

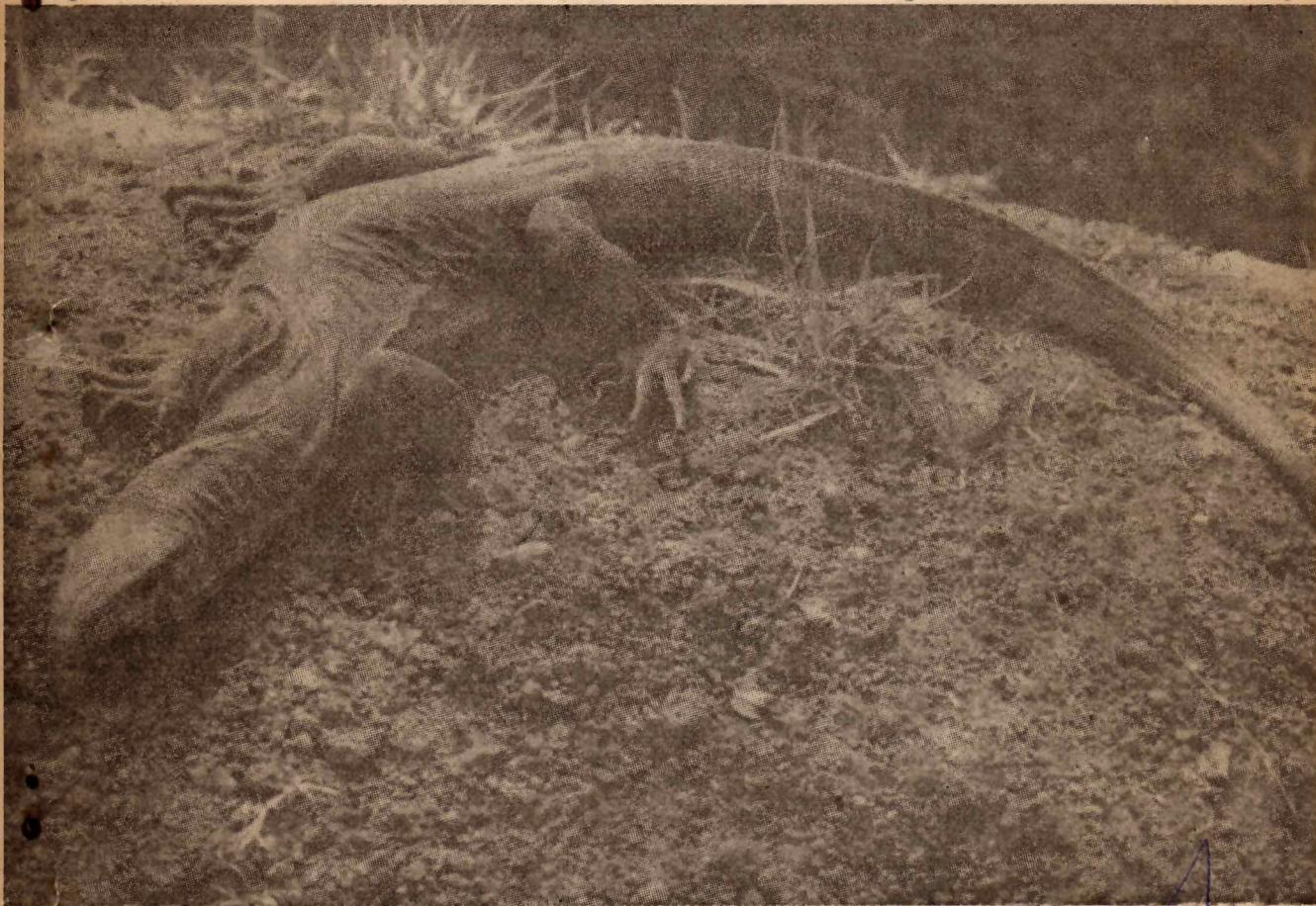
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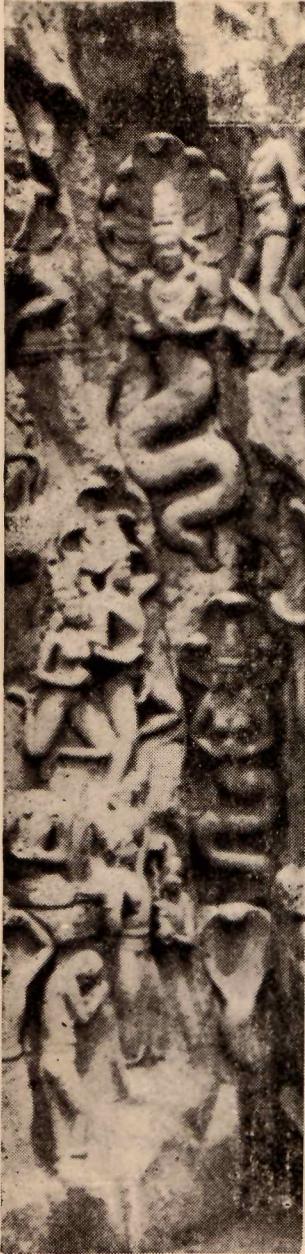
The Common Monitor

Photo by: M. KRISHNAN

Halen

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

CONTENTS

Page No.

Madras Snake Park Trust Programme for "Indian Tourism Year 1991-1992"	2
The Common Monitor — M. Krishnan	3
Amphibia of Shoolpaneshwar Sanctuary — Y.M. Naik & K.R. Vinod	7
Cannibalism in Pythons—V. Kalaiarasan	11
Sexual Dimorphism in the Rat Snake, <i>Ptyas mucosus</i> — Tej Prakash Vyas	13
Snake Lore	14
Reptiles in the News	15
News from Madras Snake Park Trust	20
Current Research Projects	21
Surplus Reptiles available for exchange	22
An Appeal	23
Details of cost of construction and display	24

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MADRAS SNAKE PARK TRUST PROGRAMME FOR "INDIA TOURISM YEAR - 1991-1992"

1. Special pamphlets on common poisonous snakes and non-poisonous snakes with special legends about them to be issued at Rs. 3/- and Rs. 5/-.
2. The regular hourly reptiles demonstration now being conducted in Hindi / Tamil / English will also be extended with special tapes in several Indian languages like Kannada, Telugu, Malayalam, Bengali, Oriya, Marathi, Punjabi, Gujarati, Goanese, Urdu etc and Foreign languages like Russian, Japanese, Spanish, German, French, Chinese, Italian etc.

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

3. Opening of the Exhibition Building displaying—
—Reptile lore around the world.

—Myth, Mythology, Worship and other interesting facets of Reptile-lore in our Indian Culture to commemorate the India Tourism year 1991 - 1992.

