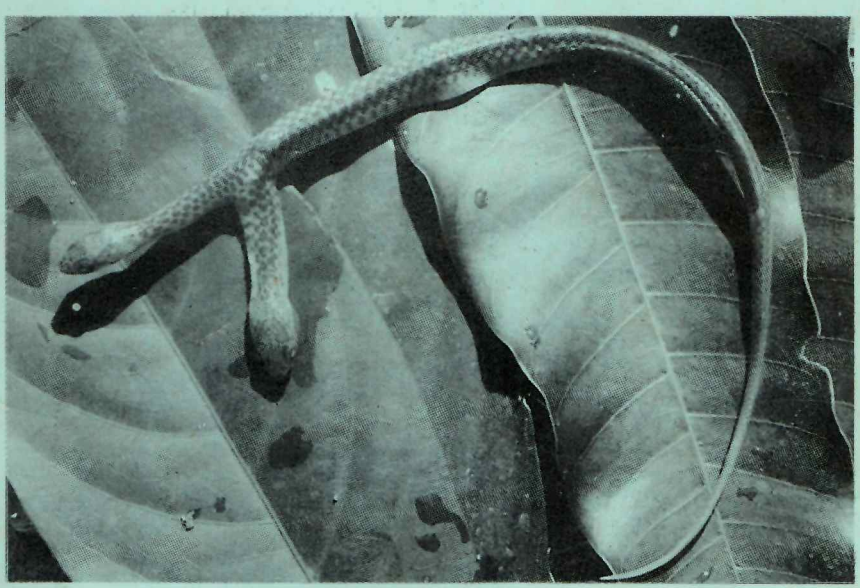
Cobra

Volume 25 July - September 1996



MADRAS SNAKE PARK TRUST

Quarterly Newsletter of the Madras Snake Park Trust

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Cover

Two-headed checkered keelback (*Xenochropis piscator*)

An anatomically defective phenomenon. However there are several records of such occurences. Two-headed snakes usually do not survive long after birth. (see p. 16).

Photo : Dr. S.K. Dutta

Cobra

Volume 25 **July - September 1996**

CONTENTS

Cobra invites articles and short notes on reptiles and amphibians, their ecology, biology, natural history, conservation or other aspects. These may be of scientific or popular interest. Black and white photographs are also welcome.

Please send your contributions to the Editor, **Cobra**, Madras Snake Park Trust, Rajbhavan Post, Chennai 600 022.

Toad

Stop looking like a purse. How could a purse
squeeze under the rickety door and sit,
full of satisfaction, in a man's house ?

You clamber towards me on your four corners -
right hand, left foot, left hand, right foot.

I love you for being a toad,
for crawling like a Japanese wrestler,
and for not being frightened.

I put you in my purse hand, not shutting it,
and set you down outside directly under
every star.

A jewel in your head? Toad,
you've put one in mine,
a tiny radiance in a dark place.

- Norman Mac Caig.

The Herpetofauna of the Great Nicobar Island

R. J. Ranjit Daniels & P. V. David
M.S. Swaminathan Research Foundation
Taramani, Madras 600 113. India.

The Great Nicobar Island has been declared as one of the 8 Biosphere Reserves under the Indian Man & Biosphere Programme. This large and remote island is biogeographically a transition between the Indochinese and Indomalayan regions. It shares a number of faunal and floral elements with the Southeast Asian Islands such as Sumatra and Java.

The Great Nicobar Island is rather poorly explored with regards the herpetofauna. Much of the early expeditions were done by the Zoological Survey of India. Recent publications about the amphibians and reptiles of the island are those by Indraneil Das (1994, 1995 & 1996). We have been mapping the distribution of herpetofauna on the island since December 1994. The present study is part of an ongoing 3 year project wherein the patterns of distribution of vertebrates on the island are being mapped.

Since December 1994, several species of amphibians and reptiles have been identified on the island. In what follows we present a brief discussion on these animals. We follow the nomenclature of Das (1994). The specific identity of some reptiles have not yet been confirmed. For such reptiles, only the generic names are provided.

Amphibians:

This island has a fairly permanent and widespread source of fresh water and hence ideal habitats for amphibians. The most common species is a toad. Although there are reports of the Common Indian Toad (*Bufo melanostictus*) from the island, the species that we have come across is

probably the endemic toad *Bufo camortensis*. This is different from *B. melanostictus* in having the parietal ridges extending backwards. This is a character quite distinct from that of *B. melanostictus*. *B. camortensis* is widespread and seen both around homes as well as in remote camps within dense forests. In colour it varies from yellowish-olive brown to dark coffee brown or black.

