HAMADRYAD

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SEPTEMBER 1987

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CROCODILE BANK NEWS

Dr. Kshitish Mazumdar, from the Centre for Cellular and Molecular Biology, Hyderabad, spent a fortnight at the Croc Bank collecting blood samples from Crocodylus palustris of various age groups, to EXTRACT DNA FOR DETERMINING PARENTAGE ETC.

The Oxford Herpetological Expedition team headed by Anita Malhotra, was here in early July. Chocklingam of the Irula Snake Catcher's Society, accompanied the team on their survey of the Srivilliputtur Hills, Ramnad District, Tamil Nadu, which kept them in the field for over a month.

The two female water monitor lizards (Varanus salvator), received in exchange for caiman crocodiles from the Nandankanan Zoological Park Orissa, nested in June and again in early August. Eggs are being incubated.

Trionyx gangeticus has been bred in captivity here for the second time.

Gene Bakko from Saint Olaf College, Minnesota, visited the Croc Bank to discuss project plans for his students who will be working here next summer.

10 Morelet's crocodiles, gifted to us by Zoo Atlanta U.S.A., arrived here on the 16th of August - our special thanks to Dr. Howard Hunt who made all arrangements for their import. The Croc Bank now has 10 species of crocodilians - almost half way through to having an international gene pool bank! The Morelet's are doing fine and have adjusted well to their new surroundings.

"SUE'S CAFE", a self-contained community kitchen of the Croc Bank, started off with a bang last month. The kitchen, a boon to visiting researchers and students, will provide simple food at a nominal cost along with a self-service counter.

NEWSPAPER CLIPPINGS:

"Eenadu" of 19th May carried a picture of a cobra which was killed, seen along with its 21 babies! The incident took place in Poozhanadu Panchayat in Trivandrum District, Kerala, believed to be a haven for snakes like cobras, vipers etc. The terrified villagers having lost a lot of their valuable chickens and a few of their brethren who fell victims to snakebite, decided to massacre the snakes and put an end to their nocturnal bliss.

* * * * *

"Indian Express" 1st June 1987: "Anti-serum for scorpion sting". Scientists at Bombay's Haffkine Bio-pharmaceutical Corporation have developed an anti-serum for scorpion sting, being prepared against red scorpion venom from horse's blood.

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A "Mercury" publication: "Shock for Snakebite"

A group of researchers at the Michigan State University have come up with a 'shocking' new treatment for snakebite. Using a modified stun gun, they administer high voltage electric current to the area around the bite. Amazingly enough, the scientists report, in limited testing the bizarre electric cure worked virtually every time. In every one of the 34 victims treated with shock, the pain from the bite disappeared, and no serious complications developed. Seven patients who refused the treatment soon suffered swelling, bleeding, shock or kidney failure. Researcher Jeffrey Williams and his Michigan colleagues are now setting up a test in which snake-bitten dogs will be treated with a series of four or five high voltage low current shocks, within half an hour of the bite. The doctors are not quite sure why the treatment works but cite evidence indicating that electricity may deactivate crucial enzymes in the venom of poisonous animals. Meanwhile the treatment is generating enormous interest..

* * * * *

"Indian Express" 12th August 1987: "Cobra in big temple strikes terror"

A giant snake believed to be a King Cobra caused a panic in Brahadeeswara temple in Thanjavur District, Tamil Nadu. The watchmen awakened to duty by the bizarre noises from within the temple, rushed in to find the snake wrestling with a bandicoot. The guards watched the ordeal mesmerised, under the cheery beam of their torchlights until the bandicoot was killed. The snake of course not wanting to be in the "limelight" for long, decided to advance on the guards, who took to their heels.

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"Indian Express" 2nd September '87: "245 kids ill after noon meal"

"245 children of the Panchayat Union Middle School at Kalappal near Mannargudi, Thanjavur, had taken ill after having their meal at the school's noon meal centre. The students who complained of giddiness and vomitting, were immediately taken to the primary health centre at Adichapuram and the Government Hospital at Mannargudi and Tiruturaipundi. A lizard was reportedly found in the food served to the students".

Editor's note: As usual (in India) bad food and dirty cooking, resulting in food poisoning, is blamed on a poor lizard, while the real culprit (the cook) gets away with it.

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"Indian Express" Madras 2.9.87: "Cobra in bus"

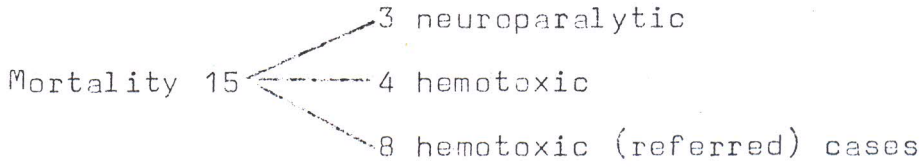
'The State-owned Pallavan Transport Corporation, which runs over 2000 busses in the busy metropolis, found an unwelcome passenger on the morning of 1st September - a cobra. The cobra had found its way into the bus, which had started its trip on route number 37 from Vadapalani, a crowded suburb of Madras, at 0940 hours. The driver Bhoopathy, spotted the cobra coiled under a passenger seat in the front of the bus. Immediately, he jammed the brakes and the passengers fled in panic. The cobra too, sensing the danger made its way out through the front entrance, but it was promptly chased and killed by its irate human fellow-passengers".

* * * * *

SNAKEBITE STATISTICS (1985-1986) OF THE LITTLE FLOWER HOSPITAL, ANGAMALY, KERALA

1. 60% of snakebite cases showed no signs of toxicity and were given tetanus injection only.

2. Out of 200 cases with systemic envenomation, mortality was 15 i.e. 7.5%



3. Neuroparalytic cases

   - 2 patients admitted in coma with respiratory problems, died after 1-3 hours. Anti-venom serum was given adequately. Perhaps more Prostymine and artificial ventilation would have helped.

   - 1 patient was normal on admission, but found dead an hour later. Patient probably fell asleep.