THE COMMON MONITOR

M. KRISHNAN

The common monitor (*Varanus bengalensis*) is the widest distributed and most familiar of all our monitors. It is there in great hill forest and there also in the plains scrub, virtually all over India. It is well known to a surprisingly varied assortment of our countrymen—percussion experts of classical Carnatic music, tribals and trappers, learned historians reviewing the 17th and 18th century dynasties of the Deccan, the manufacturers of fancy leather goods, naturalists and taxonomists, and the unregistered practitioners of esoteric indigenous wound-therapy. Such specialists are likely to know the lizard only within the narrow confines of their own interest in it, and this account seeks to coordinate diverse bits of such expertise in a sort of collage in prose.

First for some general information on the common monitor. It is the second largest of our numerous lizards. The first is the water monitor (*Varanus salvator*) which is considerably bigger. Length by itself is not always a true index of size: weight is more reliable, and a combination of both is best. The water monitor is imposingly heavy and large when full grown: it is known to reach a length of 8 feet (2.5m), and such an animal may weigh all of 15 kg. The adult common monitor (the infant is very different) is also thickset and substantially built, but less heavy: it may be 5-foot 8-inch long (1.75 m), but even such a specimen will turn the scales at 5 kg.

The grown common monitor is a dark grey on top (olive or brown grey, even slate grey on occasion), and pale buff beneath, with a few dark speckles. Its neck is long, its thick body is dorso-ventrally compressed, with a median ridged line along each

flank, and its muscular tail is slightly longer than its length from snout to the root of the tail, and laterally flattened (slab-sided). The skin is thin, loose, very tough and closely overlaid with hard, dark, perfectly smooth scales. As in all monitors, the tongue is bifid at the tip like a snake's tongue. The limbs are thick and muscular, and all four feet carry five toes, each toe with a strong, curved, sharp claw. This lizard is an expert climber and its claw-hold on wood and rough surfaces is very considerable. Under provocation it inflates its lungs, gaining size visibly, and hisses, and also lashes out with its powerful tail.

As in all lizards the heavy body is slung between the limbs, and not firmly mounted on top of them, with well developed pectoral and pelvic girdles as in mammals. Because of this, when at rest its belly and tail touch the ground, and it has to lift its body above the substratum to move. When it runs, the body is lifted well clear and the tail at an upward slant into the air, and the limbs have a whirling action that suggests a far greater speed than the animal actually has—on level ground a man can easily outrun it. Carrying the load of its lifted body it cannot run any distance, and flop down again periodically. It runs at its best speed into cover and then lies quite immobile, trusting to its stillness to escape notice.

It is mainly diurnal, and like our other lizards highly predatory. It preys on a varied assortment of what it can catch and conquer—insects, crustaceans, frogs, the lesser reptiles (including small snakes and lizards), the eggs of birds and reptiles, birds if it can capture them, and small mammals like field rats: it also feeds on carrion

at times. It preys zestfully on scorpions. In the Deccan, I have seen it kill and consume a giant black scorpion (*Heterometrus swammerdamii*), and J.C. Daniel mentions 21 scorpions having been taken out of the stomach of a monitor in **THE BOOK OF INDIAN REPTILES**. In the lower temple at Thirukhazhukunram (at the base of the hillock) there is a superb post-Vijayanagar bas-relief on the ceiling, depicting two monitors (almost life-size) hunting scorpions—notable testimony to the art and natural history of an unknown master-carver of the past.

Till prosaic, unimaginative scientific inquiry invaded and debunked exciting countryside legends, the infant monitor was greatly dreaded. It looks altogether different from the adult, a small, slim creature with prominent eyes and a thin tail, a pale brown on top and paler below, with a lacing of dark bars and speckles at the throat, that seems to skim through the air just above the ground as it runs with uplifted tail in a flurry of whirling limbs. In Anglo-Indian lore it was known as the biscobra (a name which, as the intimated 'Eha' has pointed out, clearly implies that it is twice as deadly as the cobra!) and people fled at the sight of it, for it was reputed to fly through the air and attack intruders into its domain, and its bite was instantly fatal. Today the biscobra, the most dangerous of countryside killers, is irretrievably extinct, thanks to the activities of officious scientific naturalists.

What sort of a voice does the monitor have? An old shikar book mentions its snoring in a rumbling wheeze when asleep inside a retreat, but I cannot find any other mention of its voice in faunal literature. However, from personal experience I know that when excited by danger it comes out with a high, nasal 'tcheek!' much like the call of some bush-loving bird.

So far, a general account of *Varanus bengalensis* has been provided: now for the less familiar reaches of the knowledge of specialists.

Centuries ago, a Maratha chieftain named Karna Singh laid siege to the impregnable fort of Khelna (Vishalgadh today) in the Konkan area. Finding the steep walls, built of blocks of stone, unscalable, the resourceful Karna Singh tied a strong, thick string around a captive monitor and sent it up—it could find adequate claw-holds on the rough stone, and having reached the top it lodged itself in a crevice. With the stabilising aid of the string and such footholds as he could find on the rock-face, Karna Singh scaled the wall, and let down a stout rope to enable his followers to ascend, and by this strategem captured the fortress. In commemoration of his feat, his descendants were accorded the family-name 'Ghorpade, from the Marathi name of the monitor which is 'ghorpad', Subsequent Ghorpades have left their mark on the history of south India.

Hard, logical critics have discounted this feat. They argue that even a monitor cannot secure such a purchase on slight protuberances on hewn stone that it can support the weight of a grown man. Their scepticism is based on incorrect premises. In an experiment, I found that even the claw-hold of a monitor on the branch of a tree was formidable—and in this case it is not merely a question of its claw-hold. When it has lodged itself in a recess and feels a pull on itself, the monitor puffs itself up to fill the recess almost inextricably. Insert a toy balloon into a heavy tumbler and inflate it to fill the space within, and heavy as it is the tumbler can be lifted into the air by pulling up the balloon: imagine, further, that the inside of the tumbler is not perfectly smooth but rough and that the balloon has four sets of abiding claws, and

it will be realised at once that Karna Singh's ascent was easily possible.