The other amphibian commonly seen on the island, including on roads at night, is the microhylid frog *Microhyla heymonsi*. The small fresh water creeks with green algae growing are inhabited by *Rana erythraea*. Deeper open wells beside rice fields are ideal habitats for this species and the larger *Rana chalconota*. Both species are widespread in the Southeast Asian Islands.

In early 1996 Das described a new species of large frog viz., *Limnonectes shompenorum*, (Das, 1996). This species has also been observed by us on many occasions. We also have recorded on one instance a smaller frog that is probably *Limnonectes cancrivora*. On the forest floor there is the Nicobar frog *Rana nicobariensis*.

The only treefrog that we have come across during our study is *Polypedates insularis* a new species described as endemic to the island (Das, 1995). The 8 species of amphibians so far recorded on this island are certainly part of a richer community of frogs and toads that we have not yet fully explored.

Lizards:

The most common terrestrial lizard on the island is the water monitor (*Varanus salvator*). This large lizard can frequently be seen on roadsides and in forests. Skinks are very frequent on the forest floor. The one that we have identified and that which is commonly seen is *Mabuya rudis*.

Dasia olivacea, an arboreal skink is very common throughout the island. The juvenile of this species is seen on the forest floor and is strikingly different from the adult in having red tail and a bright zebra-like dorsal colour pattern. Other arboreal lizards include the endemic

gecko *Cyrtodactylus rubida*. This lizard is frequently seen during the day on the trunks of coconut palms and taller mangrove trees. *Hemidactylus frenatus* is common both on trees as well as inside houses.

Garden lizards in the genus *Bronchocela* are fairly widespread. *B. danieli* an endemic species is rather common. Other species in the genus, especially the green forms, are also seen sharing the same habitat.

Crocodiles and Turtles:

Saltwater Crocodiles (*Crocodilus porosus*) are found on the island. Possibly due to pressures of poachers, sighting individuals is rather occasional. During our study only 2 subadults of less than 10 foot length were recorded.

The large Leatherback Turtles (*Dermochelys coriacea*) breed on the Galathea beach and hence are commonly seen. The other species including the Green Turtle *(Chelonia mydas)* and Olive Ridley (*Lepidochelys olivacea*) have been recorded occasionally along the southern coast. One subadult green turtle was found entangled and dead within a fishing net that was washed ashore. Although there are reports of the Malayan Box Turtle (*Cuora amboinensis*) from the island by local people, we have not seen any.

Snakes:

The most frequently seen land snake on the island is a species of bronzeback (*Dendrelaphis sp.*). This slender snake is often seen basking on the road and hence gets crushed by passing vehicles. Other land snakes that we have come across includes the green trinket *Elaphe flavolineata* and the rarer *Sibnyophis bistrigatus*. Small sized individuals of the reticulated python *Python reticulatus* have been occasionally recorded on the forest floor. We have also seen and photographed a species of Krait (*Bungarus* sp.) late in the evening along the beach on the northern side.

Of the two species of sea snakes that we have come across, *Laticauda laticaudatus* has been identified. Another species has not yet been confirmed.

A detailed analysis of the patterns of distribution of the island's herpetofauna is underway and will be completed by the middle of 1997. This study hopes to develop a conservation strategy for these lower vertebrates as part of the overall Biosphere Reserve Management plan.

Acknowledgement:

The study is being supported by the Department of Environment in the Ministry and Environment of Forests, GOI (project 14/26/92 - MAB/RE dt. 16.2.94). We wish to acknowledge the cooperation of the Principal Chief Conservator of Forests (A & N Islands), the Chief Wildlife Warden (A & N Islands) and the Assistant Conservator of Forest (Campbell Bay) throughout the study. We also gratefully place on record the assistance rendered by Mr. Christ Daniel Toppo and late. Mr. V. Govindarajan. Capt. V. R. N. Setty and Parirakshak have been a constant support in this project.

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A Survey of Ecto & Endoparasitic Worm Burden in Captivity & Wild Snakes at Madras Snake Park.

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The present study was carried out at Madras Snake Park from January to March 1996. The study was mainly restricted to non-venomous snakes which were exhibited in the Madras Snake Park and commonly distributed throughout the country.

The following species were examined for ectoparasites and endoparasites in both, captivity and wild. Fresh road-killed specimens were collected by morning drives on bicycle through Taramani - Adyar Road and Taramani - Velacheri Road between 5 & 7 a.m.

