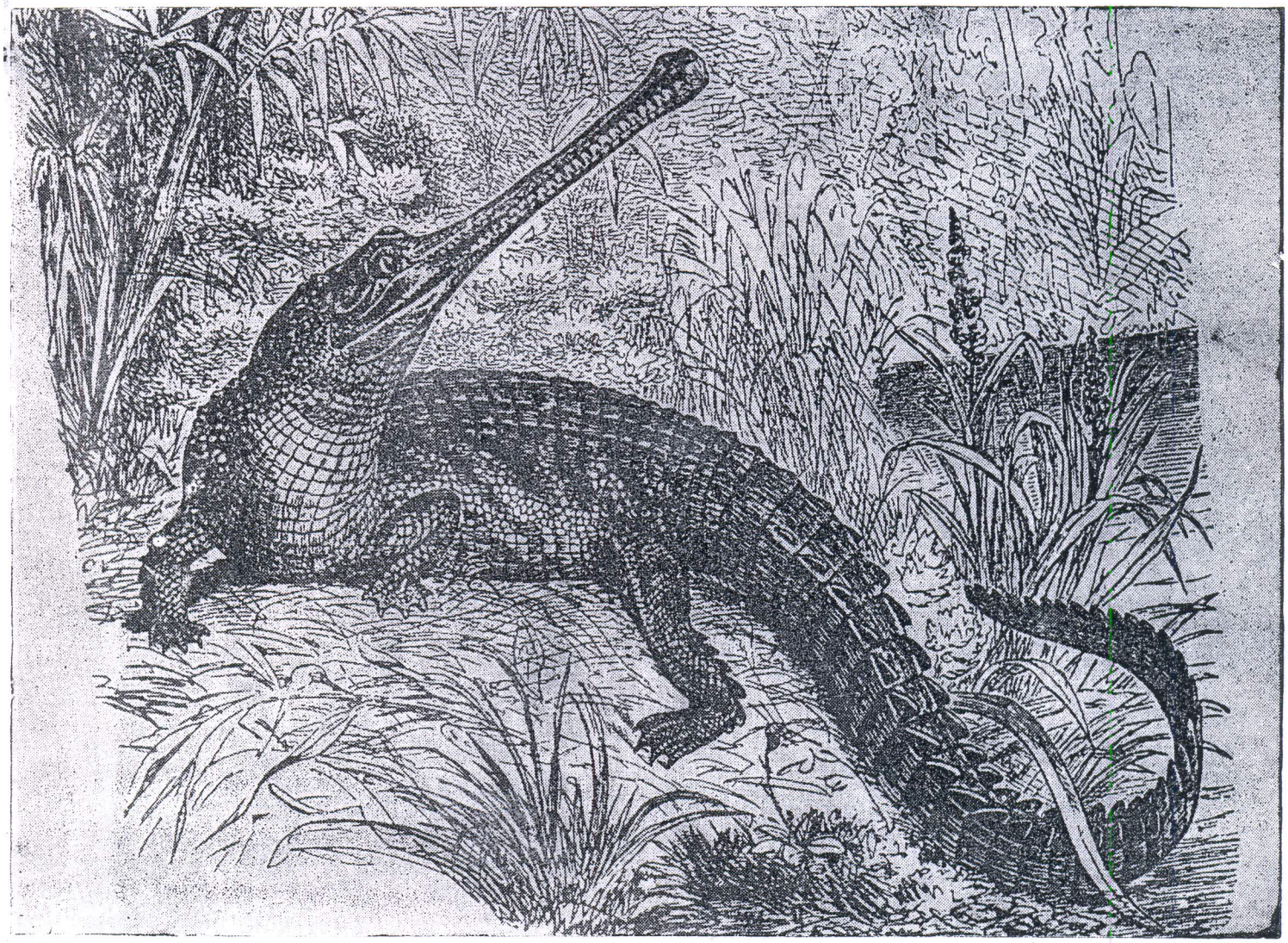
HAMADRYAD

13 No : 1

MAY 1988



HAMADRYAD

Vol. 13 : No.1 May 1988

CONTENTS

NEWS FROM THE MADRAS CROCODILE BANK

Dr. David Waugh, Training Officer of the Jersey Wildlife Preservation Trust visited the Croc Bank in November '87. He gave a talk and slide show at the British Council on the role of Zoos and afterwards spent a day with us at the Croc Bank. One of the nicest things that resulted from his visit is that our Curator, Harry Andrews will be attending a Summer Course this year at Jersey.

Ms. Orit Skutelski of the Israel Herpetological Information Centre spent a few days with the Irulas. It was very interesting to hear of the herpetological activities in Israel and especially of Dr. Amos Bouskilas (IHIC Director's) work.

Brent Stache and Jeff Klassen, from St. Olaf's College, Minnesota, U.S.A., stayed at the Croc Bank from October to early December. Jeff helped out with the childrens' film project and Brent assisted in the mugger research work.

We had a brief visit from Dr. Kartikeya Sarabhai of the Centre of Environmental Education, Ahmedabad, for a discussion on educational films and public education in general.

Rom and Zai Whitaker visited the United States in December, where Rom had been invited to New Orleans to present a video tape on the Mugger Research Project and the Crocodile Bank in general at the American Society of Zoologists' Symposium on Crocodilians.

S. Kumar joined us in December for a 3 month study on gharial behaviour. He concentrated on the basking patterns (a report on his findings will be published in our next issue). Kumar is working on his M.Sc. at the A.V.C. College Mayiladuturai.

The Croc Bank has successfully bred Varanus salvator in captivity for the first time. The hatchlings are kept in a separate enclosure and growth rates are being monitored.

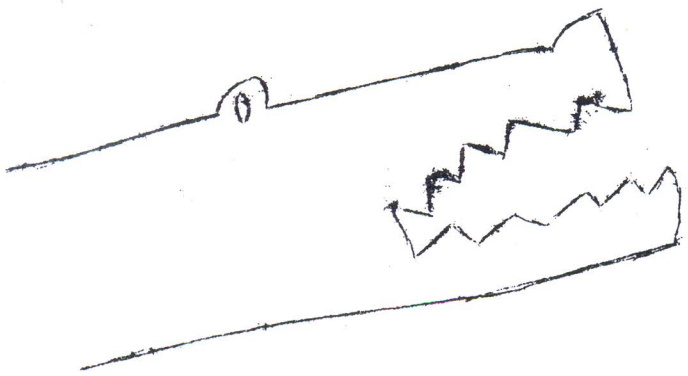
In February, Rom and Zai Whitaker were given the Sir Peter Scott Merit Award for conservation at the CITES Convention in Costa Rica in recognition of particularly significant achievements and noteworthy contributions to the conservation of wild fauna and flora.

Jack Hedin and Jan Georgsson from Yale University, U.S.A. spent several days at the Crock Bank getting familiar with the public education and tribal development programmes.

Dr. Hoffmann and Dr. Tscherner from the German Democratic Republic were here on a cultural exchange programme of zoo designing and management, and visited the Croc Bank in April.

The Eco Media film, "A Cooperative for Snake Catchers" has just received the National Film Festival Award for the "Best Scientific Film of the Year".

..2..



A BUMPER CROP OF MUGGER

This year's breeding season at the Madras Crocodile Bank saw the largest egg production from mugger crocodiles. 90 females nested, producing 102 nests and 1,946 eggs, and 12 of these females double nested. A total number 1,183 eggs were fertile and these were put back into nest holes in the enclosures for incubation. Temperatures are being monitored daily in each nest with the help of a thermistor and a digital thermometer. Eggs are then removed from nests 4-5 days prior to hatching, after calculating the average daily maximum and minimum nest temperatures. We already know the incubation periods for constant temperatures. So far, 30 clutches of eggs have been removed and hatching is taking place in the laboratory. A total of 180 hatchlings have already been put in the nursery, after they have been measured, weighed and sexed.

This year, muggers bred in three enclosures with different stocking rates. Pit No.8 has six females and one male. Pit No.10 has 14 females and one male. The smallest enclosure, Pit No.20 has 98 females, one adult male and 8 sub-adult males. The females in this enclosure are in the age group of 5-8 years and 1.6M to 2.3M total length. This particular enclosure measuring 12M long and 7M wide looked like a very high density situation which seemed unlikely to produce good breeding results. But it produced 76 nests with 1,254 eggs (out of which 664 eggs were fertile) and two females double nested. Of the 98 breeding females, 68 females nested for the first time and all 70 females were fertilised by one male. During the breeding season, no territorial fights between the dominent male and sub-adult males or between females were observed. High density stocking rate should be very closely studied as it may be one of the key elements to feasible and low cost mugger breeding success. The lack of space may be a significant

..3..

factor as these animals do not exert territorial rights, as they would in a more normal density situation. This has been observed before and commented upon at the Samut Prakan Crocodile Farm in Thailand where high density stocking seems to reduce aggressive interaction.

This year's results also indicates that first time nesters do not necessarily lay all infertile eggs. Of the 68 first nesters only 5 females laid 100% infertile clutches. These factors are being closely monitored and studied.

The Croc Bank envisages an additional stock of 1000 hatchlings from this year's breeding season. Our future mugger breeding results are likely to be a hundred or more nests per year. New enclosures are being constructed to accomodate the new offspring.

Harry Andrews
Curator
Madras Crocodile Bank
Vadanemmeli Village, Perur Post
Mahabalipuram Road
Madras - 603 104.