Moreover, I can testify to having witnessed the weight of a man being borne by a monitor lodged in a recess. About 30 years ago, I was footloose in the forest around Sholinghur, and chanced upon a strapping gipsy of my own size (I weighed 70 kg in those days) trying to dislodge a big monitor from a hollow in a tree in which it had taken refuge. That tree was hollow in its core and there were two openings into the hollow, one at the base of the trunk (through which the lizard had gone in) and another 9 feet up the bole, the top hole being rounded and smaller. Relying on the innate tendency of the monitor to go higher up the hollow when alarmed, and not come down to the bottom opening and escape, the man ascended the tree with a small axe, and clinging on with braced feet and his left arm, chipped away at the top hole with the axe to enlarge it to take his arm. Having done so, he flung the axe down and plunged his right arm in and secured the animal by its tail tip. He then proceeded to yank it out with backward jerks of his entire body against the hold of his feet and left arm on the trunk, using his weight. Inch by inch he drew the wretched creature out, till only its forelimbs and head were within, and with a short of triumph threw himself backward, yanking it clean out, overbalanced, and fell down with a thump. Released by the fall, the lizard bolted into a near-by mound of boulders and disappeared from view. Falling flat on his back and momentarily stunned, the man did not see where it had gone: I knew, but I did not tell, and so that monitor escaped. If the leaned-out weight of a hefty man can be supported by a monitor in this manner, then surely it could have provided Karna Singh with the adventitious aid he needed to scale that fort wall, especially as he was probably a slim and sinewy man.

Apart from its muscular limbs and sharp claws, the monitor has an array of slightly recurved teeth and can bite hard, but apparently its tail is its first line of offence. Tribal hunters grab it by the tail and lift it clear of the ground, and then it is powerless. It is quickly despatched, and then rolled up in a big mud ball which is baked over a slow fire in a pit. The baking is continued till the charred ball of clay bursts open, taking the skin of the lizard with its broken pieces, and the perfectly cooked meat, dear to tribal stomachs, is exposed. Today the monitor has been upgraded to Schedule I of THE WILDLIFE (PROTECTION) ACT of 1972, but still it is hunted on the sly.

What other enemies does the lizard have, besides men? The list is almost as varied as the prey it hunts. There is considerable latitude in size between the infant and adult monitor, and depending on its stage of growth it may be only a little larger than a bloodsucker or really big. Mongooses, (perhaps civets, too), different wild cats (the lesser cats), jackals, dhole, leopards, and even the mighty tiger hunt it when they can. I once saw a crested serpent eagle make off with an infant monitor that ventured out of its earth in an anthill—no doubt eagles take small monitors. And in spite of its generic name, *Ophiophagus* (snake-eater) the king cobra does not despise a monitor that crosses its path.

Monitor skin, tanned and dyed and finished to a high gloss, is tough, thin and decorative. It was much in demand for fancy leather articles, like watch-straps, purses, and even shoes. With the elevation of the lizard to Schedule I of the 1972 Act, perhaps it has gained a measure of protection from merchants in such articles.

The cured skin, not treated to a high finish, is traditionally the only skin used for the Carnatic-music percussion instru-

ment known as the 'kanjira'—a circular wooden frame open at both ends about 25 cm across, with a tympanum of monitor skin stretched taut over one open end : to the rim of this closed end jingling discs of metal are also attached, and in the hands of a competent artist, the kanjira conjures up highly individualistic rhythmical patterns quite distinct from all other drums used in concerts of Carnatic music. The late Dakshinamurthy Pillai of Pudukkottai, widely celebrated for his mastery of the mridangam, was also a wizard with the kanjira.

The dark traditions of tribal therapy credit fresh monitor meat with miraculous curative powers when men sustain deep flesh wounds. Some years ago, as I was leaving the Anamalais to catch my train home at Coimbatore, I saw a small group of Malaisars on the roadside carrying their wounded comrade. This luckless man had got in the way of a wild boar as it was leaving a field of tapioca and had been promptly charged. The boar had ripped him high up his thigh, a deep, ghastly gash that almost reached the bone and was a palm's-width across. Fortunately it was on the outside of the thigh where there was no major artery, but the wound was spou-
ting blood and the man was comatose with

shock and loss of blood. Having a motor vehicle at my disposal, I offered to take him and two of his mates to the nearest hospital for emergency treatment, to Pollachi, but his companions would not listen to me. Instead, they cut the flesh of a freshly killed monitor into thin slices with a very sharp knife, packed the wound with the slices and laying a final slice on top of everything, bandaged the thigh with strips torn from a lungi I donated. I thought the man would die, of sepsis if of nothing else, but could not do anything to help—all that they wanted from me was the lungi.

Two years later, purely by chance, I met this same man in the Anamalais. He told me his wound had healed rapidly and completely in ten days, and showed me the surprisingly small scar it had left behind. He also told me that the flesh of no other creature would do—it had to be the flesh of a fresh-killed monitor. I presume the packing of monitor meat is removed as the wound heals—stupidly, I failed to ask him this detail. Not for a moment do I suggest that this little-known therapy should be popularised, but I do think it should be scientifically investigated by competent experts.

AMPHIBIA OF SHOOLPANESHWAR SANCTUARY

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Introduction :

Very little information is available on the amphibian fauna of Gujarat. A few earlier studies (McCann, 1938; Soman, 1960; Daniel and Shull, 1963) have provided short accounts of amphibian fauna of Kutch and Surat Dangs (South Gujarat). The first detailed account of amphibians in Gujarat was published by Sarkar (1984) but the list contained only nine species. A brief study in Shoolpaneshwar Sanctuary indicated that more species remain to be discovered and described.

The Shoolpaneshwar Wildlife Sanctuary is a part of Rajpipla forest and situated on the left bank of Narmada. The sanctuary which is located between 73 32' and 73 54' E and 21 34' and 21 32' N has a hilly terrain and covers 607 sq. km. Numerous small streams arise from the mountain tops as tributaries that ultimately run into Karjan and Narmada rivers. The Tarav river meanders through the core area and augments the vegetational cover there. Towards the periphery of the sanctuary, the forest is more or less degraded with patches of open areas and grasslands.

This area which is rich in amphibian fauna in regard to both density and diversity has not been explored for taxonomical studies. Present study has yielded 13 species belonging to 7 genera and 4 families. These include 8 out of 9 the species already reported by Sarkar (1984).

LIST OF AMPHIBIA OF THE SHOOLPANESHWAR SANCTUARY AREA

Class Amphibia

Order Anura

Family Bufonidae

Genus *Bufo* (Laurenti)

1. *Bufo melanostictus* (Schneider)
2. *Bufo stomaticus* (Lutken)

Family Microhylidae

Genus *Microhyla*

3. *Microhyla ornata* (Dumeril & Bibron)
4. *Microhyla rubra* (Jerdon)

Genus *Uperodon*

5. *Uperodon globulosum* (Gunther)

Genus *Kaloula*

6. *Kaloula pulchra* (Grey)

Family Ranidae

Genus *Rana*

7. *Rana cyanophlyctis* (Schneider)
8. *Rana limnocharis* (Boie)
7. *Rana tigerina* (Daudin)
10. *Rana hexadactyla* (Stoliczka)
11. *Rana keralensis* (Dubois)

Genus *Tomopterna*

12. *Tomopterna breviceps* (Schneider)

Family Rhacophoridae

Genus *Polypedates*

13. *Polypedates maculatus* (Grey)

SYSTEMATIC ACCOUNT

1. *Bufo melanostictus*, the common toad

Material :

15 examples collected from various parts of the sanctuary.