1. Indian python (*Python molurus*)
2. Checkered keelback (*Xenochropis piscator*)
3. Striped keelback (*Amphiesma stolata*)
4. Olive keelback (*Atretium schistosum*)
5. Rat snake (*Ptyas mucosus*)
6. Green snake (*Ahaetulla nasutus*)
7. Tree snake (*Dendrelaphis tristis*)

All snakes were examined thoroughly for presence of ectoparasites. The parasites were collected and preserved in formalin.

For endroparasite study, the dead specimens from Madras Snake Park & road killed snakes were collected. The dead snakes were kept in a dissecting pan, cut ventro-laterally and the body wall could be pinned back on both sides. The gall bladder, liver, stomach, small intestine, large intestine and lungs were removed. They were placed in seperate watch glasses containing normal saline solution (0.7 gms. NaCl to 100 cc. distilled water). The lungs were tested with needles and lung flukes or lung nematodes were examined and collected. The stomach and small intestines were opened and examined. The worms attached to the wall were collected by deep scraping of the surface with scalpel. Nematodes were killed in steaming water and preserved in formalin (10 %).

The following procedure was followed for temporary and permanent mounting and identification of the specimens.

1. Washing : The preserved samples were washed in distilled water for five minutes.

2. Dehydration : The specimens were dehydrated, first in 70 % alcohol, then 90 % alcohol and then in absolute alcohol for 5 minutes duration.

3. Cleaning : The samples were cleaned in carbolic acid and mounted temporarily.

4. Mounting : After cleaning, permanent mount was made by using Canada Balsam.

During the study, the following snakes were physically examined for ectoparasites.

Common Name	Nos.
Indian Python	28
Rat snake	20
Checkered keelback	21
Olive keelback	19
Striped keelback	16
Green snake	13
Tree snake	15

Amongst captive snakes, 11 out of 20 Rat snakes were infected by ticks. This species was identified as *Aponoma jervaisi*. Similarly, Indian python was infected by the same species. Whereas other snakes viz., checkered keelback, olive keelback, striped keelback, green snakes and tree snakes had no parasites. In terms of number of ticks, the rat snake had on average 36 ticks (range - 25 to 45). The pythons had least number of 10 on an average (range - 7 to 15) (Table - I)

Table - I : Percentage ectoparasite infection of snakes in captivity.

Host	Number of snakes examined	Number of snakes infected	%
Indian Python	28	5	17.85
Rat snake	20	11	55
Checkered keelback	21	-	-
Striped keelback	16	-	-
Green snake	13	-	-
Olive keelback	19	-	-
Tree snake	15	-	-

Presence of ectoparasites was examined in wild population including 2 rat snakes, 1 green snake, 3 striped keelback and 4 checkered keelback. Among them it was observed that the rat snakes were the only ones infected by ectoparasites, the others had no ectoparasites (Table-II)

Table - II : Percentage ectoparasites infection of snakes in wild.

Host	Number of snakes examined	Number of snakes infected	%
Rat snake	2	2	100
Green snake	1	-	-
Striped keelback	3	-	-
Checkered keelback	4	-	-

For analysis of endoparasite the following dead snakes were examined.

Common Name	Nos.
Indian Python	1
Rat snake	3
Checkered keelback	3
Olive keelback	2
Striped keelback	3
Green snake	2

The endoparasites were isolated from the lungs, liver, stomach and intestines. However, endoparasites were collected only from stomach and lungs of rat snakes, striped keelback. In the case of checkered keelback, parasites were colected from stomach only. (Table - III).

From wild population 2 rat snakes, 1 green snake, 2 striped keelback, 3 checkered keelback were studied. The checkered keelback , striped keelback and rat snakes were infected by lung worms and stomach worms (Table - IV).

From the collected parasites, the lung worms were identified as *Krecephalous sp.* and the stomach worms as *Ophidascaris sp.*

Table - III : Percentage endoparasite infection of snakes in captivity.

Host	Number of snakes examined	Number of snakes infected	%
Indian Python	1	-	-
Rat snake	3	3	100
Green snake	2	-	-
Olive keelback	2	-	-
Striped keelback	3	3	100
Checkered keelback	3	3	100

Table - IV : Percentage endoparasite infection of snakes in wild.