***

CROCODILES SIGHTED IN THE COLLIRON (COLLIDAM) RIVER NEAR CHIDAMBARAM, TANJORE DISTRICT, TAMIL NADU

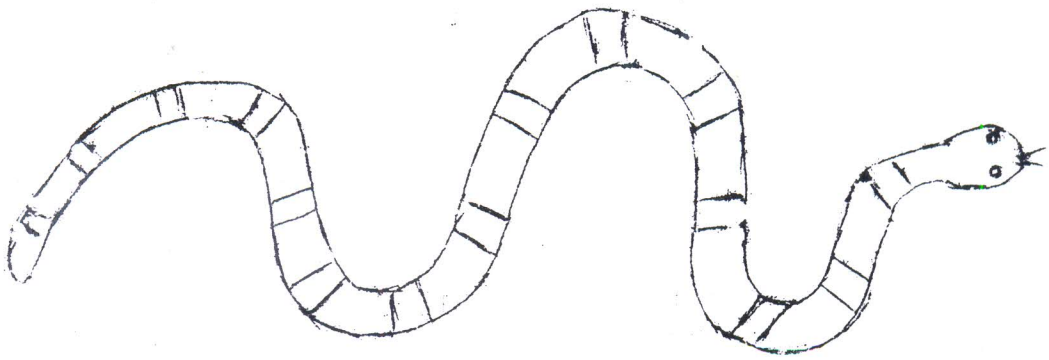
Two mugger crocodiles (*Crocodylus palustris*) of approximately 3M in length were sighted on 26.11.87 in the Colliron river. The water level in this river was very low due to the drought, and the area where the crocodiles were sighted was a very small pool.

The two crocodiles were seen basking on the sandy bank (with absolutely no vegetation) about 2-3 M from the pool. On approaching them from the opposite bank, one crocodile immediately got into the water and submerged, while the other continued basking for another 10-15 minutes before getting into the pool.

The local people report that there are approximately 10 crocodiles in the area. Although the pool is being used by the local inhabitants for washing of clothes etc. there has been no attacks so far.

R. Kumar
A.V.C. College
Mannampandal 609305
Tamil Nadu.

..4..



DR.SAHA REPORTS ON A SNAKEBITE CASE IN WEST BENGAL

Sri Golak Halder, aged about 22 years was admitted in this hospital on 13.2.87 at 12.10 p.m. for the treatment of the following complaints:-

> Throat pain, inability to swallow any food or drink, bodily discomfort, bodyache, moderate ptosis. He was examined by the doctor-in-charge on duty and the case diagnosed as "Peritonsilar Abscess" and treated accordingly.

On 14.2.87 at 10.25 a.m. I attended the patient and after taking proper case history and careful examination, the following vital findings were noted:-

> Both the tonsils and pharynx healthy, but classical neurotoxic manifestations were prominent e.g. ptosis, salivation, inability to protrude the tongue, inability to swallow any food or drink, abdominal cramp, inability to sit or stand i.e. all the predominant neurotoxic signs and symptoms of snake venom poisoning were evident. Pulse 82, regular temperature 98°F; respiration 22; regular B.P.110/70mm of Hg.

So, from the above mentioned findings it was a plausible case of Common Krait bite which occured on 13.2.87 at night while he was fast asleep on the ground floor of a thatched house.

Treatment

Rest in bed along with full assurance. At 10.45 a.m. antivenom serum (Polyvalent) 100 ml. by intraveneous drip in 30 minutes, intravenous fluid, steroid, tetanus vaccine, antibiotics etc. were given and at about 6 p.m. the patient was almost completely free from all the neurological signs and symptoms of snake venom poisoning; stool and urine passed. Further antivenom serum was not needed. No serum reaction. He was discharged from the hospital on 19.2.87 in good condition.

..5..

Comment: It is regrettable that meagre knowledge about snakebite cases among the medical officers leads to a negative approach in the treatment of venomous snakebite case.

Dr. Santi Gopal Saha
Medical Officer
Raidighi Rural Hospital
P.O. Raidighi
District 24 -Paraganas (South)
WEST BENGAL

Editor's comment: It is also important to note that a doctor can interpret the symptoms of snakebite and even identify the species responsible without seeing the snake and even without the patient knowing the details of the bite he received. This is not uncommon in krait bite which frequently happens when a victim is sleeping. It is worth emphasizing two other points of interest: krait bite, aside from classic neurotoxic symptoms, causes severe abdominal pain. Dr. Saha did not delay and injected 10 ampoules of antivenom considering the lateness of the treatment and the high toxicity of krait venom.

***

AN UPDATED LIST OF SNAKES OF BANGLADESH

1. Typhlina bramina Common Worm Snake
2. Typhlina diardi Large Worm Snake
3. Typhlina porrectus Slender Worm Snake
4. Python molurus Indian Python
5. Python reticulatus Regal/Reticulated Python
6. Eryx conicus Common Sand Boa
7. Pareas macularis Darjeeling Snail-eater
8. Pareas monticola Assam Snail-eater
9. Lycodon fasciatus Banded Wolf Snake
10. Lycodon aulicus Common Wolf Snake
11. Lycodon jara Yellow-speckled Wolf Snake
12. Oligodon albocinctus White-barred Kukri Snake
13. Oligodon arnensis Common Kukri Snake
14. Oligodon cinereus Black-barred Kukri Snake
15. Oligodon cyclurus Cantor's Kukri Snake

..6..

16. Oligodon dorsalis Spot-tailed Kukri Snake
17. Oligodon taeniolatus Russell's Kukri Snake
18. Oligodon theobaldi Mandalay Kukri Snake
19. Sibynophis sagittarius Cantor's Black-headed Snake
20. Sibynophis subpunctatus Dumeril's Black-headed Snake
21. Amphiesma stolata Striped Keelback
22. Rhabdophis subminiata Red-necked Keelback
23. Macropisthodon plumbicolor Green Keelback
24. Xenochrophis cerasogaster Dark-bellied Marsh Snake
25. Xenochrophis piscator Checkered Keelback Water Snake
26. Atretium schistosum Olive Keelback Water Snake
27. Acrochordus granulatus File/Wart Snake
28. Elaphe helena Common Trinket Snake
29. Elaphe radiata Copperhead Trinket Snake
30. Ptyas mucosus Rat Snake/Dhaman
31. Zaocys nigromarginatus Green Rat Snake
32. Argyrogena fasciolatus Banded Racer
33. Liopeltis calamaria Lesser Striped Neck Snake
34. Dendrelaphis pictus Painted Bronzeback Tree Snake
35. Dendrelaphis tristis Common Bronzeback Tree Snake
36. Chrysopelea ornata Ornate/Golden Flying Snake
37. Psammodynastes pulverulentus Mock Viper
38. Ahaetulla nasutus Common Vine Snake
39. Ahaetulla prasinus Short-nosed Vine Snake
40. Boiga cyanea Green Cat Snake
41. Boiga cynodon Bengal Cat Snake
42. Boiga gokool Eastern Cat Snake/Eastern Gamma
43. Boiga multimaculata Large-spotted Cat Snake
44. Boiga ochracea Tawny Cat Snake
45. Boiga trigonata Common Cat Snake
46. Enhydris dussimieri Dussumier's Smooth Water Snake
47. Enhydris enhydris Common Smooth Water Snake
48. Enhydris sieboldi Siebold's Smooth Water Snake
49. Cerberus rhynchops Dog-faced Water Snake
50. Gerarda prevostiana Glossy Marsh Snake
51. Fordonia leucobalia White-bellied Mangrove Snake
52. Elachistodon westermanni Indian Egg-eater

..7..

53. Bungarus caeruleus Common Krait
54. Bungarus fasciatus Banded Krait
55. Bungarus lividus Lesser Black Krait
56. Bungarus niger Black Krait
57. Bungarus walli Wall's Krait
58. Callophis macclellandi MacClelland's Coral Snake
59. Callophis melanurus Slender Coral Snake
60. Naja naja Indian Cobra
61. Ophiophagus hannah King Cobra/Hamadryad
62. Laticauda colubrina Colubrine Amphibious Sea Snake
63. Laticauda laticauda Common Amphibious Sea Snake
64. Enhydrina schistosa Hook-nosed Sea Snake
65. Hydrophis caerulescens Malacca Sea Snake
66. Hydrophis cyanocinctus Annulated Sea Snake
67. Hydrophis fasciatus Banded Sea Snake
68. Hydrophis nigrocinctus Black-banded Sea Snake
69. Hydrophis obscurus Estuarine Sea Snake
70. Lapemis curtus Malabar Sea Snake
71. Microcephalophis cantoris Cantor's Narrow-headed Sea Snake
72. Microcephalophis gracilis Common Narrow-headed Sea Snake
73. Pelamis platurus Yellow and Black Sea Snake
74. Vipera russelli Russell's/Chain Viper
75. Trimeresurus albolabris Green Pit Viper
76. Trimeresurus erythrurus Spot-tailed Pit Viper
77. Trimeresurus gramineus Bamboo Pit Viper
78. Trimeresurus monticola Blotched Pit Viper
79. Trimeresurus popeorum Pope's Green Pit Viper

Dr. M.A. Reza Khan
Curator
Al Ain Zoo & Aquarium
P.O. Box 1204 Al Ain
Abu Dhabi
U.A.E.

..8..

***

NEWSPAPER CLIPPINGS

"SNAKE SKINS SEIZED" 'Indian Express' 1.12.1987.(Trichy)

As many as 515 raw snake skins concealed in two gunny bags, worth about Rs.20,000 were seized from two persons near the Gandhi Market here on Friday. The two, Alaudin(22) of Manapparai and Nazeer Hussain (24) of Tiruchi were produced before the Judicial First Class Magistrate, who remanded them to custody for 15 days.