4. 4 viper bite victims died after admission to the hospital (they consumed local medicines before they were admitted). On admission all were semi-conscious or unconscious.
   - 3 had dilated or sluggish pupils
   - 1 had hemiplegia
   - 4 had low blood pressure (less than 80 systolic)

5. 6 viper bite victims referred from other hospitals
   - 2 were semi-conscious
   - 1 disoriented
   - 2 had low blood pressure
   - 1 had hematemesis
   - They died on an average of one day after admission, as they came in a serious stage. Being referred cases, the mortality rate was very high.

Conclusion

1. Mortality of viper bite cases is very low
2. Most bites are from Russells viper, causing kidney failure.
3. Neurotoxic patients need careful supervision.

Dr. Newton Luiz
Little Flower Hospital, Angamaly
Kerala -683 572.

* *** *

SOME COMMENTS ON THE COMMON SNAKEBITE BELIEFS IN KERALA

Dr. Luiz provides a few interesting common beliefs about snakes in Kerala:-

1. "IF A SNAKE BITES YOU, YOU SHOULD CATCH IT AND BITE IT BACK, SO THAT THE VENOM RETURNS TO THE SNAKE" ....

   Tried often in Kerala, occasionally the patient gets a chronic exzema around the lips.

2. "DO NOT KILL THE SNAKE, IF IT DIES YOU WILL ALSO DIE"...

   Due to this belief, very few snakes are brought to hospital for identification. The snake is killed only if it is inside the house.

3. "ETTADIMOORKAN (8-steps-cobra in Malayalam) IS PROBABLY THE NAME OF THE KRAIT".....

   It is believed that the patient will die by the time he can take eight steps.

4. "MAGIC STONE" (The black stone)....

   This is used by Ayurvedics and quacks. It "draws out the poison" if placed over the wound, and will fall off when the poison is all drawn out. Commonly seen in patients, who come to hospital with non-clotting blood.

5. "BITTER-SWEET ALKALOID HERBAL MEDICINE"....Efficacy doubtful; the Ayurvedic doctor gives the patient a herbal preparation which is very bitter (such as neem leaves). If the patient says it is bitter, there is no poison; if he says it is sweet, the Ayurved says there is too much poison in the body, and refers the case to the hospital. (The other criteria for referral are drowsiness, swelling of limb, bleeding from limb, severe pain, vomiting blood. Hence, the patient is usually referred a bit late). Whether the NEEM leaf test has prognostic value is an interesting question.

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SNAKEBITE TREATMENT - A FEW TIPS

Dr. Newton Luiz has also commented on the snakebite treatment chapter in "Common Indian Snakes" by Romulus Whitaker; and his views are given below:

Page 95:

1. Aspirin should perhaps be avoided in snakebite - it can worsen bleeding disorders. Paracetemol is better for pain (Crocin), or even Brufen.

2. The patient is commonly bitten on the foot. A tourniquet should at once be tied to the thigh; he should be carried (if possible) to the hospital, since walking will inject venom into the circulation; tetanus injection may be given at once.

Page 97

The report that Russells viper causes "visual and breathing difficult". This was first reported in medical literature in 1984, and has not been noticed by anyone else since then (see Lancet 1985). However, we have noticed it frequently, and feel it is a big sign in the Russells viper bites, seen mainly in patients who come for treatment too late.

Page 99

Serious allergy to horse serum is very rare. 25% of patients develop fever, shivering and vomiting and rashes with anti-venom serum. This should be treated with Avil

injection (or any antihistamine) coupled with an explanation to the patient. Do NOT stop giving anti-venom serum. Anaphylactic shock due to horse serum is rare, only one case in our hospital some 6 years ago, and is definitely an acceptible risk. Avil injection or adrenalin injection will be effective.

Please note that the test dose for anti-venom serum is considered to be unreliable, with a significant degree of false positives and false negatives.

Page 100

Cut and suction technique in snakebite. Harrison says it may be a good method, but other books disagree.

a) The local incision will increase the chance of infection.

b) The patient can bleed very severely (especially with saw-scaled viper bite)

c) Anti-venom serum is now freely available.

d) At best, it may be used as an adjunct to anti-venom serum, as recommended by Harrison.

Page 102

The statistics need to be reviewed. In Kerala in 1969, 37% of snakebite deaths were in hospitals. Today, probably 95% of snakebite deaths are in hospitals.

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VENOM EXTRACTION USING ELECTRICAL STIMULATION

Dr. Chris J. Newman who has been working on *Echis carinatus* for the past couple of years, is presently in collaboration with David Theakston of Liverpool School of Tropical Medicine. While David Theakston is working on the medical implications of West African *Echis carinatus*, Chris is studying the general biology, particularly the variation in venom composition and seasonal variation in venom production of *Echis carinatus*. He hopes to establish a breeding colony of *Echis* at Liverpool to supply venom.

Chris's collaboration for several years with London University on developing techniques for venom extraction and preparation, led to the development of a more efficient venom extraction technique for *Echis* using electrical stimulation. This technique empties the venom glands, thus eliminating the necessity of 'stripping' the glands manually, a process which is probably the most

damaging aspect of manual milking. This method could be adopted in institutions where many thousands of Echis and other species are killed in venom production, for example the Razi Institute in Iran which kills 90,000 Echis annually, and the Haffkine Institute in India, which kills 6,000 to 10,000 per year.

Based on a letter from:

Dr. Chris J. Newman
8 Green Valley, Whitehouse Lane
Wooburn Moor, High Wycombe
Bucks, HP10 0NS, England.

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A REPORT ON THE OCCURENCE OF HYBRID BETWEEN ERYX CONICUS (SCHNEIDER) AND ERYX JOHNII(RUSSELL)

A specimen of the genus Eryx was collected at Alibag, Raigad District, Maharashtra, India. This specimen indicated intermediate characters between the two common species in that area. Eryx conicus and Eryx johnii. The anterior part of the body resembles Eryx johnii, while the posterior part rather resembles Eryx conicus. Therefore, this specimen was considered as a hybrid between these two species.

