Cobra

Volume - 56 April - June 2004

CHENNAI SNAKE PARK TRUST

Quarterly Newsletter
of the Chennai Snake Park Trust

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Cover

Green or Bamboo pit viper (*Trimeresurus gramineus)*

Habitat: Hill forests. Reported to be confined to the southern part of Indian peninsula. Not uncommon. Seen in low vegetation, particularly in bamboo clumps. Mildly venomous. Food: Small vertebrates. Viviparous, 7 - 15 young at a time.

Photo: **K.Ramachandran**
Rajapalayam.

"Long ago
in Kenya where I examined the
grass closely before I sat down
to a poisonous lunch, I worried
about cobras. When going insane I worried
about cobra venom in Major Grey's chutney.
Simple as that. Then in overnight
sleep I became
a lordly cobra, feeling the pasture grass
at high noon glide beneath my
stomach."

- Jim Harrison
in poem titled *Cobra.*

Cobra

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ENVIRONMENTAL EDUCATION PROGRAMME CONDUCTED BY THE CHENNAI SNAKE PARK TRUST

R.Aengals*

and

V.Kalaiarasan
Chennai Snake Park
Rajbhavan Post
Chennai - 600 022

Over the years, large-scale destruction of wildlife has been caused by humans leading to the extinction or near-extinction of various species. The factors responsible for this have been alteration of wild habitats for a variety of reasons, human intrusion into natural eco-systems leading to man-animal confrontation, slaughter of animals for sport or for satisfying someone's commercial greed and wanton killing of animals because of unfounded or exaggerated fear or superstition. While most species of mammals and birds have been adversely affected only by one or a few of these factors, snakes have suffered heavily by the joint impact of all these factors.

It has been a primary endeavour of the Chennai Snake Park Trust to save snakes from reckless destruction arising from the often irrational fear of them, widespread ignorance about them among even the comparatively educated sections of the public, lack of knowledge of the good that snakes do by keeping vermin under control and the prevalence of many false beliefs about snakes which are firmly established in the mind of the public right from childhood.

* Present address: Zoological Survey of India, Southern Regional Station, Chennai - 600 028

The Chennai Snake Park, established thirty-two years back, displays some forty species of reptiles including about twenty species of snakes. These exhibits constitute the nucleus around which is built an entire programme for the education of the public about snakes and other reptiles. It needs to be emphasised that the Snake Park is not intended to be a mere entertainment centre, even though the public, from the youngest to the oldest, cannot but be fascinated by a mere sight of the snakes and crocodiles and other reptiles at close quarters. The display of reptiles here is only a part of the medium to convey the message.

At various strategic locations in the Park are exhibited detailed information in English and Tamil on matters such as identification of the principlal species of venomous and non-venomous snakes of India, habits and habitats of snakes and other reptiles, treatment for snakebite, etc.

The animal keepers who are quite knowledgeable about the reptiles and the three scientific personnel on duty are always available to clarify the doubts of the visiting public.

The Chennai Snake Park Trust publishes and sells popular and quasi-scientific literature on snakes and other reptiles in English and Tamil including a quarterly journal *Cobra*.

Apart from the display of snakes in the enclosures, complemented by highly informative signages, the visitors are asked to assemble at a central demonstration area four times a day for about half an hour each when some of the principal species of snakes are taken out by an animal keeper one by one and a pre-recorded talk is played back explaining the features of the species and other related information. This is done in Tamil, English and Hindi in a style easily understood by the lay-public. In addition, every Sunday, on two separate occasions, the visitors are shown how venom is extracted from cobras and a pre-recorded talk played back on how snake venom is used in the preparation of anti-venin for the treatment of snakebite.

Apart from lecture demonstrations arranged within the snake park to groups of visiting students and teachers, the scientific staff of the Park also go out to educational institutions, factories, etc. with large campuses which have an appreciable resident snake population and conduct lecture demonstrations.

Seven to eight lakhs visitors visit the Snake Park every year. From the year 1997, the Park has initiated and conducted a focussed outreach programme on snakes and other reptiles for the schools in the outlying districts. In most of these years, this programme has been funded by the Ministry of Human Resources Development, Government of India and in other years the funds have been made available from the Trust's own resources.

This outreach programme is conducted by the Environmental Education Officer, who is a wildlife biologist, with the assistance of animal keepers. Live specimens are exhibited in the premises of the schools under proper care and illustrated talks delivered by the Environmental Education Officer. Video shows are also arranged.