* * * *

"93 CHILDREN VOMIT AFTER TAKING NOON MEAL" (Cuddalore) 'The Hindu' 6.10.87.

93 children in the 2 to 5 age group who took noon meals in Ottai village near Vanoor started vomiting. A dead lizard was allegedly found in the food. Four men and three women who also took the meals were taken to the Jipmer hospital in Pondicherry along with the children where they were treated.

* * * *

"A SCORPION DOES IT" 'Indian Express' 10.11.87.

A scorpion brought a passenger train to an unscheduled stop. When the Shencottah-Madras Fast Passenger pulled up near Puduchatram, many wondered what it was all about. A passenger, who was stung by a scorpion, had pulled the alarm chain and brought the train to a halt. The railway staff gave the passenger first aid and the train was allowed to proceed. Presumably, the scorpion must have found its way into the compartment with some lugguage.

* * * * *

"BITTEN IN SNAKE PIT, BOY DIES" 'Indian Express' Dec.'87.

A cobra bit Venkatesh (8) son of Sadappa, when his playmates forced him to put his hand inside a snake pit near Uddanapalli. The boy was admitted in the Government Hospital, Hosur, in an unconscious state and he died despite treatment.

* * * *

'The Times of India dated 2nd November '87 reports on a "FLYING SNAKE FOUND"

A young golden tree snake, a rare non-venomous variety often referred to as flying snake on account of its ability to glide has been recently collected from Saputara hill station in Gujarat which lies far away from the natural distribution zones listed by experts like J.C. Daniel and Romulus Whitaker. The specimen was identified by Chandraveersingh Jhala, a wildlife enthusiast who had helped in setting up a Snake Park in Saputara. According to the Book of Indian Reptiles by Daniel and a Field Guide to Common Indian Snakes by Whitaker, the golden tree snake (Chrysopelea ornata)is found in the Andamans, Western Ghats south of Goa gap, Sri Lanka, north Bihar, West Bengal and other areas of north-east. The snake found at Saputara in the first week of October is now 78 cm long and its yellow bands are marked by flower-like orange veterbral spots.

* * * * *

"ONE CURE WITHIN TWO SYSTEMS" 'A Times of India (New Delhi) report dated 15.1.88

Abdul Hameed, a retired school teacher of Trikkaripur didn't know that the pricking on his left foot was the bite of a Russells Viper, one of the most venomous snakes found in Kerala, until he was brought to the Pappinissery Snakebite Cure Centre.

Otherwise a little-known town on the national highway-17, Pappinissery shot into prominence with the establishment of the Centre in 1964 by a few dedicated Marxists following the death of one of their comrades due to a snakebite. The Institution is the only one of its kind in Kerala and perhaps in the country for combined treatment in Ayurveda and allopathy systems of medicines for snakebite.

The exorbitant rise in the price of antivenom serum supplied by the Haffkine Institute of Bombay, is one of the major problems confronting the Institution now. The price per phial of serum has increased from a mere Rs.50/- to Rs.137/- during the past one month alone. The price was Rs.13/- per phial in 1969. A total of 8,700 cases of snakebite were referred to the Centre last year of which 2,441 were treated as in-patients. Survival of the patient depended upon the time between the bite and treatment. Undue delay in bringing the patient to the Centre could be fatal, says Dr. Kumaran.

A Snake Park is being run by the Centre at Parassinikkadavu, 13 km from Pappinissery. Among the caged serpents at the Park are two large-sized King Cobras who draw crowds. The Snake Park spread over three acres has facilities to extract venom for which they are awaiting government permission.

..10..

"FOR SNAKES NO LADDERS" The APN newsletter Soviet Panorama' June 1987.

Snake venom is used in the manufacture of exceedingly costly medicines. But while the pharmaceutical industry requires even greater quantities of venom, the number of snakes in the wild has been dwindling. For this reason snakes are now being bred in nurseries. For instance, kufis, or blunt-nosed vipers, are now kept at a special herpetological plant in the Trancaucasian Republic of Azerbaijan. While in the wild ten kufi eggs will yield on average only two or three specimens, under incubator conditions, a success rate of one hundred percent is achieved. When they are twenty days old, the baby snakes are released in batches of up to a thousand in uninhabited areas of the Main Caucasian Range.

* * * * *

"OF SNAKES AND LOVE" an extract from 'The Indian Express' dated 19.4.86.

When Shekar Bhatsavle first came to live in a village in the snake-infested region of Neral, near Bombay, he set about eliminating the reptiles with his shotgun. When shotgun cartridges became expensive, he started killing them with a rod. But later, in the midst of all this mindless destruction, came the realization that there could also be a more positive attitude towards snakes. That they too served a purpose in life. And since then, Shekar has been trying to spread the message of the harmlessness of snakes. This he has done in 180 villages adjoining Neral and his message seems to be having its effect. Shekar says his main aim besides dispelling superstition about snakes is to convert at least one person in the 180 villages in the Neral region to his way of thinking so that there is no need to exterminate a snake as soon as it is sighted. He says he has made progress in this direction. Shekar feels that research in herpetology is still in its infancy and intends setting up an institute as soon as possible to promote a systematic study in this field.

* * * *

'The Wall Street Journal' -8.1.1988 "DAVID SHEPHERD SURE KNOWS HOW TO TAKE THE FUN OUT OF DRIVING"

You're driving on a Louisiana road and spy a snake ahead. There's nothing you would rather do than squash the slithering reptile under your wheels. But first, remember: David Shepherd may be watching you.

..11..

Mr. Shepherd, a 46 year old biology professor at south-eastern Louisiana University is a fan of reptiles who has related interests in American driving habits. To test the effect of the latter on the former, he conducted an experiment and saw some pretty gruesome stuff.

'The old rubber snake trick'

At a local toy store he bought a two food long rubber snake. Then he and some of his students trekked out to a fairly untravelled highway, put the snake on the road, hid in the woods and waited. The object: to see how many drivers ran over it. Sometimes a plastic turtle was used instead, to see which animal faired worse. The professor's results, which he recently announced to the Louisiana Academy of Science, showed that of 12,400 encounters between snake and auto cover a period of three years, 1,282, or 10.3% ended in "death" for the snake. Of the 9,600 encounters between turtle and auto, only 5% ended in the turtle's "death". Moreover, of the 1,282 snake 'deaths', 498 resulted from drivers deliberately going out of their way to make a hit. "Lots of times (cars) would turn around and run back over the snake", says Mr. Shepherd, "the most was five times, and some people stopped, put their wheel on the creature, and rolled back and forth". The students saw others drive up on the road's shoulder. Once a Sheriff even jumped out of the car and pulled a gun, but the group came out of hiding to explain.

It wasn't all bad. One woman stopped to help the snake off the road. "When she heard a car coming, she ran down the road, waving her arms, not wanting the (car) to hit him", says Mr. Shepherd.

Mr. Shepherd says the experiment was inspired by a disturbing memory from his student days. He had seen a huge truck swing into the opposite lane of a highway, specifically to hit a snake. After reading articles on animals killed in highways, he wondered how many are intentional. The professor, whom some locals now call "the snake man", says he's just lucky his interest is in reptiles. "If I'd been interested in deer", he says, I couldn't have really done this".

* * * *

"CROCODILE SCARE IN HAMLET" 'The Indian Express' 29.9.87

Even as it has been proposed to release carnivorous crocodiles into the Ganga, a similar experiment at the Neyyar Dam here has created a scare in the villages nearby. It all started four years ago when the scaly amphibians in a State breeding centre here began increasing in numbers rapidly. There are about 140 crocodiles in the Centre now, 70 of which were born this April. It was then suggested that some crocodiles be released into

..12..

the Neyyar Dam. It is estimated that the reservoir harbours nearly 500 crocodiles. And then the crocodiles started attacking people. Krishnamma, 42, was bitten by a crocodile five months ago as she went to fetch water from the reservoir. As she struggled with the reptile, she was dragged into deep waters. She was released but not before her left arm was gobbled up by the beast.

Another attack occurred recently the day when this correspondent visited the area. Ayyappan, a coolie was bitten on the knee when he went to bathe in the lake created by the dam.

The Asst. Wildlife Warden, Patrick Gomez said the victims sometimes exaggerate the severity of the attack to claim the maximum compensation of Rs.5,000 permissible under the Wildlife Act. Meanwhile, a report late July said it has now been proposed to release crocodiles into the Ganga as an anti-pollution measure.

* * * *

"GOURI FINDS A MATE"- 'Times of India', New Delhi 8.12.87.

After a two year struggle, wildlife experts at the Bhitar Kanika Sanctuary in Orissa have succeeded in finding a partner for "Gouri", a twelve year old saltwater female crocodile. Gouri, oneof the two rare crocodiles in the world as per a Food and Agriculture Organisation (FAO) report was hatched in the Dangmal crocodile research project area in the Sanctuary. From the 48 eggs brought from Kalibhanjadiha in Dhamara river of the Sanctuary for incubating in the hatchery in stimulating natural conditions, 24 hatched as female crocodiles, and Gouri came out as an exceptional variety, pure white, surprising wildlife experts. The rare white crocodile was then brought up in a specially constructed enclosure at the project, the first and the largest of such projects for rearing of saltwater crocodiles in the country.