A. Khaire and N. Khaire
Indian Herpetological Society
Poona Satara Road
Poona 411 009.

Editor's note:

This form of Eryx has been observed and collected by us in coastal Kerala and Karnataka and appears to be a separate species or sub-species, rather than a hybrid. This snake certainly deserves further taxonomic consideration....R.W.

* * * * *

COLLECTION OF A STOUT SAND SNAKE - PSAMMOPHIS LONGIFRONS

On 6th July 1987 a snake was collected near Anthroli Village of Kamrej Taluka (Surat District) by Mr. Thiruvengadam (Officer-in-Charge) of Gujarat State Narmada Valley Fertilizer Company, Wildlife Complex) and sent to me for identification. It was identified as a stout sand snake.

Scales, colour and other details

Body length 97.0 cms; tail 20.0 cms. (cut tail); supralabials 8, 4th and 5th touching the eye; preocular 1;

postocular 2; temporals 2+3; lower labials 10, 6th is bigger than others; internasals present; loreal single long and concave; body scales 17 rows; ventrals 169; caudals 45 (divided); anal plate 2; sex - female.

Body colour light olive brown; scales edged with black; belly colour white; maxillary teeth 12, first, middle and last are very strongly enlarged, fang-like; head distinct from neck; eyes large with round pupils; body cylindrical; scales smooth overlapping and oblique.

According to past literature, this species is found in Madhya Pradesh (Deoras, 1965) and Maharashtra (Whitaker,1978), but only M.A. Smith (1943) mentioned Gujarat State (Bulsar, Punch-Mahal).

Raju Vyas
Zoo Inspector
Sayaji Baug Zoo
Baroda -390018.

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INDIAN HERPETOLOGICAL SOCIETY

The Indian Herpetological Society has been formed to promote the study of reptiles in India. The Society takes up various research projects on reptiles and works completely on private and government grants. The I.H.S.

is starting a biannual scientific journal soon. All details will be communicated in 'Hamadryad'. The annual membership fee will be Rs.200/- (India) or U.S. dollars 20 (abroad). For student membership, the fee will be Rs.50/- (India) or U.S. dollars 5 (abroad). For further details please contact:

Anil Khaire
Indian Herpetological Society
'USANT'
Pune Satara Road
Poona -411 009.

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NATIONAL WILDLIFE DATABASE CENTRE

A recent letter from Dr. H.S. Panwar, Director of the Wildlife Institute of India, New Forest, Dehra Dun-248006, is reproduced below. Readers are urged to respond either to me or directly to Dr. Panwar with their suggestions on how to update the Indian database centre of Amphibians and Reptiles. What we are particularly lacking is data on the status of these taxa. - R.W.

"The Wildlife Institute of India has set up a microcomputer based National Wildlife Database. This database has been designed to integrate information on the conservation status of species, habitat types, biogeoraphical regions, administrative units and specific protected areas. The system is programmed to accept data on the distribution of species and habitat types used by the species, the overall distribution and rate of loss of vegetation types, location and management details of all the protected areas, qualitative species lists for any location and detailed census records wherever actual counts of animal numbers have been made. Mapping facilities through means of Plotter and Digitizer along with appropriate software (autocad and GIS systems) are being added to enable the database to store information in a map form as coordinate files. The database software has been written in database III programming language.

At present databases have been set up on Indian mammals, reptiles, birds and butterflies along with a database on protected areas of the country. However, the database system allows for holding of 99 separate databases so there is a potential to open databases on many other groups of wildlife - fish, beetles, orchids and other groups of conservation interests.

There are not only gaps in the information presently available to us, but also information on several species and areas is totally lacking. I understand that you have been conducting studies on reptiles for a long time and would therefore request you to help us in updating our database on reptiles. We would like to have information on the distribution and status of reptiles".

Dr. H.S. Panwar
Director, Wildlife Institute of India
New Forest, Dehra Dun-248 006.

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LETTERS TO THE EDITOR

LIZARD EATS LIZARD

"I saw something in our garden a few days back and thought it worth to inform you about it. A full grown gecko (H. frenatus) attempted to devour a dark brown medium sized skink (M. carinata, presumably). The incident happened beneath a laurel tree (Catophyllum inophyllum) amongst fallen litter. The gecko was only partially successful as it could gobble up only the thrashing automised tail-piece of the skink, which made good its escape. (The struggle lasted barely a minute). I wonder if such an incident has been recorded before. I personally haven't heard of such a type of cannibalism in Indian geckos. Perhaps you could write and give me your opinion".

R. Kannan, 33 Sarvana Street
T. Nagar, Madras -600017.

Editor's note:

Another interesting meal, observed by us at Guindy National Park in Madras, was a tree frog (Rhacophorus maculatus) being devoured by a common skink (Mabuya carinata).

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SOME SNAKE MYTHS

"May I have the honour to seek your expert opinion on certain beliefs on snakes which are widely spoken and advocated by Hindus and elite. I am sure you are aware of some latest news about a snake which after suckling the breast of a sleeping woman, bit her and finally died of its own, due to mixture of human blood with human milk. The news has been published in some leading Tamil and English news media, (to name a few - Indian Express and Dinamani).

S.K. Annamalai
Store Keeper
B.C.G. Vaccine Laboratory
Guindy, Madras -600032.

* * * * *

"The purpose of this letter is to obtain your expert opinion regarding poisonous snakebite, which has become a topic of discussion in our friend's circle. We are particularly interested in cobra and its equivalent anywhere in the world. One of our friends has been maintaining that the poisonous snakes, whenever they bite and inject the venom, bite their own tail in the process and lose a finite length (approx. one and a half inches) of its tail. It is also said that by looking at the tail, it is possible for experts to determine the number of bites it has made to that date and also estimate its original length before the bite, as well as its expected length, in case it does not make any bite in its life".

S.R. Narayana Prakash
No.326, 41st Cross,
8th Block, Jayanagar
Bangalore -560 082.

