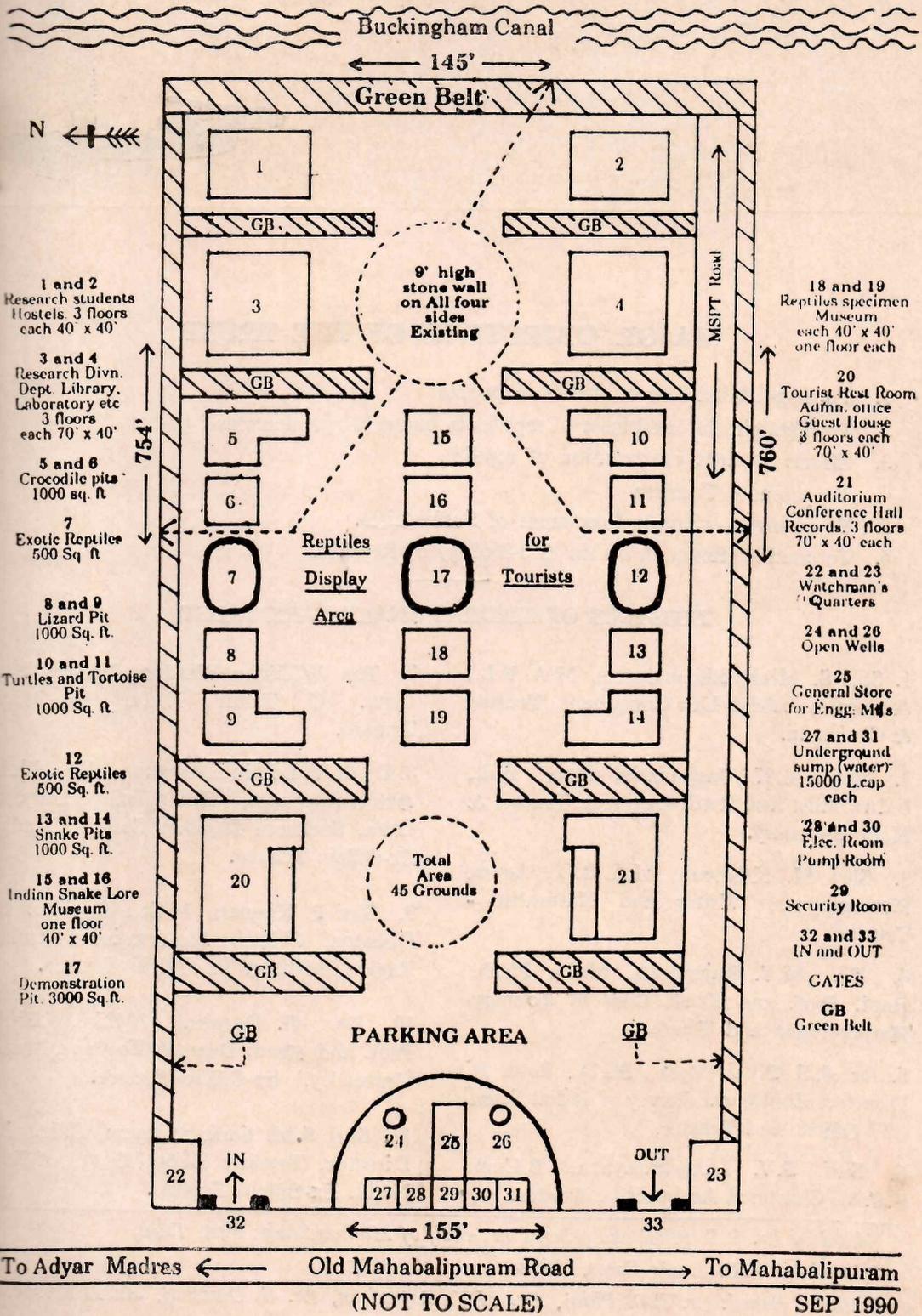
No. 32 and 33

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

- 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 Indinn Snake Lore Museum one floor 40' x 40'
- 17 Demonstration Pit. 3000 Sq. ft.

- 18 and 19 Reptilis 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. M/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.

TRUSTEES OF MADRAS SNAKE PARK TRUST

- | | |
|--|--|
| 1. Shri S. Meenakshisundaram, M.A.,B.L., Advocate, Labour Law Consultant, Trustee & Chairman. | 7. The Wildlife Warden, Forest Dept. Govt. of Tamil Nadu, Ex-Officio, Trustee. |
| 2. Shri A. N. Jagannatha Rao, B.E., Industrialist and Retd. Engineer, Trustee & Hony Secretary. | 8. Dr. K.V. Lakshminarayana, M.Sc., Ph.D., Officer-in-charge, Zoological Survey of India, Southern Regional Station, Madras. Ex-Officio Trustee. |
| 3. Shri M. Krishnan, M.A.,B.L., Artist, Photographer, Writer and Naturalist - Trustee | 9. Shri P. Kannan, M.Sc., Regional Dy. Director, Wildlife Preservation, Southern Region, Madras. Ex-Officio Trustee. |
| 4. Dr. M.V. Rajendran, M.A., Ph.D. Retd. Prof. and Head, Dept of Zoology, Herpetologist and Trustee. | 10. Dr. G. Durairaj, M.Sc., Ph.D., Prof. and Head, Dept. of Zoology, Madras University. Ex-Officio Trustee. |
| 5. Dr. R.S. Pillai, M.Sc., Ph.D., Retd. Jt Director, Zoological Survey of India, Scientific Officer and Trustee. | 11. Shri S.M. Sankaralingam, B.Sc., B.L. Director, Tourism Dept., Govt, of Tamil Nadu, Ex-Officio Trustee. |
| 6. Shri P.V. Laxminarayana, B.Com. F.C.A., Chartered Accountant, Trustee. | |

Edited by Dr. R.S. Pillai and printed on behalf of Madras Snake Park Trust.

Printed by : St. Louis Press, Adyar.

Editorial Board: Dr. R.S. Pillai, Dr. M.V. Rajendran, Dr. G. Durairaj, Mr. M. Krishnan, Dr. K.V. Lakshminarayana, Mr. Sankaralingam and Mr. A.N. Jagannatha Rao