Grown-up Gouri suddenly became a problem for wildlife experts when in 1985, it started laying infertile eggs in the absence of a male partner and without any mating. Unfortunately, the project centre got all female crocodiles in the first two batches,which deprived Gouri of a suitable male partner in captivity. Of late one young male crocodile was introduced to Gouri but the male could not dominate Gouri in the mating process. A disgusted Gouri one day attacked and injured her incompetent suitor which proved fatal for him.

A healthy male crocodile was finally found and is now kept in the same pool separated from Gouri by a check gate. Experts say both the crocodiles have now become familiar to each other.

The Dangmal Sanctuary, which also has the unique distinction of harbouring the largest living saltwater crocodiles in the world, generally 19 feet long, is also ready with quite a good number of male crocodiles produced through hatching in 1977.

..13..

"WAYWARD CROC"

As reported in the Indian Express of 10th November '87, a crocodile that lost its way and found itself in the middle of a street in Royapuram was unceremoniously shifted to the Guindy Snake Park. People found the eight foot reptile emerging from a storm water drain on Narayanappa Naicken Street and ran helter skelter. By one account, some people taking pity on the possibly hungry beast, tried to feed it a dog. But police soon forced their way through the throng followed by a team of keepers from the Vandalur Zoo. With the help of some local people, and a few gunny bags, the crocodile was captured. It was shifted to the Children's Zoo in the Guindy Park where it joined other crocodiles. One possible theory behind its emergence through the storm water drain holds that the croc found its way into the drain from a city waterway during the rains. It is the only theory that holds some water!

* * * *

Some croc news from Australia in 1987

"RENEWED CULLING CALLS AFTER CROCODILE DEATH IN NORTHERN TERRITORY"

The death of a 39 year old Queensland man killed by a crocodile in the small Northern Territory town of Borroloola last week, has sparked renewed calls for the culling of large crocodiles. It was the first killing by a crocodile in the Northern Territory since 1980, when an Aboriginal women was taken in Arnhem Land. "There is no need for a senseless wholesale slaughter", Mr. McCarthy said. "Crocodiles and humans can co-exist".

Mr. Peter Whitehead said the territory's saltwater crocodile population dwindled to a few thousand "wary adults" after extensive shooting in the 1950s and 1960s. The animals had been protected by Commonwealth legislation in 1971 and the population had since increased to between 30,000 and 50,000, although it might now have reached a plateau. The Commission runs an extensive program to take crocodiles from areas where they present a possible danger to the public, such as Darwin harbour.

Apart from the basic conservation argument of protecting a wild species in its natural habitat, the crocodile was strongly linked with the territory's image as a tourist destination, Mr. Whitehead said. Crocodiles are also set to become a commercial industry in the territory. The industry is expected to earn about $1 million a year.

****

..14..

"BIZARRE CULT OF THE CROC"

It was an English jounalist working in Darwin who hit the nail on the head when he observed recently that many Territorians (inhabitants of Northern Territory in Australia) seemed almost jubilant whenever someone was lost in the outback or taken by a crocodile. His insight was proved correct this week when a ranger uranium mineworker met a grisly death in the jaws of a giant Kakadu National Park crocodile. Many Territorians dit not feel the horror, remorse or anger that is the normal reaction to violent death. Instead, there was a widespread and bizarre delight in the fact that the crocodile had triumphed. Why this ghoulishness? The answer lies in the way Territorians see themselves - as rugged frontiermen carving out an existence in an untamed wilderness. Fuelling the mystique was the American tourist who watched from the bank of the East Alligator River as the crocodile stalked its victim and make the kill. Besieged by the media, he said he had decided to visit Kakadu after seeing the movie'Crocodile Dundee'.

Crocodile T-shirts, hats, stubby (beer) coolers, Aboriginal carvings and paintings depicting crocodiles, all have been in demand since the movie hit the screens. The feeling is that business is certainly not going to be hurt by an occasional crocodile attack. Growing up around this has been fierce rejection by most Territorians of any suggestions that crocodiles should be culled to offer greater protection to humans visiting the wild.

The logic is not one based on lofty conservation principles. Most Territorians, black and white alike, instinctively believe the waterways of the Northern Territory belong to the crocodile, and if men want to share them they must be prepared to take the risks.

* * * *

"KILLER CROC LOCATED"

A man's decomposing torso was discovered inside a crocodile killed near Borroloola, 800 kilometres south-east of Darwin. An examination of the 4.5 metre saltwater crocodile's stomach contents found the torso believed to be that of a Queensland man last seen at a nearby landing on the McArthur River. A search found two separated legs about 100 metres upstream of where the man was last seen sleeping.

The 39 year old man from Mareeba in north Queensland, and a friend had fallen asleep at the Rocky Creek landing, a popular fishing spot near Borroloola.

..15..

Conservation authorities killed the crocodile after capturing it. The Northern Territory Conservation Commission said the crocodile was killed after rangers decided it was the animal most likely to have attacked. A Commission spokesman said the man's remains would be brought to Darwin for identification, possibly for fingerprints. The missing man's friend awoke to find only his friend's shirt lying nearby. The spokesman said it was not known if the man had been taken from the bank or while swimming.

* * * *

"MIDDLE-AGED CROCS IN DECLINE"

The saltwater crocodile, one of the world's most fearsome predators, faces extinction in many of its former habitats in Australia. From a population with perhaps as many as a million animals before the arrival of Europeans, there may be only 12,000 left today. Despite a 15 year ban on the killing of crocodiles, there has been no large-scale increase in their numbers, according to Sydney University's Professor Harry Messel.

Claims of an explosion in the the crocodile population in northern Australia have no basis in fact, he says. On the contrary, so severs has been the reduction in crocodile numbers that in many areas of the north, recovery is unlikely and for all intents and purposes the crocodile could be considered to have been wiped out. The impact of this loss of the top predator from the coastal food-chains is entirely unknown.

Harry Messel now believes this intra-species preying, or cannibalism as the lay person would put it, accounts both directly and indirectly for the huge loss of young crocodiles that he has continued to uncover. Adult crocodiles appear to tolerate hatchlings and small youngsters even upto 120 centimetres long, but not larger ones that might constitute a threat to dominant male genes.

Professor Messel believes that commercial netfishing should be banned upstream from the mouths of all northern rivers and that marine sanctuaries should be created where the crocodile is afforded total protection. The over-exploitation of the barramundi resource has meant that few of the thousands of tourists who go north each year can now expect to catch one. This leaves the saltwater crocodile as a prime tourist attraction, yet as soon as its numbers show any sign of rising there are calls for a culling program. "All the scientific data dictates that rigid protection and enforcement be accorded the animal now, more than ever before", Harry Messel says.

* * * *

..16..

"PYTHON SWALLOWS DEER" 'The Hindu' dated 21.10.87.

A 11 feet long python swallowed a full grown spotted deer in Theppakadu in Mudumalai Wildlife Sanctuary. It was seen lying motionless with its prey half swallowed and the deer struggling for life. It was stated by the Forest Department personnel that it had completely swallowed the deer. Hundreds of visitors made a beeline to the spot, but they were told that the python had gone interior into the jungle and the Forest Department personnel did not allow them to go into the jungle.

* * * *

"RAJIV SAVES A WHALE" 'The Hindu' dated 31.12.87.

The Prime Minister, Mr. Rajiv Gandhi, today jumped into the green water lagoon at the Akathi Island to save an injured whale, which had strayed into the shallow waters during high tide. (The Prime Minister was in Lakshadweep holidaying with his family). This made the SPG commandos walking just behind the Prime Minister also take a dive in the lagoon waters. Minutes after, many among the local crowd gathered to welcome Mr. Gandhi, also plunged into the water to help him push the whale into the sea. Meanwhile, a bigger whale, appeared at the far end of the lagoon. Local people believe sighting of whales to be auspicious.

* * * *

OCCURENCE OF A HOUSE GECKO (Hamidactylus flaviviridis) WITH A BIFID TAIL

A specimen of the house gecko (Hamidactylus flaviviridis) was captured in the Administration building of Poona Snake Park. It was a male of about 130 mm in total length and was caught during the night. It had a well developed bifid tail. The separated two branches measured 35mm and 25mm respectively, from the point of regeneration to the tail tip. The phenomena of autonomy and tail regeneration is a well established fact in geckos, however, a bifid regenerated tail is rare. Bellairs (1969) states the possibility of double or even triple tail regenerations in lizards.

..17..

Both the branches of the tail responded to a given stimulus with the same intensity. This clearly indicates nerve development in both the branches. The formation of more than one growth centre at the amputated edge is not a common feature of higher vertebrates. This observation demonstrates the possibility of a few cells giving rise to a complex, secondary structure.

Anil & Neelimkumar Khaire
Poona Snake Park
Katraj, Poona Satara Road
Poona -411 046.

Editor's Note: We have seen a few geckos with regenerated bifid tails (*Hemidactylus frenatus* and *Hemidactylus leschenaulti*) and even one baby caiman with such a feature. Once a water snake (*Xenochropis*) was hatched at Madras Snake Park with a double tail, but it died very soon.

***

SKIN SMUGGLING IN TOKYO

A World Wildlife Fund for Nature agency reports that Japan has been smuggling the skins of endangered lizard species from Bangladesh. A Japanest Government official has however, denied that these imports were illegal.

It is estimated that the skins of 700,000 Bengal and Yellow Monitor lizards were smuggled between 1986 and 1987. The Convention on International Trade in Endangered Species (CITES) prohibits trade in these two lizard species. Although Japan is a signatory to the CITES treaty, it has taken a reservation on 14 species.