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SPOTTING OF A "WHISKERED SNAKE" IN A FARM NEAR LUCKNOW

Syed Alihasan Husaini, claims to have seen a rare "whiskered snake" on two occasions in a farm near Lucknow, Excerpts from his letter are given below:

"First time I had seen it being washed up, or you can say swimming desperately in the flooded Gomti river,

while the front portion of its body was over the water. It was about 4 p.m. and I was sitting over a 'pulia' (small bridge) on the Sultanpur-Lucknow road about 14 k.m. from Lucknow city, near the farm Ganjaria, which is a considerably wild area. The snake was a hooded one with a length of about 1½ feet. Its colour was dark brown or blackish. On the hood there were three whiskers. The flood water was travelling very fast and so was the snake, but I had seen it for sufficient time, not to make a mistake about its description.

The location where I had seen this whiskered snake a second time was also on the same farm. I was sitting on a chair in the shade of an Ashok tree in front of my house, near a field which was full of shrubs and grass. Suddenly, a chameleon running very fast and in haste, jumped over my chair and ran past me. I jumped from my position and hardly six feed from me was the snake that was chasing the chameleon. On seeing me, it disappeared into the grass. The time was 2 p.m., which suggests that the snake is 'diurnal'. It was no trick of a snake charmer who could have sewn the hairs of a mongoose on the snake's head, as it was a wild one; nor was the snake shedding its skin, as no snake would chase a chameleon while shedding its skin".

Syed Alihasan Husaini
Room No.5, I.T.T.U.P.
A1, Amousi Industrial Area
Lucknow.

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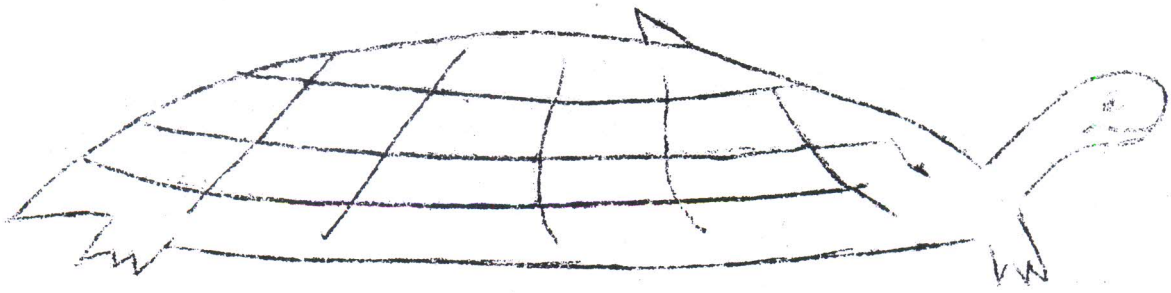

PROJECT FOR REHABILITATION OF FRESH WATER TURTLES INITIATED IN UTTAR PRADESH

A project to rehabilitate fresh water necrophagous turtles for the biological control of partly cremated corpses that pollute the Ganga, finally got underway in January 1987, 2 years after its being submitted for sanction in February 1985. The Ganga Plan Directorate which is funding the major part of the expenditure, approved an outlay of 13.5 lakhs on capital expenditures against a proposed 28.0 lakhs, but the cuts involved mainly expenditure on construction of staff quarters, while all essential facilities for turtles were sanctioned.

Five species viz. Trionyx gangeticus, T. leithi, Lissemys punctata, Chitra indica and Geoclemys hamiltoni have been identified as those useful for control of polluting corpses. Dr. E.O. Moll, whose comments were invited on the project, expressed his doubts about utility of C. indica, (piscivorous habits), Geoclemys hamiltoni (not found in flowing water) and T. leithi (which he maintains does not occur in the Ganga river system). Dr. Moll is probably correct, except about the occurence of T. leithi in the Ganga. Several juveniles of this species with their distinctive quadra bulls-eye markings on the carapace, have been captured in the Kukrail nallah and several adults turned up in an illegal consignment of turtles that was confiscated at Lucknow station. The adults are distinctive by their longer nostrils and black head patch in contrast to the shorter snout and chevron head markings of T. gangeticus. If these were not T. leithi, they are a Trionyx species or sub-species of the Ganges system, which has not yet been described.

The various programmes that have been proposed are:

1. Large scale egg protection of T. gangeticus and L. punctata. Annual targets of the order of 30,000 eggs have been worked out, when the project becomes fully operational.

2. Rearing of about 6,000 hatchlings of the rarer species for one year in turtle rehabilitation centres, to give them a head start in survival when they are restocked in rivers.

3. Systematic state-wide crackdown on poaching and illegal transportation of turtles.

4. Notification and protection of three closed areas to include a total of 180 river kilometres of good turtle habitat in three rivers viz. the Ghagra, the Jamuna and the Ganga. These will supplement the existing National Chambal and the Katernia Ghat Sanctuaries, as reserves for river life.

5. Notification and protection of a closed area to include 40 kms. of the Ganga centered around Varanasi ghats, which is the most important area for the Ganga Action Plan. Varanasi has been chosen as the headquarters of this project, so due attention can be given to the Varanasi Ganga.

The project proposal envisages considerable inputs into ecological research on turtles and allied river life so that multi-species rehabilitation can be rationally implemented and the progress of the project can be realistically assessed.

In the last financial year which ended March 1987, little could be achieved due to late release of funds and land acquisition problems at Varanasi, but construction of the first turtle rearing enclosure was completed alongside the Kukrail Gharial Centre. The enclosure has two 'U' shaped channels each 2.5 metres wide and 37 metres in length and incorporated a flowing water system fed by a central water tank. Flowing water is said to have proven benefits as a result of reduced bacterial loads, and it will be possible to rear more turtles in the same facility. The capacity of the rearing ponds is estimated to be 3000 to 5000 turtles.

If all goes well, the project will not only eliminate polluting animal remains from the Ganga and consolidate the gharial project, but since turtles still occur in some strength in the Ganga system, it will also generate within a reasonably short time frame, a surplus of turtles for the table wherever people care to eat them.