Remarks :

This toad was very common in the study area. Hill specimens were found to be larger than from plains. The species usually remain hiding in holes or under the bushes and stones and come out for eating insects during night.

Distribution :

Throughout Indian region, Sri Lanka, Burma, Southern China, Malay Peninsula and Archipelago.

2. Bufo stomaticus**Material :**

6 examples collected from Saghai, Mal-Samot and Namgir areas.

Remarks :

This species was not so common as the common toad. Strictly nocturnal in habit. Habitat preference was found to be almost similar to that of the common toad.

Distribution :

In India : West Bengal, Bihar, Andhra Pradesh, Rajasthan, Uttar Pradesh Gujarat and Maharashtra(Also found in Nepal, Burma, Sri Lanka and Pakistan.

3. Microhyla ornata**Material :**

4 examples from Namgir, Mozda and Sisha.

Remarks :

This narrow-mouthed frog is nocturnal in habit. During day they hide under leaves or stones. It feeds mostly on insects.

Distribution :

All over India; Sri Lanka, Southeast Asia to Malay Peninsula.

4. Microhyla rubra**Material :**

1 example collected from Sagai area

Remarks :

This microhylid frog appears to be very rare in the area as it was collected from only one locality. The frog was found resting under the stone during day time. This species has not been recorded from Gujarat hitherto.

Distribution :

Widely distributed in Assam, South India and Sri Lanka.

5. Uperodon globulosum**Material :**

4 examples collected from Piplod, Mozda and Sagai.

Remarks :

This fossorial frog appears to be of rare occurrence in this region. They were not seen above the ground during day time except perhaps during breeding season. We collected these frogs buried about a foot beneath the soil surface from small stream-beds.

Distribution :

Assam, West Bengal, Orissa, Madhya Pradesh, Maharashtra, Karnataka and Kerala. Occurrence of this species was reported in Dangs by Daniel (1963).

6. Kaloula pulchra**Material :**

1 example collected near Mal-Samot village.

Remarks :

This single specimen constitutes a new record of the species for Gujarat. This beautiful frog was seen at night, resting on tree trunk at a height of about 2.4 mts, on

a river bank. It was spotted on a rainy day and was giving shrill and loud calls.

Distribution :

All over South India, Assam and West Bengal. Also reported from Sri Lanka.

7. *Rana cyanophlyctis* the skipper frog

Material :

150 examples from various parts of the study area.

Remarks :

This was the most common species in the study area. They were found floating in most of the ponds, ditches, rivulets and other water bodies.

Distribution :

Throughout India. Also reported from Pakistan, Afghanistan, Iran, South Arabia, Nepal, Thailand and Sri Lanka.

8. *Rana limnocharis* the cricket frog

Material :

100 examples were collected from various parts.

Remarks :

The second most common species in the study area, they were collected from stagnant water bodies, banks of streams, marshes and paddy fields.

Distribution :

Throughout Indian region, Iran, South Arabia, Sri Lanka, Nepal and Thailand.

9. *Rana tigerina*, Indian bull frog

Material :

75 species collected from various parts.

Remarks :

Common species in the study area. Very large specimens were collected from Sagai and Piplod areas.

Distribution :

Throughout India; also reported from Nepal, Sri Lanka, Burma, Thailand, South China and Taiwan.

10. *Rana hexadactyla*, Pond frog

Material :

One example collected from Mosda.

Remarks :

Only one specimen was found floating in a stagnant water body.

Distribution :

Common in South India. Also reported from Punjab, Rajasthan, Maharashtra, Goa and West Bengal.

11. *Rana keralensis*, the verrucose frog

Material :

3 examples collected from Sagai and Mosda.

Remarks :

Though this species is known to be nocturnal, we collected them during day time from forest rivulets. This little known species was, until recently, considered as endemic, to Kerala or Tamil Nadu. However, Daniel J.C. (personal communication) has indicated that the range of this species extends further north through Karnataka up to Maharashtra. Our studies revealed that the range of this species extends at least up to the left bank of Narmada river in Gujarat.

Distribution :

Kerala, Karnataka, Goa, Maharashtra and Gujarat.

12. *Tomopterna breviceps*, the Indian burrowing frog.

Material :

5 examples collected from Chopadi, Jarvani and Namgir.

Remarks :

They were collected from riverbanks and bushes very close to ant nests or termitaria.

Distribution :

All over India, Sri Lanka, Malaya and Southern China.

13. **Polypedates maculatus**, the common tree frog

Material :

7 examples collected from Sagai, Namgir and Fulsar.

Remarks :

The species were very common in Sagai area, often found on walls and window panes of forest guest house. They were also seen in gardens and bushes.

Distribution :

All over India, except Haryana, Punjab and Rajasthan.

The authors thank Prof. Bonny Pilo for his encouragement and immense help in preparing this manuscript.

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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.

CANNIBALISM IN PYTHONS

V. KALAIARASAN

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All snakes are carnivores. They prey on a wide variety of animals such as insects, frogs, snakes, birds and mammals. Feeding on its own species (cannibalism) is one of the well known facts noticed in many species of snakes (Krait, Viper and Rat snake).

Instances of cannibalism are not common in python species. However it was noticed in both the Indian and Regal Pythons in the Madras Snake Park Trust as detailed below :-

1. 07.09.1990 Indian Python about 3-4 months old
2. 19.09.1990 Regal Python about 3-4 months old
3. 20.11.1970 Regal Python about 3-4 months old

Pythons of the same age group are kept in various cages, the number of snakes varying from 2-12. The pythons are usually fed individually once a week with rats and mice. Sufficient live prey is released inside the cage at about 5.30 P.M. Generally most of the snakes feed within an hour or so. But a few of them neglect the prey which is left inside the cage overnight to be cleaned next day morning. In such situations missing of one snake was noticed with an abnormal bulge along the body in another. The swallowed victim was regurgitated within a couple of days.

This act of cannibalism was recorded from a month old to an year old pythons and it always happened at night. It does not occur when there is a long gap between two feedings.

Instances of cannibalism occurs usually in the following situations :-

1. Insufficient supply of food or high degree of starvation
2. Two snakes of dissimilar size feeding on the same mouse and anything connected to it including other snakes, and
3. Viper or other snake feeding on its own progeny

Another possibility is that the frightened mice rubs its own odour on some snakes within the restricted space inside the cage. Since snakes locate their prey by smell, the mouse-smell on the body of the snake could very well have prompted another hungry snake to swallow it, despite the fact that it is of the same age and size.