Bangladesh, however, does not provide the export permits which are necessary for trade in the reserved category species. Authorities in Bangladesh state that there was no legal export of lizard skins after 1985.

The lizards were declared as "clothing samples", "business documents", "jute bags" and "salted fish" when exported. Shoes, bags, and belts are the end products of these lizard skins upon reaching Japan.

Centre for Environment Education-News
and Feature Service
Ahmedabad -380 054.

Editor's Note: Watch straps are one of the most important uses of lizard skin in Japan.

***

..18..

LETTERS TO THE EDITOR

A SNAKE STORY

An idle moment in which I thought I'd let you hear of an interesting snake story at the Madras Club. In a very tall and diseased old rain tree, a ratsnake was seen high up with its head inside a hole. It stayed there for a good half an hour before descending. Unfortunately, there were lots of thick vines and bushes at the base of the tree and I couldn't see where it went: probably there was also a hole among the roots but I couldn't find it. However, what was it doing up the tree? Most of these holes are nesting sites of parrots and mynahs, and though I couldn't see what it was doing, I am almost certain it must have been eating the helpless young parrots inside. The full-grown birds flying around were making quite a racket.

We often think of snakes confining their food to certain species - rats in this case - but I've often thought they are much more ubiquitous. A big cobra I once caught had swallowed a very large 'onna' (Calotes) which it disgorged tail first. I once also had a large green whipsnake that also had swallowed a full-grown male 'onna' whose spines were sticking through the snake's skin.

Harry Miller
Indian Express
Express Estates
Madras -600002.

#:::*** :::

WILD MEMOIRS OF A RARE SNAKE IN THE SHENTURUNY HILLS IN SOUTH KERALA

I am writing this letter to you to prove a doubt on the existence of a snake, which is said to be a very rare specimen, being found in southern Kerala and further there is only one sight record of this snake. But before coming to this matter, I would like to introduce myself to you. My name is R.S. Sree Kumar, a resident of southern Kerala and aged 21. I am a great lover of nature and a wildlife enthusiast. At present I am also a member of the B.N.H.S.

In his book 'VANASMARANAKAL' (wild memoirs) written in Malayam, the author late Mr. P. Parameswaran vividly narrates his experience and work as a forester.

..19..

Parameswaran was a forester of the erstwhile Travancore Government, he worked in the Forest Department between 1910 and 1950. (Now he is no more, he died 2 decades ago). His work 'WILD MEMOIRS' was first published in 1958 (also his last edition). The book is divided into 9 chapters, of which the third one is devoted to this rare snake and titled as 'The Kozhipoovan of Shenturuny Hills'. Here the word 'Kozhipoovan' could be translated as a cock's crest.

The Shenturuny hills is in south Kerala falling under the Thenmalai Forest Division. Shenturuny Valley was once famous for its large tracts of evergreen forests and flourishing wildlife there, particularly elephants, but now it is in a declining stage. So the Kerala Government recently declared it as a Wildlife Sanctuary to save it from further destruction.

Allow me to translate his own narrations about the snake:

"Rackwood is the name of a tea estate, which is just 8 km. east of Kulathupuzhai in Travancore. The road to Rackwood goes through Shenturuny Valley. One day I was proceeding to Rackwood from Kulathupuzhai and was accompanied by an expert shikari (hunter). The morning sun was beginning to expose his dim light in the eastern horizon against the fumigating grey mist arising from the nearby thick evergreen forest of Shenturuny hill tracts.

After covering half a mile, unexpectedly we heard a whistling sound from the top of a nearby tall rock. My shikari friend after making a thorough search around pushed me from the back in order to walk speedily. But the danger had already set in. We saw a giant snake on the top of that tall rock. By standing on its tail and making a whistling sound it seemed sure that the giant creature was aiming to approach us. Soon my shikari friend instructed me to stand just behind him. The snake had already started to approach us, just like a 'steam boat'. I closed my eyes. Within seconds I heard a number of horizon-shaking' shots from my shikari friend's English rifle. When I opened my eyes, the scene., was beyond my words to narrate. The giant creature and his mate were struggling for life, but within minutes they died. Yes, they were a pair. After some time we measured the male specimen. He was 16 feet long and 14 inch girth. The female specimen was somewhat smaller.

These species of snakes are called 'Kozhipoovan' because just above its blue black neck there exists a fleshy

..20..

horn-like crest which is shaped like a calling bell and glistening black in colour. So the tribals here, Kannies (the hill men of southern Kerala) call it 'kozhipoovan'. The male snake usually makes such whistling sounds to call its mate, they say".

Based on the above, I will be glad to know your views and opinion about this rare snake, and whether it is true. Have you any idea about such a snake ever existing in the Western Ghats?

R.S. Sreekumar
Pandarzhikom
Valiyam P.O.
Pooyappally (Via)
Quilon District
Kerala -691540.

Editor's reply to the above letter

Dear Mr. Sree Kumar,

Mr. Parameswaran's memoirs indeed sound too 'wild' to believe. There is no snake with a natural crest on the head (although there are desert vipers with horns, but not in India) though the periodically shedded skin could look like this to someone with a good imagination (or bad spectacles). The snakes described (if the story is true to some degree) sounds like king cobras, but the whistling was no doubt the sound of a squirrel or bird alarmed at the sight of the snakes(or the human observers). No snakes whistle, though several hiss loudly (such as the python) and we have heard king cobras and ratsnakes give a deep, soft growling or sighing sound, but no whistle.

Unfortunately even writers with an otherwise accurate eye for detail get confused when they see a snake, particular a big dramatic one like a king cobra (which used to be quite common in Kerala before most of the forests were cut away) and all sorts of rubbish then gets put in print, perpetuating popular local myths.

R. Whitaker.

***

..21..

A HUMOROUS ACCOUNT OF A SNAKE BITE EXPERIENCE

Last year one of the Croc Bank's friends living in Auroville, trod on a small Russells viper in front of his house. When he was bitten, David felt the pain in his toe and kicked his foot which resulted in the snake flying through the air and getting away, but not before it was seen briefly by 2 or 3 people. David was first treated by the "blackstone" method, but later got antivenom serum. For the next 10 days the situation was complicated by allergy to the antivenom serum and later by a reaction to the tetanus injection and by necrosis on the toe. Now over a year later, the toe looks a lot better and David has a lot more respect for snakes.

During the first few minutes after his bite, David was thoughtful enough to write a note to us about his experience, which we reproduce here. David's letter tells us that he kept his spirits up by writing notes to everyone he knew and it seems to have worked.

"Dear Rom,

Just got bitten by a Russells viper. Feel funny because I am using 'blackstone', however, just sent a chit to get the antivenom. If I die, the shampoo left in the hut goes to Croc Bank, plus the yellow raincoat".

Moral: If snake bitten, think antivenom and nothing else. Don't complicate a snakebite by trying other remedies.

***

NEWS FROM A CROC FARM IN SOUTH AFRICA

Let me introduce myself. I worked at the Fitzsimons Snake Park in Durban in 1979 and was curator of Transvaal Snake Park early in the eighties. Thereafter I wrote "Snake Versus Man - a guide to dangerous and common harmless snakes of Southern Africa". At present I am Chairman/Newsletter Editor of the Herpetological Association of Africa and my hobbies include reptile photography and collecting herpetological books.

I have been with Kwena Gardens since its inception some 28 months back. It is a tourist/commercial farm with the initial emphasis on tourism. A great deal of money was spent on landscaping and scenic buildings and as far as we are concerned, it is one of the nicer tourist farms. Our mother company is CLAL, Israel and our director is Shlomi Ranot, whom you may have met.

Initially we brought in approximately 170 crocodiles from Botswana, from hatchlings to some adults measuring close to 5 metres in length. That was in November 1985.

..22.

In the first year, towards the end of 1986, we hatched over 420 eggs and these crocodiles have done very well, averaging about one metre in length after 12 months, the largest of the batch measuring 1.34 M. We are feeding them a diet similar to what was described by Cardelhac in his paper on alligator management. Right now I am busy with a series of experiments feeding different groups diets consisting of different protein levels and carefully analyzing their faeces and urine. Thirty six hatchlings are monitored for ten day periods and a further twelve groups consisting of eight per group will be monitored for several months. They are being kept at 31°C.

We have just passed our second breeding season and hatched 875 eggs. I am sure that we can double this figure the coming season as we are very new in the industry and our track record is improving with experience. Our aim is to produce close to 5000 skins per year.

That is very briefly what our operation is all about. Should you require any further information please write.

Johan Marais
General Manager
Kwena Gardens Crocodile Farm
P.O. Box 234, Sun City
Bophuthatswana
SOUTH AFRICA

***

REPTILE REFERENCES FROM 'ENVIRONMENTAL RESOURCES EXTRACTS'- ESG-World Wildlife Fund Bulletin

Rao, R.J. Captive Rearing of Gharials and Turtles in National Chambal Sanctuary.
Zoo's Print 1(10):17-18 1986. 2 photos.

The National Chambal Sanctuary, created to protect the gharial, borders three States. Gavialis gangeticus, one of the three Indian crocodilian species, is protected by collecting eggs from nesting sites, rearing hatchlings and juveniles, and releasing them into the Chambal river. Uttar Pradesh alone has released 1,000 gharials so far. The Gharial Rehabilitation Centre at Deori (Madhya Pradesh) also rears three of the seven species of freshwater turtles occurring in the Chambal, Kachuga tentoria, K. dhongoka and K. kachuga. Research studies on gharials and aquatic fauna are underway at this Sanctuary since 1983. Emphasis has been given to the conservation of aquatic fauna in the National Chambal Sanctuary.