As a precursor to the students' educational programme, a special training programme is held for the teachers consisting of lectures, audio-visual demonstrations and distribution of teaching aids. The intention is that the teachers so trained will, in turn, convey the knowledge to the students. The topics covered in the training programme for teachers are briefly as follows:

- Environment and Pollution
- Wildlife and Conservation
- Role of reptiles, particularly snakes, in the ecosystem
- Snakebite and Treatment
- Teaching techniques in environmental education

Course materials are prepared and supplied to all the participants.

The students training programme consists of the following:

- Lecture on the role of reptiles, particularly snakes, in the ecosystem
- Live demonstration of reptiles
- Video film on snakebite and treatment

To assess the impact of the orientation programme for teachers, a questionnaire has been prepared based on which opinion is obtained from all the teachers who participate in the Workshops. Several of the schools concerned are visited a second time to evaluate the performance of the teachers in the transfer of knowledge to the students.

In order to evaluate the extent to which the students acquire knowledge from the training programmes intra and inter-school competitions are conducted.

The teachers are also instructed to assign some project work to the students on checklists of common plants, medicinal plants, common birds and common reptiles of their area and the reports are evaluated.

During the last seven years (i.e. as on 31.3.2004), 585 schools have been covered under this programme benefiting 1,526 teachers and 1,05,940 students.

In addition to the above programme for schools, the Chennai Snake Park Trust has also commenced programmes for the training of personnel from the Tamil Nadu Forest Department and the Tamil Nadu Fire and Rescue Services Department. The one-day programme consists of general information on snakes, identification of principal species of snakes and treatment of snakebite. In the year 2003-04, five and ten programmes were conducted for the Forest and Fire and Rescue Services Department respectively benefiting 88 and 226 officers respectively.

LOCOMOTORY BEHAVIOUR IN *XENOCHROPHIS PISCATOR* (SCHNEIDER), *NAJA NAJA* (LINN) AND *ERYX JOHNII* (RUSSELL) UNDER CAPTIVE CONDITIONS

Priya Joseph
Department of Zoology
Devamatha College
Kuravilangad, Kerala - 686 636
and
Joe Prasad Mathew and V.C.Thomas
Department of Zoology
St. Berchmans' College
Changanacherry, Kerala - 686 101

Introduction

In snakes, intra-specific variation in locomotor performance is common. They utilise a variety of locomotor modes depending on both the speed and the surface encountered (Gray, 1946; Gans, 1974; Jayne, 1986; Priya 2001). A study was conducted to analyse the locomotory behaviour and pattern in *Xenochrophis piscator* (Schneider), *Naja naja* (Linn), and *Eryx johnii* (Russell) under captive conditions.

Methodology

Adult snakes of *Naja naja* and *Eryx johnii* were collected from different regions of Thiruvananthapuram District, Kerala, while *Xenochrophis piscator* were collected from the Kuttanad region of Alapuzha District, Kerala. Snakes selected were more or less of the same size. The snakes were well maintained in cages.

Locomotor behaviour and patterns of locomotion

Locomotor performance of each snake was examined by the method adopted by Arnold and Bennet (1984). Freshly collected snakes with more or less similar linear dimensions were used in order to minimise the effects of size on locomotor performance. All tests were conducted at a temperature of 30± 2° C. The race track selected for the experiment measured 15.0 m x 0.5 m. The bottom of the track was covered with natural turf to facilitate movement. At the beginning of each trial, the snake was introduced to the starting line from its box. If necessary, they were gently prodded to make them move. Crawling time was measured with a digital stopwatch to the nearest 0.01 sec. The burst speed, mid-distance speed, distances crawled and the duration of crawl were measured.

Not all snakes completed runs on the race track at each trial. Some snakes refused to leave the starting point and some stopped crawling after some distance. Such data were eliminated and an analysis of average score was determined of those snakes that had a score in one or more trials for each of the performance indicators. Along with locomotor performance testing, the pattern of locomotion in each snake was also noted.

Observations

Kinetic studies in *Eryx johnii, Xenochrophis piscator and Naja naja* suggest that there is significant variation in the locomotor patterns. It was observed that different species of snakes can move in more than one of the patterns. Among the snakes studied, mainly two types of movements were observed in *Xenochrophis piscator,* namely, lateral undulation and concertina movement. *Naja naja* performed side-winding movement and lateral undulations whereas *Eryx johnii* performed in a rectilinear pattern.