Editor's note :

Instances of one species eating other members of the same species viz. cannibalism is of no aberrant occurrence in animals kept in isolated environment. It occurs in natural populations too, in mammals, birds, reptiles, frogs, fishes and many invertebrate groups that are predatory in habits. Cannibalism in natural populations might serve some definite function in the process of natural selection by eliminating a potential competitor for food or for promoting of the extermination weak and infirm.

Various degrees of cannibalism exist :- within the womb one foetus eats up its brothers or sisters (sharks), the young makes a meal of the mother (spiders), the parent gobbles up its progeny (birds and mammals) or the female devours the male during or immediately after mating (preying mantis, spider).

Cannibalism among reptiles is seen in both lizards and snakes. Among snakes kraits are perhaps the most cannibalistic and boas are least so. Instances of kraits swallowing a conspecific are rampant in literature and one of the most interesting "True Snake Story" chronicled by Captain MacGregor in Burma more than 60 years ago in the Journal of the Bombay Natural History Society (Vol. 33, 1929) is reproduced below.

"At about 6 p.m. one evening one of my servants reported that he had seen a snake enter a hole in a wall. I went out and looked at the hole and could see the snake distinctly coiled up in it. I got hold of a stick and sat over the hole and waited for the snake to come out. Shortly afterwards the snake began to come out and I clubbed it. I then pulled the snake, and when it was nearly out I noticed that another snake was holding on to its tail.

I continued to pull and the other snake was hauled out and slain in the same way as the first. On pulling out the second, a third was found hanging on to its tail end. This was pulled out still hanging on and slain. This seems a tall story, but the fact remains that three banded kraits were slain by me, one after the other, each one hanging on to the tail-end of the previous one."

Found in more than 130 species in the animal kingdom, cannibalism is an abominable repulsion only to the human species. Human cannibals, however, were known to live in the wilderness of Africa. There is the story of an African cannibal who cut up and ate his mother-in-law since she disagreed with him on everything. Patting his bloated belly he lamented "Inside here, she still disagrees with me".

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.

SEXUAL DIMORPHISM IN THE RAT SNAKE *PTYAS MUCOSUS* (Linnaeus)

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During the study of reproductive biology of the rat snake, *Ptyas mucosus* (Linnaeus), I have examined a large number of snakes. Males are larger than females. The males measured about 200 cm in length and females about 170 cm in length. A pair of reversible copulatory organs—the hemipenis—is present in males. The tail appears more swollen and longer. Probing method proved to be most satisfactory for sex determination. A blunt probe is introduced backwards into the cloaca. In the male it passes back into the tail through one of the hemipenis for about 5 to 8 cm. or more depending upon the size of the animal. In the female the probe cannot be inserted since

its passage is checked by the posterior wall of the cloaca.

Sex could also be determined by pressing the tail in a postero-anterior direction from the tip to the opening of cloaca. In male, a pair of hemipenis with longitudinal furrows and transverse rings, is everted. Sperms pass through these furrows and are taken to the tip of the lobes of the penis and along the canals on the ventral side and are deposited in the cloaca of the female during copulation. Spiny structures are also present around the hemipenis. This sex determination method can be used for sexing the other species of snakes also.

MISCELLANEOUS NOTES

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

—Editor

SNAKE LORE

KSHEERA SAGARA MATHANAM (Churning of the Ocean of Milk)



Devas (Gods) and Asuras (Demons) churn the Ocean of Milk to obtain "Amrita", the Nectar of Life. They use Vasuki, the King of Snakes as a rope and the mountain Meru as the churn. During the process of churning emerge Surya (Sun), Chanora (Moon), Agni (Fire), Airawata (White Elephant), Kamadhenu (All-giving Cow), Kalpa Vriksha (All-giving Tree) and Lakshmi (Goddess of Wealth). In the process Vasuki spits the dreaded poison, Hala-Hala which engulfs the universe. Lord Siva swallows the poison to save the

universe. Parvati, out of concern for her Lord chokes his throat to prevent the poison to descend, the throat turning blue attributing the name Neelakanta to Lord Siva. The poison which spills here and there is consumed by Insects, Scorpions, Snakes etc. giving rise to poisonous species. Amrita emerges finally from the Ocean of Milk. Meru sinks and Vishnu assumes the form of a Turtle and acts as a pivot giving rise to the Kurma Avatara.

A.N. JAGANNATHA RAO.

REPTILE NEWS IN PRESS

Indian Express Sunday Magazine,
May 3, 1972.

LIVING WITH SNAKES

Indian snake-charmers find their going tough as the government puts a ban on catching snakes for the sake of performance
—*Joginder Chawla*

As the summer sun gets brighter and the days get longer and hotter, life stirs inside little holes in the ground. After the winter hibernation, there is some stretching and coiling, and finally the long slithery creatures come out of their holes, into the world they had been hiding from for one whole season. Snakes get hungry, and come out to hunt.

And whether it hunts to eat or not, the animal world has a very few exceptions who are not scared out of their wits when confronted with a hissing snake. It need not be the spread hood of a cobra, it could be just any serpent, slithering down the path or coiling around a branch, which sends a shiver down the spine of even the space age man. But there are some, even apart from the mongoose, who do not recoil in horror from the sight of the reptiles. Snake-charmers fall in that rare category.

India, still regarded as the magic land of fakirs and snake-charmers by the unenlightened foreigner, has a host of such experts who catch, tame and rear snakes. It is a fascinating life, laced with danger and the excitement of countering nature's venom with the acquired skill of man. Durga Nath, a snake-charmer from the outskirts of Delhi, has been catching snakes since he was ten. With lightning speed he pins a cobra to the ground with his forked

stick, grabs its head and tail, and forces its mouth open. With a swift blow of the other end of his stick, he breaks the fangs. Then he puts the cobra in a piece of cloth and slowly wraps it around the snake.

"These cobras are very angry reptiles, he says. "Almost all snake charmers have been bitten. So we never hunt alone, and always carry a medical kit." The kit consists of Indian herbs, and instruments like bones, sharp edged birds feet or nails of porcupines. Like most snake charmers, Durga Nath travels around the country, catching snakes and then taming them into performing animals.

Snakes are usually caught after Shivratri, at the end of winter. The festival of Shiva has special significance to the snake-charmers. Legend has it that during the cold months of winter, Lord Shiva gathers all snakes into his lap and gives them his body-warmth. Then, during Shivratri, he sets them free. So that is when snakes come out into the world.