(Gharial Rearing Centre, National Chambal Sanctuary, P.O. Box 11, Morena 467001, M.P. India).

* * * *

Auffenberg, Walter. 'The Indian Monitor Lizard'. Sanctuary Asia. 6(4) :326-333. Oct/Dec.1986. 7 coloured pictures.

Of the 42 species and sub-species of monitor lizards, India possesses four distinct types: Varanus bengalensis, V. salvator, V. flavescens, V. griseus. The behaviour, habitat, range, mating and breeding habits are given in detail. All the four species occurring in India are protected, both by the Indian Government and by international regulations.

V. griseus and V. salvator are protected because the Indian part of their range is so small; V. flavescens be because it has become so rare, though the original range was quite extensive; and V. bengalensis because there had previously been a drastic reduction in its numbers due to its extensive use in the leather industry. Biologists are unable to make significant constructive recommendations for their management as little is known of their natural densities, home ranges, and habitat preferences. Until this data is forthcoming current policies regarding their protection should not be changed.

* * * *

Singh L.A.K. 'The Indian Chameleon, Chamaeleon zeylanicus (laurenti) in Satkoshia Gorge Sanctuary, Orissa: Notes on Availability, Growth and Biometrics.

J. BNHS 83(1):111-119.1986. 3 graphs, 1 table.

The preliminary observations made on variable availability, growth rate, biometrical relationships and the probable life-span of the Indian Chameleon are reported, based on a study between September 1975 and August 1980. Marking by toe-clipping is believed to have shortened the lifespan when 96 chameleons were returned to the wild. Based on a capture record that indicated a gradual decline in the juvenile and adult population,it is believed that the adults are distributed in the study area in a very low density, maybe 1-2 animals per sq.km. Low density of distribution supports an observed sex ratio of 1 female: 2.6 males, since males wander more, are less territorial and a larger number of males offer a selective advantage in producing offspring sired by a better male.

Availability of chameleons depended on food availability. Higher numbers of animals were obtained after each seasonal rain, monsoon, winter and summer. Procryptic behaviour in young ones was more pronounced. The rate of growth in the wild is estimated to be about 11mm per month during the first year. The 33mm long hatchlings approach adulthood at about 155 mm at the end of the first year. The average maximum size was about 180mm and animals above 200mm and beyond the second year were rare. The casque on the head is used in the female to assist in nest digging and is suspected to be an organ of advertisement for courting males.

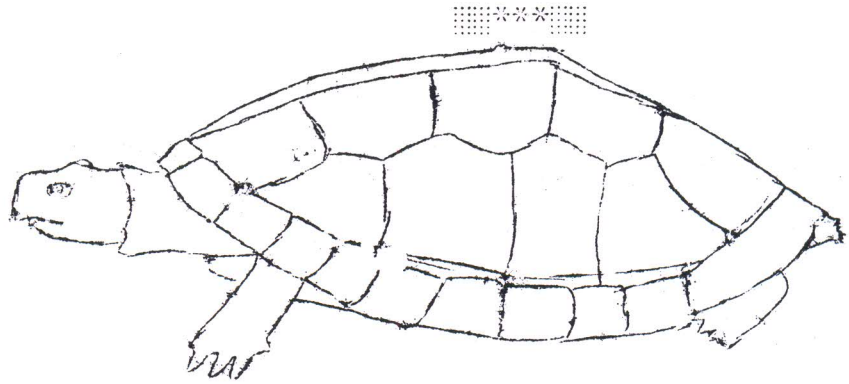
..24..

Moll, Edward O[1] and (late) J. Vijaya[2] 'Distributional Records for some Indian Turtles'
J. BNHS 83(1):57-62. 1986.

A nine month survey of emydid and trionydchid turtles in India, in 1982/83, produced noteworthy distribution records for 10 species:

Cuora amboinensis, Geoclemys hamiltoni, Kachuga tecta, Melanochelys tricarinata, M. trijuga indopeninsularis, Morenia petersi, Chitra indica, Pelochelys bibroni, Trionyx hurum and T. leithii.

1. Department of Zoology, Illinois University, Charleston, Illinois 61920 U.S.A.
2. Madras Crocodile Bank, Vadanemmeli Village, Perur P.O. Mahabalipuram Road, Madras 603104.



INTERIM REPORT ON THE TURTLE PROJECT AT THE MADRAS CROCODILE BANK TRUST

The phenomenon that occurs in the embryonic development of turtle eggs when they go into a kind of aestivation in the egg, is termed "diapause".

Dr. Mike Ewert during his visit here, suggested that this diapause could be broken by 'chilling' the eggs for short or long periods of time. Due to adverse temperatures or weather conditions prevailing, the embryo cannot break the diapause and often dies, as we have experienced here at the Croc Bank. Artificial lowering of temperatures may help the embryo to break diapause and may even speed up the embryonic development.

Acting on Dr. Ewert's suggestion, we 'chilled' 180 eggs in a refrigerator with temperatures ranging from 16°C-24°C (depending on the placement of trays, i.e. lower trays had higher temperatures). Two clutches of five eggs each were kept at room temperature as "control clutches". The eggs were candled every week to note development.

..25..

Some eggs developed rapidly. Small embryos were visible by the end of the first week, and by the second week the embryos were surrounded by extensive blood vessels.

After 28 days three trays of eggs were removed from the refrigerator (one month chill). These were the eggs which were not reacting positively to the chill. The rest of the eggs will be kept in the refrigerator for a 60 day period.

Note: The eggs that are developing may be viable eggs that would develop anyway chill or no chill.

Moisture control is difficult, the bottom trays tend to dry out, while the higher trays have too much moisture.

After the chill period, the eggs were transferred to a sunny area at 32°C and buried in the soil. These eggs were from Trionyx and Lissemys. Control clutches of each species were kept in the laboratory at room temperature.

The control clutches are candled regularly. After a month, the buried eggs will be taken out and candled. Most embryos that fail, do so at the dark-eyed embryo stage and we hope that the subsequent warm period after the initial chilling will prevent this, resulting in higher hatching rates.

Ms. Chandini Menon
Research Associate
Madras Crocodile Bank
Vadanemmeli Village, Perur Post
Mahabalipuram Road
Madras -603 104.

***

EXCRETION OF AMMONIA-N IN THE FRESHWATER POND TURTLE *Melanochelys trijuga trijuga* IN RELATION TO SURROUNDING WATER

Water or the lack thereof comprises a major factor in the external environment of any animal, leading in time to the selection of those adaptation most necessary to maintain an internal environment compatible with life (Dantzler & Schmidt-Nielsen, 1966). Reptiles which are considered to be the first land vertebrates are expected to excrete uric acid as the major nitrogenous product, but this is not true as far as chelonia are concerned.

..26..

In turtles there is considerable variability in nitrogen excretion within a species and in some species a single individual can vacillate between ureotelism[1] and uricotelism[2] (Khalil & Hagag, 1955). What induces such shifting in waste product metabolism is still obscure. The present study is aimed to find the effect of water on the ammonia-N excretion in the pond turtle Melanochelys trijuga trijuga.

Five specimens of varied sizes (149-248 gms) were acclimatized to laboratory conditions before the period of study. After acclimatization, turtles were transferred to plastic basins containing 650, 900, 1100, 1250 and 1600 ml. of distilled water and ammonia-N estimated every 90 minutes from 9.30 a.m. to 4.30 p.m. by following the method of Soloranzo (1969).

Table I provides details of the ammonia-N excreted by the turtles with varying quantities of water. The highest amount of ammonia-N excreted was found to be in the plastic basin with the least amount of water (650 ml) and the least in the plastic basin with the highest amount of water (1600 ml). Further, as the amount of water in the basin increases, the quantity of ammonia-N excreted by the turtle decreases, thereby showing that the surrounding water plays an important role in nitrogen metabolism of turtles.

References

Dantzler, W.H. and B. Schmidt-Nielsen (1966) Excretion in freshwater turtle (P. scripta) and desert tortoise (G. agassizii) Am.J. Physiology 210(1): 198-210.

Khalil, F., and G. Haggag (1955) Ureotelism and uricotelism in tortoise - J. Exp. Zool., 130: 423-432.

Solaranzo, L.(1969) Determination of ammonia in natural waters by the phenol hypochlorite method. Limnol. Oceanogr. 14: 779-801.

1 - Having urea as the main excretory product.

2 - Having uric acid as the main excretory product.

..27..

TABLE I

TIME	TEMP°C	INDIVIDUAL (mg/l of NH3)				
		wt.203 gms	149 gms	167 gms	160 gms	248 gms
		WATER CONTENT (ml)				
		650	900	1100	1250	1600
10.30	29.5	25	23	14	12	11
12.00	30.5	35	28	25	21	14
1.30	31.5	43	32	31	28	23
3.00	30.5	46	38	36	35	29
4.30	30.0	51	42	40	39	34

G. Premkishore
Department of Zoology
Presidency College
Madras -600005.

Chandini Menon
Research Associate
Madras Crocodile Bank
Vadanemmeli Village, Perur Post
Mahabalipuram Road
Madras -603 104.