When introduced onto the ground, the snakes showed variations in their first performance. *Eryx johnii* showed a reluctance to move forward at first. It simply buried its head within the body and assumed a coiled posture. After a few seconds, the snake moved forward slowly and, after

covering an appreciable distance, it slightly increased its speed but no change in the pattern of movements was observed.

When *Xenochrophis piscator* was introduced onto the ground, it responded immediately and moved in a pattern of lateral undulation. The snake's body moved along an S-shaped path and all points along the body of the snake followed a more or less identical sinusoidal path and all points moved simultaneously. After travelling a particular distance, *Xenochrophis piscator* showed concertina movement. In this type of movement, the front part of the snake is fixed and the trunk curved; then the hind end is fixed and the trunk straightened until the front end reaches a new fixation. After reaching a particular distance when the conditions were found to be favourable for escape, the snake showed leaping movements which could be a modification of side-winding and an act done during emergency.

When introduced on the ground *Naja naja* responded immediately. After a few seconds, when the conditions for escape were found to be favourable, the snake increased its speed of movement. In *Naja naja,* side winding was observed in which simultaneous transfer of posterior part of the trunk occurs and lifting of the anterior part from each fixed point takes place. As the snake progressed, its tail points about 60 degrees away from the direction in which the animal is going to move. In this type of movement, a peculiarity noted was that the head was raised up to form an obtuse angle and it faced in the direction of travel. Besides side winding, *Naja naja* performed lateral undulations also.

Conclusion

Locomotion in snakes is the result of a combined action of axial muscles, vertebrae and the associated ribs, the skin and neural circurity (Jayne 1982; Cundall, 1989). Several factors like temperature (Hertz *et al.,* 1982), feeding state (Garland and Arnold, 1983), reproductive condition (Jayne and Bennett, 1990) and dehydration influence locomotion. Moon and Gans (1998) recorded that terrestrial locomotion in snakes is effected

by muscular activity that produced axial bends. The bends form around external objects and exert force against them which propel the snake forward. Locomotor behaviour and patterns of locomotion varied in the three snakes studied. It is assumed that behavioural variation contributes to the individual variation in crawling performances. Besides that, changes in the morphological variables and metabolic machinery could contribute to performance variation.

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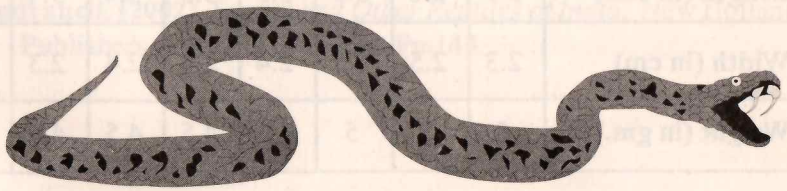

NOTES ON THE BREEDING HABIT OF COMMON BRONZEBACK TREE SNAKE *DENDRELAPHIS TRISTIS* (DAUDIN)

R.Aengals*
Chennai Snake Park, Rajbhavan Post, Chennai - 600 022

The common bronzeback tree snake (*Dentrelaphis tristis* Daudin), contrary to popular belief, is a harmless snake. It is found throughout India including the Andaman and Nicobar islands, upto 2000m above sea level (Whitaker, 1978).

The common bronzeback is highly arboreal and lives almost entirely on trees and shrubs. Information on breeding biology is completely lacking. The author has observed mating in the wild during the months of April and May in late mornings.

The observations reported here have been made in the Chennai Snake Park. A gravid female tree snake measuring about 122 cm. (SVL - 84 cm, CL - 38 cm. Wt. - 150 gram) was kept in a cage sized 75cm. x 75cm x 1.25cm with glass front and sides covered with wire mesh. On 11th August 1996 morning, the snake laid eight oblong leathery eggs. The measurements are given below:

Nos.	1	2	3	4	5	6	7	8
Length (in cm.)	3.5	3.6	3.3	3.5	3.5	3.4	3.4	3.6
Width (in cm)	2.3	2.5	2.3	2.4	2.4	2.4	2.3	2.5
Weight (in gm.)	5	5	5	4.5	4.5	4.5	4.5	5

* Present address: Zoological Survey of India, Southern Regional Station, Chennai - 600 028

After the eggs were measured, they were wrapped in cotton and kept in a polythene bag. The bag was transferred to a 1 ft. high plastic container with holes.