Snake-charmers are wrapped in their folds of legends and myths. Gorakh Nath has a special place in their lives. They believe that Lord Vishnu created a human being from mud and water and named him Gorakh Nath. Shiva adopted him, and asked him to worship the snake as deity. Shiva cared for snakes, as is evident from depictions of him in ancient art, with snakes around his neck and hair. Gorakh Nath hosted a big party and served snake flesh and venom to his guests. Today's snake charmers trace their lineage to the guests of Gorakh Nath, and thus attach Nath to their names, as a sign of respect to their guru.

"When we capture a snake we make a promise before Guru Gorakh Nathji that we will rear it like our child," says Durga Nath. "And after a few months of performance, we release it from captivity. Because, although we look after them, captivity makes them weak and ill. Moreover, we must keep our promise to Guru Gorakh Nath." The snake-charmers live quite an ascetic life, and often wear saffron, like sages.

"We have lived a good life with these snakes", says Prabhu Nath, another snake-charmer. But the difficult part is catching the snakes. When the creatures come out after a long hibernation, the trails they leave behind are followed by the charmers. The best time to catch snakes is the rainy season, because that is when the holes get flooded and the snakes are forced to come out. And the toughest job for these disciples of Gorakh Nath is to catch a king cobra.

At least five people need to hunt together to capture a king cobra. The master snake can kill a full grown elephant with its poison. Besides, these are enormous some times about 15 feet long, and when it smells danger it stands on its tail and towers over the man, glaring down at him. In short, it is quite unnerving to be confronted with an angry king cobra.

So, a group of snake-charmers work together to capture the master serpent. Two of them throw a cloth over the snake's head, the other three hold him down by the tail and the middle. The fangs are removed swiftly and the king is put into a basket. The king cobra is a very good catch. A rare occurrence, it commands a good price. They are found only in the humid climate of eastern India and the Andamans. Other cobras, about five feet long generally, are quite common and therefore quite cheap.

Thus, snake-charmers travel all over India. "Recently we have been going

abroad, as well," says Prabhu Nath. "About 300 years ago, our forefathers used to perform before the Mughal emperors in the Red Fort." Although the Mughal empire has vanished since then, the village Molarband still crawls with mud huts crawling with snakes. The children play carelessly with these deadly animals, tossing them about and wrapping them around themselves. But the culture is slowly dying out.

To day, catching snakes is illegal if not used for scientific purposes. The police are out to harass them and the business of bribes is pulling down the financial status of the snake-charmers. Besides, the profession has lost respectability, and the new generation is not too keen on following in the footsteps of their parents.

And so, today, snake-charmers barely make Rs. 40 a day. The elaborate rituals and poojas have ceased to be a regular feature of the disciples of Gorakh Nath. And maybe even that will trickle to an end, as the clan of disciple die out.

HE EASILY GETS OVER ANY SNAKE BITE

By V.R. MANI

*The Times of India News Service
Thiruvananthapuram*

It is a hot Sunday afternoon. A frail-looking man is showing some snake tricks on a roadside near the city. Suddenly, one of the cobras with which he is "playing" strikes him on the ear-lobe.

The crowd and the nearby shop-keepers talk in hushed tones. The man will die before long, they think. But the dark complexioned man is as cool as a cucumber. He goes to his bicycle parked nearby, opens a packet, smears a paste-like substance on the spot where the cobra had struck and consumes a pinch of another concoction. He tops it with a glass of lemon juice from

a roadside vendor. And he is back at playing with the deadly snakes.

For K. Nelson of Peyad, about ten km from here, snake bites are nothing new or anything to fear. "I must have been bitten at least 35 times," he says, showing the marks on his fingers and the ear lobes. But most of the bites had taken place when he was under the influence of liquor.

It is a small wooden piece, whose botanical name he does not know. (He calls it "sarpa adakki", a Malayalam term meaning controller of snakes), smeared with turmeric which he says does the trick. "The snakes are not able to open their mouth when I have this wooden piece on me," he says. As if to remove any suspicion that the fangs of the snakes might have been removed, Mr. Nelson forces open the mouth of a cobra with the help of a stick and bare sits fangs.

The wood is found in the Pasumalai hills near Madurai, says Mr. Nelson. And most of the bites were when he was either drunk, which made him accept challenges of catching snakes without the wooden piece on him, or when he had forgotten to keep the wood on his self.

It was one Karur Ponnasan of Tamil Nadu who taught him the art of catching snakes and introduced him to the "sarpa adakki". Gradually, Mr. Nelson, who refuses to divulge his age but appears to be in his forties, learnt how to treat snake bites from Ayurveda books. Today, he earns his bread mainly by treating snake-bite victims.

"I have treated many patients and not a single one has died," he says, adding that the victim should be brought to his place within four hours of the bite. He does not charge them any fee and prefers to take whatever is given. There is an unwritten code of conduct which prohibits him from demanding fee for the treatment. But he

admits that he is finding it difficult to make ends meet what he earns through such treatment. It is not often that people are being bitten by snakes.

Therefore, he visits the city zoo and takes care of the snakes, feeds them and transfers them from one enclosure to another and makes some money. Be it a python, be it a king cobra, for Mr. Nelson it hardly makes any difference. He would even stuff a live snake into his mouth and take it out for you. He puts them inside his shirt, ties them around his waist and wears them around his neck to one's astonishment.

The fact is that he virtually lives with snakes. He keeps them in card-board boxes in his house. His wife, two married daughters and his grandchildren are also not scared of snakes. His grandchildren also can catch snakes, he says: "If they see a snake, they will catch it and not let it go," he says as if it is all child's play.

Indian Express

April 6, 1992

THEY SING TO PLEASE THE SNAKES SUBHADRA SUNDARALINGAM

Serpent worship, though found throughout the entire subcontinent and in many parts of South East Asia, plays a unique part in the social life of the people of Kerala. One wonders whether it is the abundance of snake population found in the thick vegetation of the region that has made the people of this land look upon them with respect and propitiate them due to innate fear for this dangerous species of reptiles. Almost every household of Kerala has its own serpent deity proposed to possess powers of good and evil. "Sarpakkavu"- a small shrine in the grove where stone images of the divine serpents are installed and propitiated is seen in many ancestral houses. It is

customary that the women of the household light an oil lamp at this shrine daily to invoke the blessings of the Nagas.

The Pulluvan caste in Kerala is associated with the serpent worship. Usually during the lean months (July-August) when there are no agricultural operations, the Pulluvan and his wife go from house to house with their traditional music instruments—the Kudam and the Veena—singing the Pulluvan Pattu, songs in praise of the serpent deities Anantan, Vasuki, Sankhuvalan, Nahushan, Dhadhimukhan etc. It is believed that the Pulluvan Pattu is particularly pleasing to the serpent gods, who bless those for whose sake the songs have been rendered. The Pulluvans are rewarded with a few rupees in cash or a small measure of rice or paddy by the head of the household. Apart from this they are also invited to conduct the annual ritual of poojas to please the serpent gods.