D. Basu
Research Assistant
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P.O. Pharidinagar
Via. Viazipur, Lucknow-226016.
Uttar Pradesh

A NOTE IN RESPONSE TO EDITOR'S COMMENTS

"Please refer to the Editor's comments on Mr. S.B. Mishra's report in the Hamadryad (Vol.12 Page 12), I am to inform you that some eggs of Kachuga dhongoka and K. kachuga kept at our hatcheries during 1986, were destroyed by termites. I found that all eggs have small holes and they were filled with sand. The termites have eaten away the egg contents, but I don't know how the sand enters the eggs. Regarding field nests, I never saw any egg predation by termites".

R.J. Rao
Research Fellow (WII)
National Chambal Sanctuary
Morena -476001, M.P.

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REHABILITATING FRESH WATER TURTLES OF THE GANGA

Carnivorous turtles, scavenging off the corpses thrown into the Ganga, were once a common sight along the river banks. These large necrophagous turtles were vital in the process of controlling the pollution of the holy river.

Over the years however, there has been a gradual disappearance of this kind of turtle. Ecological changes, the growth of habitation along the river and the paucity of nesting places, are some of the reasons for this.

In view of the important role played by the turtles in keeping the river free from pollution, the Ganga Project Directorate has sanctioned a scheme for rehabilitation of the scavenger turtles. The scheme ensures protected nesting, breeding and rearing of the young turtles and their eventual release into the river at Varanasi.

To be implemented by the Wildlife Department of the Government of Uttar Pradesh, the programme includes a breeding centre at Varanasi. Till such a centre can be established at Varanasi, a sub-centre for breeding has been set up at Kukrail near Lucknow for hatching the turtles, says a release from the Directorate.

It is expected that about 205 turtles would be released into the river between November, which would go up to 27,000 by 1983-94. (see note by D. Basu)

Centre for Environment Education-News
and Features Service
Ahmedabad -380054, INDIA

FRESHWATER TURTLE EGG COLLECTION IN UTTAR PRADESH

Eggs were collected at Pinahat on the Chambal river and transported to the hatchery at Kukrail. Out of 5 nests of Trionyx gangeticus discovered on 14.9.86, only one nest contained eggs. The clutch size was 34.

One nest of Lissemys punctata containing 5 eggs was also collected in the same area and taken to Kukrail for hatching. This is the first such collection made for the Ganga river pollution control project (see note by D. Basu in this issue).

Following the above note, Mr. Mishra writes to us that under the Ganga Pollution Control Project, a total of 409 turtle eggs have been collected, starting in September 1986, mostly from the Chambal and Yamuna rivers. The breakdown is as under:

Trionyx gangeticus	Lissemys sp.	Kachuga tentoria
346	17	46

11 eggs of Lissemys sp. were recovered from a multiple clutch. Another 32 eggs of soft shell turtles were obtained by dissection of dead turtles and the eggs have been placed under incubation in Kukrail, Lucknow.

S.B. Mishra
Research Associate, Crocodile Breeding Centre
Kukrail, Lucknow.

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FRESHWATER TURTLE EXHIBITION

Mr. Mishra writes to us about the Freshwater Turtle Exhibition arranged at Lucknow in February 1986, in conjunction with a major annual fair. Turtles of several different species and sizes were shown to the 2 million people who visited during the 16 day exhibition. Many of the interested visitors asked questions and were told how valuable turtles and crocodiles are as predators and scavengers.

Editor's note:

Mr. Mishra is to be congratulated for his efforts in helping educate people about this little known group of Indian reptiles. He deserves all the encouragement he can get from the local authorities..... R.W.

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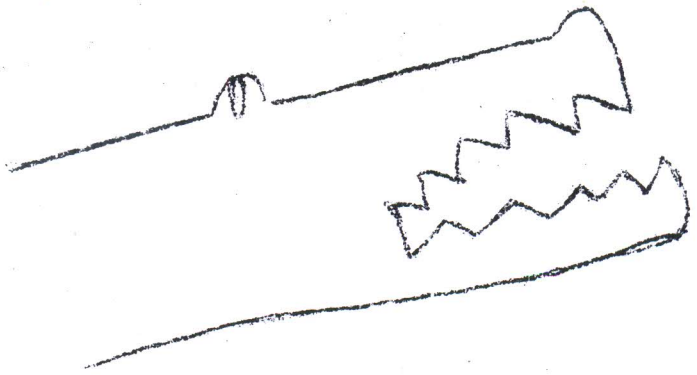

A NOTE ON THE MUGGER BREEDING AND NESTING ACTIVITIES AT THE CROC BANK

This year's breeding season at the Croc Bank had a very hectic start: In Pit 20, young muggers (5 and 6 year old's) nested almost every night during the second week of February, and sometimes 2 or 3 females nested the same night and even at the same time. But like all first-time layers, most eggs were infertile, and clutch and egg sizes small. Most females who nested the previous year, did not nest this year and totally there were 18 nests. All this initial activity was in Pit 20, an enclosure stocked with 98 females, 10 sub-adult males and one 17 year old stud!

In the other two main breeding enclosures, Pit 8 stocked with 6 females and 1 male, and Pit 10 with a stocking rate of 12 females and 2 males, nesting started much later compared to previous years.

In Pit 10, females laid 100% infertile clutches and other clutches were 50% or less fertile and smaller in numbers. In all there were only 17 nests and only 4 females double nested. This was low when compared with the 1986 nesting season of 21 nests, and 8 females double nesting. This season, known females who have been double nesting for 8 or 9 years, only laid single clutches.

The 11 year old mugger breeding enclosure - Pit 8, also had some unusual features this season. The females who have been nesting for the past 11 years and double clutching for 9 years, started nesting very late this year, and only one female double nested. Looking at past nesting records of these females, one could predict laying dates plus or minus 3 to 4 days, and which female would lay first and so on. Year after year there has been a definite pattern in the order of laying dates with these females.

On looking at these features and comparing previous records, drought years or low rainfall years have produced fewer nests, and one of the main sensing or indicating factors for the crocodile, may be the rise or drop of the water level in their habitat.