On the 23rd of September , that is, after 44 days of incubation, six young ones came out. They measured 22 c.m. to 25cm. Two eggs were infertile.

Daniel (1983), and Das (2002) give the incubation period in common bronzeback tree snake as four to six weeks. Whitaker (1978) mention it as 55 days in one case. The present observation differs from their observations.

Acknowledgement

The author is grateful to Thiru.B.Vijayaraghavan, I.A.S.,(Retd) Chairman, Chennai Snake Park Trust and the then-Hony. Secretary Dr.R.J.Ranjit Daniels and Dr.V.Kalaiarasan, Director, Chennai Snake Park for their encouragement.

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THE DECLINING POPULATION OF THE GREEN KEELBACK *MACROPISTHODON PLUMBICOLOR* (CANTOR) IN MALWA-PLATEAU

Vikas Upadhyay
161-C Rajendra Nagar
Indore - 452 012 (M.P.)

The green keelback (*Macropisthodon plumbicolor* Cantor) is a common snake of hilly areas and well wooded plateau but in Malwa region its population is on the decline. It may even have become locally extinct in parts of the plateau.

The Malwa plateau has an average altitude of about 420-450 m ASL and it lies 22° - 24° 80' N and 74° 10' - 79° 14' E. it has an area of about 1,50,000 square km. the northern area of this plateau has an average altitude of about 450 m ASL whereas its Southern portion is composed of high lands about 570 m ASL.

The eco-biology of *M.plumbicolor* has been described by Daniel (2002), Deoras (1965), Gharpurey (1962), Murthy (1986) etc. In the Malwa region, its status and ecology have been described by Ingle (2002) and Vyas (1998).

This species is now rare in Indore district which is located at 562m ASL. Some towns of southern Indore have high altitudes viz. 572 & 590m ASL but still the *M. plumbicolor* is not common in these areas. The reasons that have made this species uncommon are the usual ones in similar cases, namely, heavy deforestation, human interference, heavy grazing, fast rate of urbanisation, conversion of grass lands into farm-lands.

This species, however, is common in Dhar district (22°.00 - 22° 49'N & 75° 06' - 75° 42' E and altitude 588m ASL) and its eco-biology has been studied by Vyas (1998). On 24th October 2001 I spotted a large female *M. plumbicolor* which was 88 cm. long in Mandu a famous historical place located on Vindhya hill ranges (altitude: 666m ASL.)

Acknowledgement

I am thankful to Dr.Tez Prakash Vyas for giving me information and support.

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BEHAVIOUR OF CHAMELEON *CHAMAELEO ZEYLANICUS* (LAURENTI) AGAINST CERTAIN COLOURS

S. Sivakumar and **S. Prema**
Qtrs-887, PHC-II
SDSC SHAR
Sriharikota - 524 124

A full-grown chameleon *Chamaeleo zeylanicus* was caught near our quarters in Sriharikota on 5th August 2004 to take its body measurements before release.

When it was placed on a dark red cloth, it became aggressive and bit the cloth several times. When it was kept against a dull background, away from the red cloth, it became normal and turned to pale green so as to match with the background. When showed the red cloth again, the body colour became dark, the pouch-like cheeks became swollen and it became alert even while approaching the cloth. The same behaviour was observed when a pink colour pillow was shown to it. The behaviour was normal with other colours.

RANDOM HARVEST

The Law is an Ass - even where it concerns reptiles

"In Georgia, by state law, you cannot keep any native species of lizard or snake as a pet, with one exception–venomous ones are legal. You can keep a six-foot diamondback rattlesnake in your bedroom, but don't get caught with a garter snake.

"In California, you cannot catch or keep a San Diego mountain kingsnake, an orange-throat whiptail lizard or a western pond turtle. However, if you have a bulldozer, you are welcome to destroy as many (of these) as you like to build a shopping mall.

"In Kansas, you can possess upto five reptiles or amphibians if you have a hunting license. A list of fourteen permissible capture techniques is given. Although firearms are allowed, 'fully automatic weapons' are not. Let's give that little leopard frog a fighting chance. But all is not lost in Kansas if you are feeling disarmed. Among the list of acceptable capture methods are deadfalls, crossbows, and poisonous gas. What on earth are they hunting in Kansas?

"It is illegal to possess any snake in Hawaii. The only exception is that a zoo is permitted to have two of each non-venomous species. But both must be males! No fun being a snake in Hawaii....