It is believed that the word "Pulluvan" is a derivative of the word Pullu, meaning a bird. A common belief goes that there are some wandering spirits which take the form of birds and fly about at night causing ill health to babies and children.

While discussing the identity of Pulluvan caste Thurston in his book "Castes and Tribes of Southern India", says, "The Pulluvans of Malabar are astrologers, medicinemen, priests and singers in snake groves. The name is fancifully derived from Pullu, a hawk, because Pulluvan is clever in curing disorders which pregnant women suffer from through the evil influence of these birds. The Pulluvans are sometimes called "vaidyans" (physicians)" (1909 : 226).

The Pulluvans are also specially invited by householders to sing the "Naveru Pattu", a folk composition to ward off evil eye and evil tongue which is believed to cause sickness in children. The name and the birth

star of the child are told to the Pulluvan who incorporates them into the Naveru Pattu thus to ward off the evil eye or evil tongue which has been causing ill effects on the child.

It is interesting to see the Pulluvans in their peregrinations carry their own forms of musical instruments which proclaim their tribal ethnicity and profession. The Pulluvan veena is like a fiddle but with a single string and a dish shaped resonator (kinnam) and a stem attached to it. The Pulluvan takes pride in saying that their musical instrument is shaped like a snake—the resonator being the hood and stem denoting the tail of the snake. Hence, they treat it with reverence. The resonator is made of light wood and its face covered with the skin of iguana (udumbu). The tapering stem is of harder wood like teak or jack and is about one foot long. The length may vary in proportion to the size of the resonator. The twisted fibre from the creeper Nagar Chithramithu forms single string of the veena. The bow used for this string instrument is about two feet long and is made out of the hard stem of the arecanut palm and the stretched strings are also made out of the above mentioned creeper fibre. An interesting feature of this bow is that at the bottom end of it is attached a couple of metallic rings which give a jingling sound while playing and provides an additional rhythm. As only a single string is provided the notational range is restricted and mainly this instrument which they proudly call "veena" essentially acts as a sruti for songs while jungles provide the beats.

The Pulluvan Kudam is an instrument for rhythm (thala) and looks like any other mud pot but is said to be much stronger. A hole is made at the bottom of it and about half of the pot is covered with calf skin. Two leather cords are twisted together and sent through the hole and the skin and knotted inside the pot while the

other end of it is fastened to a two-foot long wooden plank. The plank is kept flat on the floor and held tight by the thigh of the artist sitting on it. The pot is kept over the left thigh with its mouth facing left and the artist holds the pot with his left elbow and the upper arm. When he plucks the cord with a plactrum (a hard wooden piece) with his right hand, a vibrating sound "Brum", "Brum", is made. The index finger of the left hand is used to stop the vibration of the cord for the necessary pauses required during the rhythm. By altering the tension on the cord by the upper arm holding the pot, tonal variations are obtained.

According to Mr. L.S. Rajagopalan, a musicologist, the tonal variations obtained from the Pulluvan Kudam make it a good tala instrument. A Pulluvan very often gives a solo demonstration of various beats/talas in between the songs and calls it Tayabakara. The talas used by them are : Muthalam—3 matras; Nalan Thalam—4 matras; Panchari—5 matras; Tripura—7 matras; Champa—10 matras and Anchadantha—16 matras. A pair of large slymbals (Elathalam) is also used to keep the beat while singing. The Pulluvan Pattu is in Malayalam and the outlines or the major range of notes of a few ragas of Carnatic music like Todi, Saveri, Kalyani, Sri and Madhyamavathy can be identified—though the Pulluvans themselves cannot identify them.

The Pulluvans, besides being good singers and instrumentalists are very good at an art like Rangoli as well. They are custodians of the great art of drawing the Pampin Kalam—an intricate drawing depicting serpents intertwined—using coloured powders. The picture of a Naga Yahshini, a semi human cum serpent form is a favourite theme. Usually the drawing is on a square format which can vary in size from a couple of square feet to several square yards cove-

ring almost the entire courtyard of a house. For this Kalam drawing they use five natural colour powders of vegetable base : yellow (turmeric), red (kumkum), green (dried and powdered green leaves), white (rice powder) and black (powdered paddy hush charcoal). The Pulluvans use no other tool for the artistic drawing than a coconut shell perforated with holes through which the powders are allowed to trickle and while moving the shell skilfully the powders form lines and figures.

Drawing the Pampin Kalam is associated with the periodical ritual connected with the serpent worship when the Pulluvans are specially commissioned by various householders to perform the pooja to please divine serpents. Once the drawing is complete the divine presence of the holy serpents are invoked on it by the Pulluvan. A young girl of the household is bathed, dressed in clean clothes and made to sit on the Kalam. The Pulluvan begins to sing stories connected with the snakes from Mahabharata, especially the portion which talks about the sage. Kashyapa and his two wives Kadru and Vinata and the birth of 1008 serpentine sons of Kadru. The Pulluvan Pattu gradually increases in tempo and rhythm and almost everyone participating in the ritual gets "into it". The young girl sitting on the Kalam gradually starts swirling her head and gets into a trance and even drags herself on the ground almost erasing the Kalam with arecanut shoots which she holds in her hand.

It is believed that she gets possessed by the divine Nagas as the Pulluvans sing in praise of them. Simultaneously the Pulluvans pose certain questions to the possessed girl whether she is satisfied with the ritual or not. If the answer is positive it is taken to mean that the gods are satisfied and happy and the ritual comes to an end with the girl recovering her consciousness as the Pulluvan Pattu gradually decreases in tempo and

comes to a halt. But, if the answer happens to be negative the entire process of the ritual has to be repeated with fresh Pampin Kalam drawn.

The members of the Pulluvan tribe in Kerala though possessing such rich musical traditions are considered to belong to the old classification of "untouchables". Unlike the Malabar matrilineal system (Marumakka Thayan.) they follow Makkathayam

or the patrilineal system and are engaged in various types of occupations today—basically daily wage earners. Though still classified as a backward community in the caste hierarchy of the Kerala society and are not only considered socially backward but also economically backward the Pulluvans will still go on singing their Pulluvan Pattu and perform the ritual to propitiate the snake gods for the well being of the upper castes.

VISITOR'S COMMENT

Today, i.e. 26-6-92, I have an experience to see the Snake Park. It is very well maintained and the demonstration to public for telling the people about the reptiles is very good. I have not seen any Park like this in Northern India.

26-6-92

SATISH MOHAN

*M/o Env & Forests
New Delhi.*

NEWS FROM THE MADRAS SNAKE PARK TRUST

1. On being selected by the Fisheries Survey of India, Shri P. Tamilarasan, Research Scholar left MSPT in June 1992.
2. Shri R. Rajarathinam has joined as Research Scholar.
3. All the Research Scholars have undergone a two month's Computer Training Programme in June-July.