***

Indraneil Das, a young scientist who is emerging as one of India's very scarse authorities on the turtles of India, recently sent us his three field survey reports on turtles in the north eastern region. These surveys were funded under IUCN/WWF Project 6343, and are briefly excerpted below:

TURTLES OF MANAS TIGER RESERVE : February 1988, pp.1-4

Manas, lying in the eastern foot-hills of the Himalayas, has a total area of 2,837 sq.km. The region receives heavy rainfall, and the forest type ranges from terai riverine, reeds and swamps, semi-evergreen to evergreen forests. Part of this area falls under Bhutan, part under the Indian State of Assam. The terrain is flat land, with numerous rivers draining from north to south.

..28..

The following species of turtles were examined from the Manas Tiger Reserve of Assam, during a field trip in January, 1988.

1. Malayan box turtle (Cuora amboinensis)
2. Tricarinate hill turtle (Melanochelys tricarinata)
3. Indian black turtle (Melanochelys trijuga)
4. Brown roofed turtle (Kachuga smithii)
5. Indian tent turtle (Kachuga tentoria)
6. Assam roofed turtle (Kachuga sylhetensis)

* * * *

TURTLES OF NORTH-EASTERN INDIA : March,1988, pp.1-17

Introduction

North-eastern India, comprising the States of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and parts of West Bengal, continue to be faunistically the most interesting but least known area in the country. Herpetological investigations have been, not unexpectedly, few and biological data required for management and conservation of these groups are almost entirely lacking, chiefly due to the extreme climatic conditions - harsh winters and heavy precipitation which is followed by floods during the monsoons and poor communications within the area that consists largely of dense forest-draped mountains. The situation is not likely to change for a long time.

Land tortoises (family: Testudinidae) and freshwater turtles (families: Emydidae and Trionychidae) are among the least known of the herpetofauna, presumably because these generally do not grow large enough to attract the interest of the layman, or even the average biologist, except when they feature in a curry. Therefore, the only data available are locality records, many of which are based on museum collections that are over a hundred years old. Very often, the locality given is imprecise, eg., 'Cachar hills' or even 'Assam' - in the past, almost the entire north-eastern India was called 'Assam'.

The present account is the first part of a field investigation on these groups in north-eastern India, undertaken by the author on behalf of the IUCN and supported by the IUCN/WWF (Project 6343), to report on the status of chelonians in the area.

Methods

The methodology followed include searches in suitable habitats (eg., rainforest, grasslands, ponds and river banks), on foot, by boat or jeep. Trackers and fishermen familiar with the areas under investigation were employed during these searches. In course of this field work, other natural history observations were also made. Knowledgeable local people were interviewed, and information such as occurrence, biology, population trends, capture methods, utilisation, as well as myths and beliefs concerning these groups were entered into a standard proforma for uniformity of data collection. Visits to local markets and catching centres provided information on the actual exploitation and the species affected.

Western Assam

No land tortoises were seen during searches in the Bansbari, Mothanguri, Barangabari and Rabang areas, and neither could the locals describe any testudinid species.

Several forest guards of the Assam Forest Department have described a large black tortoise, that lives in forested mountains. From the description, it appears to be the Burmese black tortoise (Manouria emys). Localities in western Assam where the tortoise has been sighted include the hills near Goalpara city, Goalpara District and the area south of Guwahati, near the Meghalaya border, Kamrup District.

Freshwater turtles of at least 6 species are to be found in Manas. 20 turtles in the collection made by Mr. S.K. Sarma, from Manas, were examined. These included the Malayan box turtle (Cuora amboinensis), the tricarinate hill turtle (Melanochelys tricarinata) was also examined. Perhaps the commonest turtle in the area, at least as evident from the numbers collected, is the Indian black turtle (M. trijuga indopeninsularis). The remaining 3 species all belong to the genus Kachuga, 'roofed turtles', typically with elevated shells. Doubtlessly, the most important find in Manas is the Assam roofed turtle (K. sylhetensis), known by half a handful examples now in the collection of the BM(NH) and ZSI, all collected in the last century from localities further east.

A wealth of turtle-lore was collected through communication with the inhabitants of the villages in and around Manas. In the Assamese language, 'kacho' (or 'kasso' as it is more commonly pronounced) is the name for the softshell turtles (trionychids), while the hardshells (emydids) are referred to as 'dura'.

..30..

Various parts of turtles are supposed to have medicinal properties. The gall bladder is eaten to relieve intense stomach pain (dewormer?) and the turtle's ovary is consumed to cure high blood pressure in women, expecially during childbirth. The powdered limb bones are sometimes given orally to exorcise spirits. Ashes from a burnt plastron, sprinkled on a wound causes quick healing. The shell of a turtle is frequently hung on cowsheds or around the neck of cows to prevent disease and also to transmit the prolific nature of turtles to the cows. Turtle meat is eaten by the Hindus as a source of protein. Since the meat is considered hot, it is frequently cooked with papaya, a 'cold' vegetable. However, at least one villager interviewed believed that if eaten with distaste, turtle meat causes deprosy!

A trip was made to the Kamakhya temple, near the city of Guwahati, on 5th February, 1988. Situated atop a hill and overlooking the Brahmaputra, it is an important religious place of the Hindus.

In the famous 'tortoise pond', priests and other temple attendents bathed and washed utensils, while large softshell turtles swam about. At a time, 4 turtles could be seen, but the total population in this 20 x 30 metres pond is possibly more. Pilgrims threw various kinds of food into the water and called out to the turtles.

Eastern Assam

Inspite searches in the grasslands, including a 'rhino-trail', no land tortoises were to be seen. Mr. S. Deb Roy, Chief Conservator of Forests-Wildlife, mentioned that a large tortoise is found in the nearby Mikir hills, in the Koliani reserve, and this seems to be the Burmese black tortoise (*Manouria emys*).

Freshwater turtles however, were common, and the following were collected:

1. Malayan box turtle (*Cuora amboinensis*)
2. Spotted pond turtle (*Geoclemys hamiltonii*)
3. Brahminy river turtle (*Hardella thurjii*)
4. Indian tent turtle (*Kachuga tentoria*)
5. Indian peacock softshell turtle (*Trionyx hurum*)
6. Indian flapshell turtle (*Lissemys punctata*).

Several markets in eastern Assam were visited to check on the level of exploitation of turtles. Predictably, most of the catches originated either from the Brahmaputra or its numerous tributaries. The peak turtle season in the region appears to be the early monsoons, while during other times, supply is limited and the price unusually high. At New Market, Dibrugarh, turtle meat sold at Rs.60/- (about 5 U.S. dollars) per kilo in retail on 17th January, 1988. In comparison, the average price in the West Bengal markets is a third of this. Two live peacock softshell turtles (Trionyx hurum), SCL about 50 cm. and 20 cm. were seen at the Dibrugarh market, whose fore and hind limbs were sewn together and the turtles kept upside down in wicker baskets.

Dealers and fishermen at Guija Ghat reported a decline in turtle as well as fish populations in their area of operation, and attributed this not to trade but the illegal use of pesticides to kill fish, by the economically poorer section. Several fishes were found floating dead on the Dibru river during the trip.

Eastern Arunachal Pradesh

Namdapha lies, after the recent reorganisation of Tirap District, in the Changlang District of Arunachal Pradesh and is the fifteenth Tiger Reserve of the country as well as a Biosphere Reserve. The total area is 1,985 sq.km. comprising of river valleys, mountainous rain forests as well as snow-clad peaks. Namdapha was surveyed between 10th to 12th January, 1988.

A large land tortoise that inhabits mountains, considered here to be the Burmese black tortoise (Manouria emys), has been reported by the locals from several localities in the region. At the forest near 17th mile road west of Deban, it has been sighted during the monsoons.

The Noa-Dihing river, which ran in front of the rest house at Deban was also surveyed. No turtles were to be seen during these investigations, but the keeled box turtle (Pyxidea mouhotii) has been previously reported from the Deban area (Das 1987).

Notes on the Burmese black tortoise (Manouria emys) in the Chittagong hill tracts, Bangladesh.

The following section is based on information provided by the tribal Chakmas inhabiting the villages near Deban, Arunachal Pradesh, India.

..32..

The tortoise (Manouria emys) attains a large size in Chittagong hill tracts (reportedly ½ metre in shell length and exceeding 20 kg. in body weight). It inhabits crevices among boulders in mountains, and is generally not found in water. Chakmas call it mon dur (mon = hill; dur = tortoise/turtle). The tortoise is considered to be rare, and is only occasionally met with - one elderly Chakma mentioned that about 30 years ago, 1-3 could be caught per year by a single member of his tribe. Most of the Chakmas agreed that the tortoise was comparatively more often seen during the monsoons than at other times. Hunting dogs are generally employed in locating these giant tortoises, which reportedly stays in pairs. When one is caught, it retracts its head and emits a loud cry that attracts its mate.

The Chakmas eat the tortoise, and the dried gall bladder of this, as well as other chelonians are taken orally as a cure for stomach-ache and head-ache. The shells may sometimes be used as a doorstep for the huts or for making cradle for babies. The Bengali Hindus of Chittagong also eat the tortoise.

* * * *

TURTLES OF KAZIRANGA NATIONAL PARK : April, 1988, pp.1-4

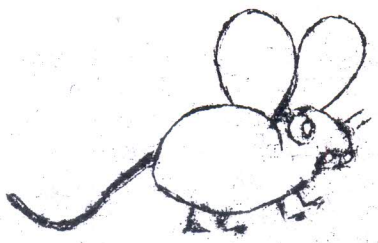
Kaziranga National Park is situated in central Assam, in the Nowgong and Golaghat Districts. The Park is bounded by the river Brahmaputra in the north and a National Highway in the south. Riverine grassland, with numerous large bodies of standing water, is the characteristic vegetation of the park.