Host	Number of snakes examined	Number of snakes infected	%
Rat snake	2	2	100
Green snake	1	-	-
Striped keelback	2	2	100
Checkered keelback	3	2	66

Parasitic infestation is common in reptiles, since they live in conditions conducive for the survival of the parasites. Optimum parasitic infestation may not be of much importance, since it may not cause any disturbance to the reptiles. On heavy parasitic infestation, the reptiles may loose their condition slowly, leading to death. The presence of parasitic species in any host may affect the distribution indirectly, or even affect the population of species directly.

The present study was carried out to evaluate the ecto and endoparasitic infestation in common snakes such as Indian python , rat snakes, checkered keelback, olive keelback, striped keelback, green snake and tree snake. In the present study at Madras Snake Park, 131 specimens belonging to seven species were examined for ectoparasites. Out of 20 numbers of rat snakes 11 were infected with large *Aponomma sp.*, whereas in Indian python, only 5 were infected out of a total of 28 snakes.

The present study reveals that the tick *Aponomma jervaisi* infection is more common both in captive specimens and wild snakes. Generally, the wild reptiles have lower density of ectoparasites compared to captive ones, since their mode of life enables them to off load the ticks during their movement through grass, stones, gravel and other rough surfaces. In captive reptiles, tick density is more due to the absence of these factors. The terrestrial snakes are more vulnerable to ectoparasites compared to semi-aquatic snakes like striped keelback, olive keelback and checkered keelback. In the terrestrial snakes, wider gap between the scales is more common than in other snakes, The intergap between the scales facilitates heavy infection by blood sucking parasites which cause irritation, skin trauma and anemia.

During this study, captive specimens of rat snake, checkered keelback, Indian python and green snake were examined for endoparasites which showed positive results for rat snakes, checkered keelback and striped keelback.

In the wild and captive specimens, endoparasites were recorded in rat snakes, checkered keelback and striped keelback but could not be seen in Indian python, green snake and olive keelback.

First Record of *Rana danieli* from West Bengal

Kaushik Deuti
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Photography has enhanced the documentation and study of herpetofauna all over the world. While looking through the colour photographs taken at Mahananda Wildlife Sanctuary in northern West Bengal by Biswajit Roychoudhury of Nature, Environment and Wildlife Society, Calcutta, I came across a beautiful photo of *Rana danieli* taken at Jogijhora, in Sukna range of the Sanctuary in 1995. Mahananda Wildlife Sanctuary (area : 129 sq. km.) situated in Darjeeling district of West Bengal is a relatively undisturbed forest tract in the terai zone and is intersected by the rivers Mahananda and Teesta flowing through it.

Rana danieli was originilly described from Mawphlang, Khasi hills of Meghalaya by R.S. Pillai and S.K. Chanda in 1977. Later on Chanda (1979 and 1982) reported it from Assam and Arunachal Pradesh. G.R. Zug and J.C. Mitchell (1995) also reported the species from Nepal. Therefore, there was a possibility of its occurrence in West Bengal. However, due to lack of proper survey in northern West Bengal, the Zoological Survey of India could not document the presence of the species in their publication : Fauna of West Bengal, Amphibia (Sarkar *et al*, 1992). This photographic record thus can be taken as the first record of *Rana danieli* Pillai and Chanda, 1977 from West Bengal. However, a specimen may be collected in future as a final proof.

Acknowledgements :

I am grateful to Dr. S.K. Chanda of Zoological Survey of India, Calcutta for allowing me to see the specimens to confirm the identification and to Mr. B.Roychoudhury of NEWS Calcutta for permitting me to publish the information.

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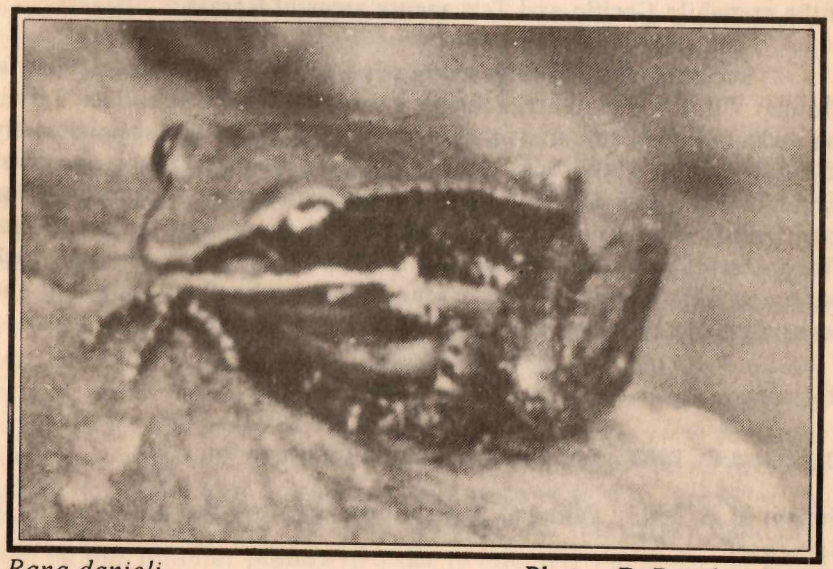