The water levels at the beginning of this year's season in all enclosures were already lower than the normal years because of last years poor monsoon, and when the breeding season started, the water levels started dropping (since the breeding ponds depend on the ground acquifer). This could be a primary reason for the late nesting of females.

At the peak of the nesting period when the water level was very low and still dropping, females were all busy tunnelling at the base of the enclosure walls and into the sand banks at or below the water level in the pond (a feature noticed here only during the summer when water levels get really low and sometimes during the cold months).

Females who had nested and were expected to nest a second time, were tunnelling around the enclosure, and females who had just started to nest, also began tunnelling, while some females never nested at all. These females who generally continue to court and mate throughout the breeding season even after nesting, turned their behavioural cycle to tunnelling instead.

These features, like delayed nesting, no double nesting or no nesting at all, would be interesting to compare with crocodiles in a wild situation, where in low rainfall years the ponds or rivers start to dry up and water levels get very low. Females would in most cases, start migrating in search of deeper water or dig tunnels to get through the season. The rapid drop in water levels and extreme environmental temperatures, could be a triggering factor for muggers to migrate in search of better nesting areas which would optimize hatching results, permit protection of nests and provide more feed and water for the hatchlings. Delayed nesting could thus be an important survival mechanism in drought prone habitats.

These features of the mugger's breeding biology need closer monitoring and study in detail, the results of which would be useful for wild population management.

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RESEARCH PROJECT ON MONITORING REINTRODUCED MUGGER CROCODILES IN ANDHRA PRADESH

The Wildlife Institute of India, in collaboration with the Forest Department, is funding a research project on thee monitoring of reintroduced mugger crocodiles in the State of Andhra Pradesh. The objectives of this study is to assess the movement, dispersal, habitat choice, recruitment and the success of reintroduction of mugger in Andhra Pradesh. The project researcher Shri V. Vijaya Kumar, operates through logistic support from the Crocodile Research Centre of Wildlife Institute of India at Hyderabad, and has made Manjira River Wildlife Sanctuary (65 km. west of Hyderabad) in Medak District, as his field station.

The project work began in October 1986, the first three months being spent in orienting Mr. Vijaya Kumar on field methodologies and crocodile census techniques, identification of birds and other animals, assessment of biotic and abiotic pressures on the habitat etc. Since January 1987, he has been surveying mugger habitats in Andhra Pradesh in Godavari, Krishna (Ethipothala Falls) and Manjira rivers, where mugger crocodiles have been reintroduced.

His survey has located a larger natural population of mugger crocodile above the Singoor dam on Manjira river, just above the western boundary of the Manjira River Sanctuary, which may require extending the Manjira Sanctuary limits.

The 1987 nesting and hatching season had been rather busy for him. He had been monitoring the wild nests (the Andhra Pradesh Crocodile Project has stopped wild nest collection since 1983 as there are enough eggs produced every year in captivity), hatching success in the wild, dispersal of the hatchlings, predation etc. He is concentrating on these aspects at Lanjamodugu in Godavari, Ethipothala Falls on the Krishna river and Manjira Sanctuary.

The winter months of 1986 to February 1987 also helped Vijaya Kumar to monitor the migratory bird populations in Manjira Sanctuary. His list includes over eight thousand demoiselle cranes, several hundred bar-headed geese, just six flamingos (Sangareddy-Manjira is reported to be the location from where flamingos ringed at lake Rezaiyeh, Azerbaijan, Iran, during the period 1971-74 have been recovered) and the regular visitors like brahminy duck, spotbills, teals, naktas, painted storks, openbilled storks have also been recorded. A total number of 68 wetland birds have been recorded by him.

Also of interest are the presence of a large number of marsh harriers, brahminy kites, ospreys and fishing owls.

Among the other reptiles of interest are pythons, soft-shelled turtles (Trionyx leithi) and (Chitra indica) and common monitor lizards.

The presence of a large number of wild boar along the river bank, fields and reed beds, as also blacknaped hares, brings in a certain amount of conflict between villagers and wildlife due to crop damage. Vijaya has also sighted several grey foxes which seem to be getting rarer day by day.

Illegal fishing in the crocodile sanctuary is not totally stopped, but the constant movement of the research team in a power boat has brought down this problem a little bit.

After the 1987 monsoon, Vijaya Kumar plans to release some more captive reared mugger into these sanctuaries, and to carry out some capture and recapture studies to study food habits, growth, dispersal and movement pattern etc.

The 1987 monsoon period is being utilized by him to make an inventory of the fish species in the Manjira and Lanjamodugu Sanctuaries.

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* * * * *

LETTER TO THE EDITOR

"Can you give me an idea about the territorial behaviour of Crocodylus palustris. How much territory does each croc defend. About 75 to 100 crocodiles are being translocated from Neyyar Dam to Parambikulam. These crocs were reared at the Crocodile Breeding Centre at Neyyar Dam and let off into the reservoir two years back. There have been quite a few cases of attack on m n. The situation is being solved by translocating them to the

Parambikulam reservoir. The Parambikulam reservoir is 28 sq. km. in area and has a wild population of about 100 crocodiles (this is just an estimate, no census has been done). We would like to know the feasibility of the project".

Mr. Nirmal John
Asst. Wildlife Warden, Orukomban Range
Parambikulam Wildlife Sanctuary
Parambikulam -678 661.

* * * * *

SOME CROC CHIPPINGS

"The Star" (16.9.86): "Ban on crocodile trade puts breeders in a fix"

"The ban on the crocodile trade has put at least three major breeders in Kedah and Penang in a fix. The breeders used to import baby crocodiles from Thailand for breeding, mainly for their skin. An imported 35 cm long crocodile cost about $120. When fully grown its skin could fetch upto $960.