"Alaska has lots of hunting and fishing laws already in place, but only one native reptile. The garter snake, therefore, is classified as a game animal..."

[Reprinted from *The Cold Blooded News* - The newsletter of the Colorado Herpetological Society, Vol.27, No.11, January 2000 based on *A Field guide to Reptiles and the Law* (1995) by John P. Lerrel.]

* * *

Gila monster, diabetes and brain and thought disorders

The gila monster and the beaded lizard, both found in parts of the American continent, are the only two known poisonous lizards on earth.

The September 2003 issue of *The Monitor* quoted a report by University of Auckland researcher Matthew J. During and colleagues in the Aug. 17, 2003 issue of *Nature Medicines* to say that a drug extracted from the venom of the gila monster had been found to be a remedy for diabetes. It lowers blood sugar and promotes weight loss.

It is called exenatide and it has been grabbing headlines at recent meetings of diabetes specialists. The newest report comes from the 18th International Diabetes Federation Congress in Paris.

Oddly, this reptile molecule works in humans too. It lowers blood sugar and promotes weight loss. It also protects insulin-producing beta cells in the pancreas and stimulates the growth of new beta cells. Beta cell death is a major factor in progression of type 2 diabetes.

Amylin Pharmaceuticals Inc. and Eli Lilly and Company in Indianapolis, are developing exenatide.

A compound similar to exenatide has two unpronounceable names: HSEGTFTSD and [Ser(2)] exendin (1-9). In animal studies, this compound protected brain cells from toxic injury by plugging into a brain molecule called GLP-1R.

During and colleagues believe that this compound may be successful in treatment strategies directed towards degenerative brain and thought disorders.

* * *

Salties in Bhitarkanika: The bad news

The Wildlife Society of Orrisa has warned that the Rengali irrigation project on Orissa's Brahmani river will reduce the flow of fresh water in Bhitarkanika's eco-system, home to the largest saltwater crocodile population of India. Apart from posing a threat to the saltwater crocodiles, this may also indirectly pose a threat to the humans since the changes in the eco-system may induce the crocodiles to migrate upstream resulting in conflict with humans.

- Source: *Sanctuary* Aug. 2004

* * *

Salties in Bhitarkanika: The good news

The Hindu of 16th Aug. 2004 reports that some 500 hatchlings of the saltwater crocodile have emerged from their nests in Bhitarkanika National Park and made their way to nearby water inlets in the second week of Aug. 2004. More than 54 other nests have been sighted along the creeks and water inlets here, each nest with some 70 eggs. A close vigil is being maintained by the National Park authorities to protect the eggs from predators.

The report also says that, according to the last census, there are some 1,330 saltwater crocodiles in Bhitarkanika.

* * *

Turtle mishap

A pet turtle kept in a 10th floor apartment in Hong kong climbed through a window and plummeted hitting a car. The turtle survived, though with a broken shell. The car was damaged.

So says a report in *The Hindu* of Oct. 16, 2004. But, this is of little consequence considering the earliest reported mishap involving a turtle. The year was 456 B.C. Aeschylus, the great Athenian dramatist died of a broken skull when an eagle in the sky dropped a turtle on his bald head, mistaking it to be a rock on which it could smash the turtle to get at its insides. There is no mention of what happened to the turtle.

- B. Vijayaraghavan.

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Raj Bhavan Post
Chennai - 600 022. India.
Phone : 91- 044 - 2235 3623
E-mail : cspt1972@md5.vsnl.net.in

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AIMS AND OBJECTIVES OF

CHENNAI SNAKE PARK TRUST

i) To maintain and display a captive collection of snakes and other reptiles as a means of education of the public.

ii) To undertake captive breeding of vulnerable species of snakes and other reptiles.

iii) To promote knowledge on snakes, and other reptiles and amphibians and dispel the erroneous beliefs about them.

iv) To aid and assist research on reptiles and amphibians.

v) To provide facilities for the identification and classification of snakes and other reptiles and amphibians and, for this purpose, maintain a museum of study collections.

vi) To maintain a library of books and other literature on reptiles and amphibians.

vii) To publish scientific and semi-scientific literature on snakes and other reptiles and amphibians.

viii) To undertake survey on the distribution and status of snakes and other reptiles and amphibians.

ix) To provide consultancy services on snakes and other reptiles.

x) To provide a common forum for interaction among amateur scientists and friends of reptiles and amphibians.