Rana danieli Photo : B. Roychoudhury

A Report on the Occurrence of Sawscaled Viper (*Echis carinatus*) in Chinnar Wildlife Sanctuary, Kerala

S.A. Basu Jahas, Joseph Thomas & P.S. Easa
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The sawscaled viper (*Echis carinatus*) is a desert form preferring arid sandy soil. Wall (1994) gives the distribution of the species as throughout a large area of Indian Peninsula. It is also reported from semi-desert and broken scrublands of the country. However, Daniel (1989) while describing its distribution mentioned that sawscaled viper is not recorded in the erstwhile Cochin and Travancore areas of Kerala.

Recently, in July 1996 while conducting a survey of reptiles in Chinnar Wildlife Sanctuary, a female sawscaled viper was collected from the rocks in Palappetty area at an altitude of 720 mts. The area is mostly of scrub jungle with rocky patches. There was drizzling and mist throughout the day. The locals call the sawscaled viper "Churutta". The total length of this specimen was 30 cm and snout-vent length 27 cm. The posterior part was bulging and on dissection, four embryos which were not well developed were seen. This is the first report of the occurrence of sawscaled viper from this part of Kerala.

Reference :

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Peculiar Water Shedding Posture Observed in Malabar Pit Viper (*Trimeresurus malabaricus*)

Somen Mukherjee
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Pune 411 004.

On the 13th September 1995, three of my friends and I were carrying out an amphibian and reptilian transect at Ghodhavne area in Koyna Wildlife Sanctuary, Maharashtra. The transect was a part of the " Western Ghats Biodiversity Project" (1994 - 1995) sponsored by Center for Ecological Sciences of Indian Institute of Science, Bangalore.

In one of the quadrants of the transect, we saw a peculiar posture of *Trimeresurus malabaricus* (Malabar Pit Viper). It was raining heavily and the Malabar Pit Viper (approx. 30 cms.) was seen hanging from a fork of a small tree, 6 feet from the ground. The anterior half of the snake was hanging down. The head of the snake was slightly dipped towards the ground. The posterior part of the snake came down from the other side of the fork, positioned along the stem. The snake had anchored itself safely by wrapping its tail around the stem and locking it tightly. The rain water flowed down its body, and then trickled down its snout drop by drop. The position taken up by the snake was ideal for heavy rains, because most of the rain water falling on it, followed its body and trickled down and only a minimum part of its body was exposed to the direct impact of the rain. Thus we assumed that the snake might have taken up this peculiar posture in order to tide over the impact of heavy rain.

Notes on the breeding of Sawscaled Viper at Arignar Anna Zoological Park

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Biologist
&
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The sawscaled viper (*Echis carinatus*) inhabits scrub and other low vegetation and is distributed all over India except the erstwhileCochin and Travancore part of Kerala (Daniel 1983). It is commonly found under bushes and rocks. The animal attains a maximum length of 788 mm.

Although it is a common snake exhibited in various zoos, very little is known of its breeding habits. In Arignar Anna Zoological Park eight numbers of sawscaled viper collected locally were exhibited in a glass fronted enclosure with small potted plants, boulders and a small water pool. At 10 a.m.on the 16th September1991 a gravid female started giving birth. It takes 25 minutes to deliver the babies. The young ones were removed from the enclosure, measured and weighed. The weight of the young ones ranges from 4 - 8gm and length, 110 - 145 mm. Over a period of two days these babies were kept in a pot. The first moulting was observed on the fifth day from birth. Though the young ones were provided with small insects and minced chicken, they did not take food for another four days, after which they were released in the wild.

The authors are thankful to Mr. R. Sundaraj, Chief Conservator of Forests for his encouragement.

Notes on Two-headed Snakes

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A two-headed checkered keelback watersnake (*Xenochropis piscator*) hatchling estimated to be about one week old was received at the Nandakanan Zoological Park, Orissa on April 3, 1986 through a villager of Kalapathar (Cuttack District, Orissa). The hatchling was collected from the bank of a village tank. It had two equally well developed distinct heads and measured 19.5 cm from tip of the tail to the tip of the snout of each head. It was maintained in a special tray and offered fingerlings but unfortunately it died after two weeks without taking food.