Kedah Wildlife Department Director T. Sivanathan said today that his department had last week rejected an application from a breeder in Padang Serai to import baby crocodiles from Bangkok. He said the ban, effective from January last year, was in line with an agreement reached by several countries including Asia, to classify crocodiles as a fully protected reptile. "Under this classification, it is an offence to breed crocodiles even as pets. Existing farms are allowed to keep their crocodiles but only as a tourist attraction", he added. Mr. Sivananthan said that in the past crocodiles were bred for their skin which could be used to make bags and shoes. He said the ban was necessary as crocodiles were fast becoming extinct in most countries and had to be fully protected.

"In Kedah, for instance, we only found one last year in the Merbok river. That was the first sighting of a wild crocodile in the State in 10 years", he said.
Mr. Sivananthan added that in order to protect the crocodiles, countries with natural crocodile breeding environment, including Malaysia, had decided to impose a joint ban on crocodile trade! .

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"The Star" (17.9.86): "Croc farm still operating despite ban on trade".

PENANG - 'The crocodile farm in Balik Pulau is still operating despite a ban on crocodile trade imposed by the Government last year. Although the farm has stopped killing the reptiles for their skin, it is still selling them alove to zoos and other who were interested in breeding them.

Encik Mat Nayan Hassan, 44, caretaker of Tulin Enterprises Sdn Bhd, said the sale of crocodiles was few and far between, and the farm survived mostly on gate collection from tourists. "Even then, few people want to look at the crocodiles nowadays. We get a few visitors a day but for some days, no one visits the farm", he said. He said a regular visitor would sometimes bring about 80 ducks to feed the crocodiles. Otherwise, the reptiles feed on dead chicken brought from nearby farms. He said officers from the State Wildlife Department conducted regular checks on the farm tc ascertain the number of crocodiles there. The crocodile is a protected animal and the farm is required to report all births and deaths to the department, he said.

There are more than 200 crocodiles in the farm. The crocodiles had been imported from Thailand and Indonesia when the farm was set up in 1979. He said the reptiles were slaughtered and the skin sold for making bags, belts and shoes before the ban was imposed. The crocodiles were sold according to their length. A one-week old reptile, about 25 cm in length, may cost upto $400, while bigger ones may cost between $2,000 and $3,000 each.

Encik Mat Nayan said the older reptiles were normally kept in the farm for breeding purposes. The crocodiles sometimes fought among themselves and if one of them was killed, the head was sold to Chinese physicians who believe that the oil extracts have medicinal values.

The farm is however, in an unkempt state, with overgrown weeds everywhere. The State Wildlife Department said since the ban, there had not been any application to turn the farm into a tourist spot!.

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OLD HERPETOLOGICAL REFERENCES SERIES

Summaries from notes in the Journal of the Bombay Natural History Society (Vols. 28-47)

Wall F. notes on some lizards, frogs and human beings in the Nilgiri Hills Vol.28 pp.493-499.

Chameleo calcaratus, Draco dussumieri, Psammophilus dorsalis, Salea horsfieldi, Gonatodes jerdoni, Ixalus variabilis (common castanet frog) Ixalus signatus, Micrixalus opisthorhodus (the pink legged frog), Rana rimochain (the yellow legged frog), Rana temporalis, Bufo melanostictus, Bufo beddomei, Lethyophis glutinosus.

Wall in this note says about capturing castanet frog (Ixalus variabilis).

"As soon as I directed my attention to one individual spot and cautiously approached it, the sound so often repeated suddenly ceased. At this stage the frog forgets all about his lady love to whom his song is addressed and like "brer rabbit lies low and says nuffin". A contest of patience would then ensue between us, the frog remaining silent and I immobile pretending I wasn't there. The frog won every time. My patience exhausted, I listened attentively to another vocalist and tried to track him down. At close quarters I would scan the ground and the foliage for a moment for a glimpse of him but unsuccessfully. This went on for some days. At intervals, I would stand out in the rain, in view of other visitors who did not know me and my ways, and my sanity was questioned. At last after repeated failures, I offered a reward of four annas to anyone who would find the mysterious ventriloquist, and in a few minutes all the idle rickshaw coolies in the hotel, were on the warpath after the elusive little creature. After the lapse of a considerable interval, one man brought me a tiny little frog about an inch long, which was obviously a tree frog from its dilated toes. Later another of the same kind was brought and then as if by magic every cooly had a dozen or so to offer me. Then I sallied forth to learn the secret of their discovery. At the back of the hotel was a narrow little water channel that flowed into a masonry catchpit for the use of the malis when watering the garden. At the edge of this little channel were many arum lillies and when one searched these plants systematically, a frog was sure to be disclosed in one of the hollow stems just above where it clasps the root. I also found it in other similar plants, such as wild ginger.

Having collected several specimens in various jars and given them foliage and water, my next concern was to

hear what sounds would emanate from them, but they remained largely silent all day. Prison quarters were evidently not conducive to love making. At night, I placed the jars close to my head and when the light was out, first one and then another piped up and to my delight the author of the clapping notes was unmasked" .

Food of the Fat-tailed gecko (Eublepharas macularius), S.H. Prater Vol.28 pp.811-812. Captive fed on small lizards - young M. carinata, C. versicolor, immature E. macularius. For 5 years lived in Society, eating insects, cockroaches, biscuit crumbs, scorpions.

A new Stone Gecko from the Himalayas - Capt. CM. Ingoldby Vol.28 pp.1051-1921. Summer near Simla, first collected by Wall, falsely identified - proposed name Gymnodactylus wall sp.n.

A Note on Cannibalism in a Gecko V. Ramachandra Rao, Vol.30 pp.228. H. leschenaulti eating H. brooki.

Notes on a collection of Reptilia from Waziristan and the adjoining portion of the North West Frontier Province, Capt. C.M. Ingoldby Vol 29 pp.117-130. Agama nolepis, Agma rubrigularis, Uromastix hardwickii, Acanthodactylus cantoris, Eremias guttulata, Eublepharus macularius, Agama nupta, Agama urata, Agama caucasica, Calotes versicolor, Eremias velox.