BABIES BORN AT MSPT

As part of captive breeding, the following reptiles were bred—

- 1) Common Sand boa (*Eryx conicus*) gave birth to 12 babies.
- 2) Russell's viper (*Vipera russelli*) gave birth to 21 babies.
- 3) Marsh Crocodile (*Crocodylus palustris*) 23 babies were hatched.
- 4) Chamaeleon (*Chamaeleon zeylanicus*) A total of 66 babies were hatched.

CURRENT 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, and Dr. R.S. Pillai, Research Officer, MSPT.

2. Studies on chamaeleon by Mr. 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. Jagannatha Rao who is the co-ordinator of the project.

3. A research project on "Rodent control using harmless Reptiles" is being undertaken by Mr. T. Raveendra Babu M.Sc., M.Phil. B.Ed. at MSPT under the guidance of Dr. P. Vivek Raja M.Sc. Ph.D., Senior lecturer of Zoology, Govt. Arts College, Madras-35 coordinated by Shri. A.N. Jagannatha Rao Hony. Secretary and Dr. R.S. Pillai Research officer, MSPT.

4. Studies on Turtles and Tortoises by Mr. R. Aengals M.Sc., Mr. B. Rathinasabapathy M.Sc., M. Phil and Mr. P. Tamilarasan M.Sc., M. Phil., under the guidance of Dr. R.S. Pillai, M.Sc., Ph.D., and being co-ordinated by Mr. A.N. Jagannatha Rao.

5. Relationship between morphology and habits of reptiles by Mrs. R. Chitra B.Sc.

SURPLUS REPTILES AVAILABLE AT MADRAS SNAKE PARK TRUST IN EXCHANGE

(Subject to approval by the Government)

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)

WANTED IN EXCHANGE

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

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*)
and

Fresh water turtle—any species.

Crocodile

10. Estuarine Crocodile (*Crocodylus porosus*)
(Juveniles and sub adults)

11. 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*)

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-story 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 dat 1.9.1990.

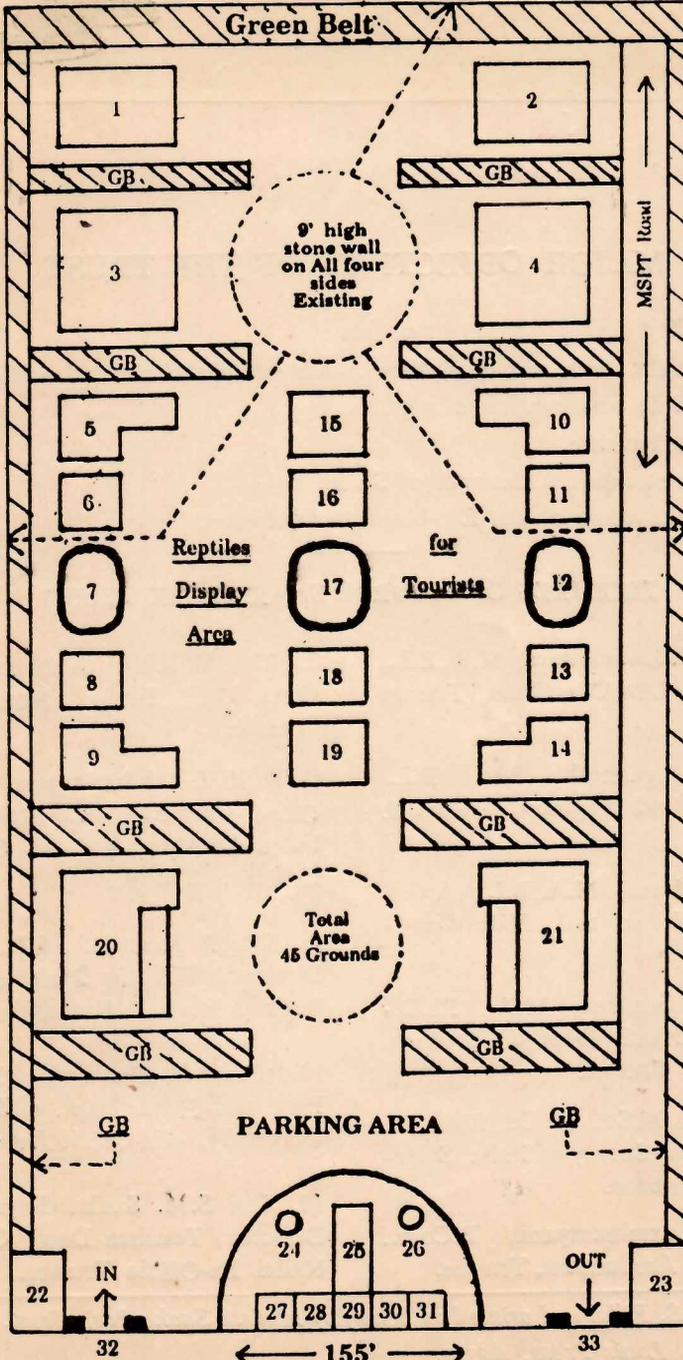
ALL GRANTS WILL BE DISPLAYED ON A MARBLE SLAB ON THE RESPECTIVE FLOOR/BUILDING.

Proposed Layout of Madras Snake Park Trust at Kottivakkam, Madras

Buckingham Canal

145'

Green Belt



1 and 2
Research students
Hostels. 3 floors
each 40' x 40'

3 and 4
Research Divn.
Dept. Library.
Laboratory etc
3 floors
each 70' x 40'

5 and 6
Crocodile pits
1000 sq. ft.

7
Exotic Reptiles
500 Sq. ft.

8 and 9
Lizard Pit
1000 Sq. ft.

10 and 11
Turtles and Tortoise
Pit
1000 Sq. ft.

12
Exotic Reptiles
500 Sq. ft.

13 and 14
Snake Pits
1000 Sq. ft.

15 and 16
Indian Snake Lore
Museum
one floor
40' x 40'

17
Demonstration
Pit. 3000 Sq. ft.

18 and 19
Reptiles specimen
Museum
each 40' x 40'
one floor each

20
Tourist Rest Room
Admn. office
Guest House
3 floors each
70' x 40'

21
Auditorium
Conference Hall
Records. 3 floors
70' x 40' each

22 and 23
Watchman's
Quarters

24 and 26
Open Wells

25
General Store
for Engg. Mts.

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

Total Area
45 Grounds

PARKING AREA

To Adyar Madras ← Old Mahabalipuram Road → To Mahabalipuram

(NOT TO SCALE)

SEP 1990

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

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|---|--|
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