As they are anatomically defective, the two-headed snakes usually do not survive long after birth (Whitaker, 1971) although a two-headed king snake (*Lampropeltis gerulus californiae*) lived for six and a half years. Earlier records of two-headed snakes from India are in dog-faced water snake, (*Cerberus rhynchops*) from near Madras city; checkered keelback water snake (*Xenochropis piscator*) from near Nagercoil, Tamilnadu (Whitaker, 1971) ; common sand boa, *Eryx conicus* from Shimoga district in Karnataka (Indian Express, Bombay, August 16, 1988); wolf snake, *Lycodon aulicus*; cobra, *Naja naja* and Russell's viper *Vipera russellii* (JBNHS, 1971). According to Whitaker (1971) there are records of two-headed rattle snake (*Crotalus*) and garter snake (*Thamnophis*) in addition to king snake. The Pore Elizabeth Museum and Snake Park once had a two-headed sand snake. One of its heads swallowed the other! (Anonymous, 1964) One out of ten hatchlings of Russell's viper (*Vipera russellii*) born on 9th June 1994 at Calcutta Snake

Park, Calcutta had two heads, but survived for only 23 days (Mitra, 1994)

The authors wish to thank Dr. Sushil K. Dutta, department of Zoology, Bhubaneswar for the photograph. (See cover)

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Random Harvest

Live and Let Live

In a paper published in *Biotropica* 27(2), quoted in *Herpetological Review* 27(1) - March 1996, Gradstein and Equihua discuss the presence of three species of algae and a liverwort growing on the head of a lizard. According to the authors, the epizoic liverwort reported constitutes the first record of a cormophytic plant growing on a living vertebrate.

Spot the turtle

Identification of individuals is crucial in the study of endangered sea turtles. Flipper-tagging, the method most widely used, has the disadvantage of heavy tag losses on nesting beaches. In *Herpetological Review* 27(1), Donna Mc Donald *et al*. discuss a dependable combination of methods. One external characteristic unique to each adult leather-back turtle is a pink spot on the top of the head. Its appearance, including size, shape, colour and pattern seems to be unique to each individual. Photographs of the pink spot serves as a backup method of identification in case flipper tags are lost. The pink spot is recognisable at the individual level over several years. Since, however, changes in the spot cannot altogether be ruled out, the technique should serve as a supplement, not a replacement, for the use of flipper tags.

Est. in Peace

Estivation or dormancy in response to dry conditions poses physiological problems that are parallel to winter dormancy. But, despite the large number of reptile species that inhabit areas subject to periodic drought, few studies have investigated the physiological consequences of estivation in reptiles. Estivation may pose some physiological challenges that are different and more severe than those experienced by animals over winter.

Estivating crocodiles (*Crocodylus johnstoni*) were studied at their dry season refuge in northern Australia over six years. The crocodiles spent three to four months a year underground without access to water. Field metabolic rates and water flux were studied. Plasma and cloacal fluid samples were taken at periodic intervals to monitor the effects of estivation with respect to the accumulation of nitrogenous wastes and electrolytic concentrations.

The studies showed that freshwater crocodiles do not appear to have any specific adaptations for estivation, but, given an adequate refuge, they can survive many months without access to water.

A paper on the above research by Keith Christian, Brian Green and Rod Kennett appears in the *Journal of Herpetology*, 30(1) March 1996.

Though periods of acute drought occur in parts of India which have populations of marsh crocodile (*Crocodylus palustris*) there appears to be no studies on estivation in this species. In his book on Indian Reptiles (1983), J.C. Daniel says that " in summer, (mugger) living in transitory waters either estivate or migrate during night to more permanent sources." This is based on an account given by R. Whitaker in JBNHS - 75 (1978) p. 225. Writing on his visit to Hiran lake in Gir in a drought year with low water level, he had noticed the presence of 16 tunnels in one high embankment dug by the mugger " apparently against the eventuality of the lake completely drying up". This presumption apart, no evidence appears to be available in regard to estivation in marsh crocodile in India.

B.Vijayaraghavan

All the animals are very good at being animals;
As usual, we are not up to being us.

-Penelope Shuttle

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MADRAS 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 promote knowledge on snakes and other reptiles and dispel the erroneous beliefs about them.

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

iv) To aid and assist research in herpetology.

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

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

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

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

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

x) To provide a common forum for amateur herpetologists to interact.