The following turtles were collected from the Kaziranga National Park of Assam, during a field trip in January and February, 1988.

1. Malayan box turtle (Cuora amboinensis)
2. Spotted pond turtle (Geoclemys hamiltonii)
3. Brahminy river turtle (Hardella thurjii)
4. Indian tene turtle (Kachuga tentoria)
5. Indian flapshell turtle (Lissemys punctata)
6. Indian peacock softshell turtle (Trionyx hurum)

..33..

Indraneil Das
Department of Limnology
Bhopal University
Bhopal 462 026.



SUMMARY REPORT ON THE BIOLOGICAL RODENT AND TERMITE CONTROL PROJECT SPONSORED BY DEPARTMENT OF SCIENCE AND TECHNOLOGY, GOVT. OF INDIA

FEBRUARY 1988

I. Rodents caught

	No.of Males	No.of Females	Total No.
1st week	494	1,389	1,883
2nd week	1,088	1,343	2,431
3rd week	949	1,662	2,611
4th week	864	1,385	2,249
Total	3,395	5,779	9,174

II. Material found in rat burrows (rice)

1st week	72 kilograms
2nd week	39 "
3rd week	19 "
4th week	28 "
Total	158 "

III. Number of Irulas employed

1st week	58
2nd week	187
3rd week	193
4th week	185
Total	658

IV. Average cost per rat = Rs.1.43

..34..

MARCH 1988

I. Rodents caught	No.of adults	No.of juveniles	Total No.
1st week	951	1,404	2,355
2nd week	1,315	2,107	3,422
3rd week	1,591	2,282	3,873
4th week	824	661	1,485
Total	4,681	6,454	11,135

II. Material found in rat burrows (rice and groundnuts)

1st week	27.0	Kilograms of rice
2nd week	44.0	-do-
3rd week	101.5	-do-
4th week	63.0	-do-
	3.0	kilograms of groundnuts
Total	238.5	(235.5 kgs. of rice and 3kgs of groundnuts)

III. Number of Irulas employed

1st week	183
2nd week	269
3rd week	276
4th week	188
Total	916

IV. Average cost per rat : Rs.1.62

APRIL 1988

I. Rodents caught	No.of adults	No.of juveniles	Total No.
1st week	1,846	3,863	5,709
2nd week	650	469	1,119
3rd week	1,028	572	1,600
4th week	810	580	1,390
5th week	1,019	476	1,495
Total	5,353	5,960	11,313

II. Material found in rat burrows (rice and groundnuts)

1st week	152.5	kilograms of rice
2nd week	48.0	-do-
	1.0	Kilograms of groundnuts
3rd week	29.5	Kilograms of rice
4th week	47.0	-do-
	1.0	kilogram of groundnuts
5th week	30.0	Kilograms of rice
	18.0	Kilograms of groundnuts
Total	327.0	(307 kgs. of rice and 20 kgs. of groundnuts)

III. Number of Irulas employed

1st week	474
2nd week	125
3rd week	122
4th week	124
5th week	201
Total	1,046

IV. Average cost per rat = Rs.1.72

The Manager
Rodent Control Project
Irula Snake Catcher's Co-operative Society
Vadanemmeli Village, Perur Post
Mahabalipuram Road
Madras - 603 104.

..36..

***

THE IRULA TRIBAL WOMEN'S WELFARE SOCIETY AFFORESTATION PROGRAMME

Wandering among the long rows of seedling beds at the Irula Tribal Women's Welfare Society nursery in Echoor in northwest Tamil Nadu, one is struck that the ground work is that of master craftsmen of sorts. The crisp, shallow bunding trenches still bear the scrape marks of the crowbars that carved them, and the bare root beds themselves have been formed with the expertise of a hundred generations of diggers.

The "craftsmen" are members of the Irula tribe of Chingleput District, hunter-gatherer people whose traditional employment has been the hunting of snakes and rats through the excavation of their burrows. The tree planting project they are involved in is more than an effort to regenerate the dry deciduous and scrub forests they once inhabited. Like its cousin, the Irula Snake Catcher's Cooperative, the afforestation programme is designed to preserve the heritage and skills of the Chingleput Irulas while making them marketable in a "developing"area.

Although the primary emphasis is on self-help for the Irula women, the project's design enables it to benefit neighbouring villages as well. The I.T.W.W.S. "leases" wastelands from local panchayats in return for forthcoming yields of fodder and firewood. Irula women then establish on-site nurseries to raise bare root and packet seedlings. During the rainy months of October and November, villagers are employed to plant the young trees under the supervision of Irula families, who then assume the responsibility of watching and maintaining the developing sites.

Layout

Fast growing pioneer tree species are planted in border strips of three lines to provide shade and shelter for the mix of slower growing, permanent trees they surround. Contour bunds are built at 30 metre intervals to conserve soil and water, and the entire tract is encircled by a natural wall of cactus and thorny shrubs to fence out grazing cattle and goats. Native species are chosen primarily for their ability to resist drought and to reestablish ground cover quickly. But a percentage of fast growing exotic trees are planted as shelterbelts on

..37..

each site. In keeping with the program's overall goal of regenerating natural forest growth, all existing grasses and undergrowth are preserved on I.T.W.W.S sites.

In its first year, the project operated from a central nursery at the Madras Crocodile Bank in Vadanemmeli Village. 1,00,000 seedlings of mixed species were raised and transfered to two 20 acre sites in neighbouring villages. Despite the fate that late planting prevented the young trees from establishing themselves during the northeast monsoon, survival rates were high. With a renewal of funding from the National Wastelands Development Board, in the fall of 1988, the I.T.W.W.S hopes to plant 5 lakh seedlings on 300 acres of wasteland. Technical assistance will continue to be provided by the Auroville Afforestation Project.

Long Term Benefits

The project was organized by the I.T.W.W.S. in a coordinated effort to foster eco-development and self help among the Irulas. The project envisions some reclaimed lands eventually being inhabited and managed by the tribals on a sustained yield basis. Silk cotton, timber, fodder and fruits are to be shared as per the agreement with local village panchayats. An additional benefit for the Irula women will be the resurgence of endemic species that have traditionally been used in tribal herbal medicine. The reestablishment of perennial water sources and the promotion of native flora and fauna remain however, the principle goals of the I.T.W.W.S. In the long term, such accomplishments could also be the project's most valuable contribution to the Chingleput villages as a whole.

JACK HEDIN
Morse College
Yale University
New Haven, CT. 06520
U.S.A.

***

A SEED BANK FOR AFFORESTATION

The Irula Tribal Women's Welfare Society is presently engaged in setting up a Seed Bank, which is an offshoot project of the Society's tree planting programme, based at its nursery site in Echoor, Chingleput District. Local and indigenous species of seeds are being collected by Irulas in and around Chingleput District, and a random checklist has proved to show that at least 30 indigenous species of seeds are available. A survey to make a complete checklist of different species in the area is underway and is being conducted by the Irulas themselves who are involved in the seed collection.

This year bamboo started seeding in and around Chingleput District in mid March and 600 kgs. of seeds have been collected over a period of 2 months by a small group of Irulas at the rate of 20 kgs./person/day, from different areas. Over 200 kgs. of eight other species have also been collected. A unique feature that was discovered in the process of bamboo seed collection was that seeds can be collected from ant tunnels and mounds, for which the Irulas possess the necessary skill and expertise. Over 100 kgs. of bamboo seeds have already been supplied to other afforestation projects.

The seeds that are being brought to the Centre are cleaned, peeled, shelled, sorted for viability and stored. Samples of seeds are weighed, counted (No.of seeds/100 or 200 gms, depending on the size) and sown in test beds after pre-sowing treatment. Germination is recorded in three phases and seedlings counted. These tests would be very useful for nursery raisers to check seed viability, germination rates and to calculate approximately how many seeds would be required by weight for the number of seedlings planned to be raised for different species.

Objectives of the Seed Bank

1. To give employment to more Irula tribals and to put to use yet another of their traditional skills as hunter-gatherers.

2. Supply of viable, fresh seeds to forestry projects.

3. Collection of herbal and medicinal plant seeds.

The Society would appreciate any information/literature on seeds, seed collection, storage, pre-sowing treatment of seeds etc.

Harry Andrews
Curator
Madras Crocodile Bank
Vadanemmeli Village Perur Post
Mahabalipuram Road
Madras -603 104.

***

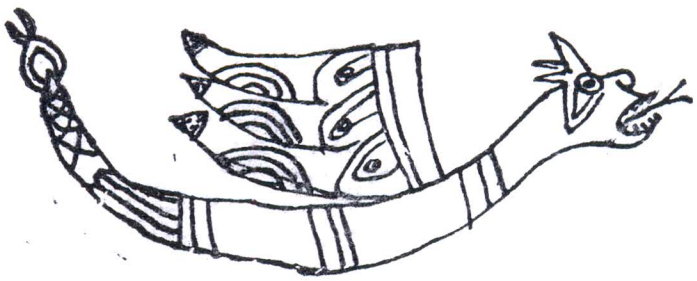
DONATIONS

Local : Rs. 15 annually

Foreign : 5 dollars annually

Cheques should be made to

MADRAS CROCODILE BANK, VADANEMMELI VILLAGE, PERUR P. O.
MAHABALIPURAM ROAD, MADRAS-603 104



HAMADRYAD is edited by Zai Whitaker. This Issue co-edited by Rom Whitaker, Romaine and Harry Andrews. A biannual Publication, Information presented here may be used elsewhere with acknowledgement to Hamadryad.