Notes on the Indian monitor (Varanus monitor) and flying lizard (Draco maculatus) J. Williams Vol.37 pp.739-740

A bloodsucker (Calotes versicolor) attacking an adult bird, C.H. Buddulph Vol.39 pp.640.641. C. versicolor tried to catch an adult lark.

A comment on the name 'bloodsucker' applied to Calotes versicolor. B. Baru Vol.40 pp.577-578. Believed widely that it sucks blood by just looking at you and therefore changes colour afterwards, from the blood. Muslims kill or injure it because a Prophet hid in a well, enemies saw Calotes at edge bobbing its head and they took it as an indication that someone was hiding there.

Notes on Calotes versicolor (Daudin) Jerdon, Charles McCann, Vol.39 pp.843-848. The breeding season is heralded by a remarkable change of colour. While the female is satisfied by a slight maidenly blush, the male dons the most extraordinary polychromous attire, the head, the shoulders, a portion behind the shoulders and a part of forelegs become a brilliant crimson or bright scarlet. Black patches appear on either side of the throat at the angle of the jaw and the shoulder.

Thus grotesquely, some say gorgeously painted, the male sits on a fence post or on the trunk of a tree surveying the neighbourhood. By now its manners are as loud as its dress and its sole intent is to seek a quarrel. It will from time to time distend its gular membrane and jerk its head and shoulders up and down, as an acrobat practicing the 'dunds' by way of exercise. But this is not a mere physical exercise, it is to all intents and purposes a provocation and a challenge to all males in the vicinity, As every male is now urged by the same pugnacious spirit, many fights take place with much 'all-in wrestling and biting.."

Breeding season starts April and ends September. Mating frequent from record,half April to end June and early July. Copulation takes only a second. Egg laying seen to take 2 hours. One clutch hatched over a 3 day period - first batch 37 days, second batch 38 days, third batch 39 days. Seems to be no egg tooth. Valuable as agricultural pests controller.

Extension of the range of the diurnal forest gecko Cnemaspis kandiana Humayun Abdulali Vol53 p.134. Found at Yellapur, North Kanara, northward extension of the range.

Observations of the egg-laying habits of lizard (Calotes ophiomachus) G.L. Underwood Vol45 pp.248. Egg laying, digging and packing with snout etc. Egg laying of the bloodsucker lizard (with a lovely photo). Anonymous Vol.51 pp.944-945 laying and digging.

The courtship of the monitor lizard (with 2 photos - Varanus monitor), Salim Ali Vol.44 pp.479-480. Kutch 1943. 1½ hours combat, both standing up on tail, grasping neck, wrestling but no mating took place. Male went off and so did the female.

Egg laying period of the Common Indian Monitor J.D. Romer Vol44 pp.600-1940. Female from Elephant Island Bombay - started laying 1st November (one egg) 2nd November 3 eggs, 3rd November 3 eggs, 5th,- 7 eggs could be felt in belly, it then was returned to Elephant Island. Specimen was 3'5" (tail 2 feet of this).

Indian monitors in the United Provinces-D.G. Lowndes, Vol.47 pp. 176-177. Gravid female seen in June.

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OUTLINE OF THE STUDY DONE BY V. SEKAR OF THE A.V.C. COLLEGE MAYILADUTHURAI (T.N.) AS PART FULFILMENT OF THE DISSERTATION OF M.Sc. (WILDLIFE BIOLOGY)

A study on the relative abundance, breeding biology and the diet of the Indian Bull Frog Rana tigerina (Daudin) and Indian Pond (Green) Frog Rana hexadactyla (Lesson) during the north-east monsoon in Madras, Tamil Nadu.

- -

There have been a few studies on the breeding biology of Indian frogs. The present study concentrates on the two species most commonly collected for the frog leg industry, namely Rana tigerina and Rana hexadactyla.

RESULTS

During the study period (20th November 1986 to 15th March 1987) of 116 days, a total of 135 efforts were made to capture frogs in two different habitat types spread over 38.5 sq. kms. out of the total 51 sq. km. Out of this, only 4 night trips were carried out to collect frogs. During this perios, 724 R. tigerina and 41 R. hexadactyla were collected, indicating the relative abundance of R. tigerina in the study area.

Out of 724 R. tigerina caught during the study period, 413 (57.04%) were caught in paddy fields, while 235 (32.46%) were caught in ditches and ponds and 76 (10.5%) were caught in more open water bodies in lakes, confirming the habitat preference of R. tigerina into semi-permanent or permanent water bodies with vegetation edges such as paddy fields, ditches and low depth water bodies with acquatic vegetation.

SEX RATIO

Females outnumber the males in both the species throughout the study period. Out of 724 R. tigerina, 202 (27.90%) were males and 522 (72.10%) females. In case of R. hexadactyls, out of the 41 specimens caught, 13 (31.71%) were males and 28 (68.29%) were females.

BREEDING

Out of 202 male R. tigerina, 148 were above 65mm/adult size class,of which only 16 (10.80%) had thick yellow matured testis, exhibiting a reproductively active condition. Similarly, out of 522 female R. tigerina, 436 were above 65mm adult size class, out of which 73 (16.74%) had matured ovaries laden with ova and all others had spent ovaries, thus indicating the last stages of a breeding season.

FEEDING

Of the 724 R. tigerina caught, 361 (49.86%) specimens had some food or other items in their stomach. Three hundred and sixty three (50.14%) specimens had absolutely no food in their stomach.

Of the 41 R. hexadactyla caught, 30 (73.17%) had some food or other items in their stomach. The collection exhibited a significantly higher percentage of R. tigerina with food during 0600 to 1000 hours and again between 1800 to 2100 hours.

In the case of R. hexadactyls, 1300-1500 hours were observed to be the most active feeding hours, followed by 1800-1900 hours.

Among the food items, crabs dominated the stomach contents in the case of R. tigerina, and snails (33.33%) in the case of R. hexadactyla. While insects such as crickets, grasshoppers, beetles, cockroaches, caterpillars, millipedes, centipedes and scorpions were observed in the stomach contents of R. tigerina, these were significantly absent in the case of R. hexadactyla.

The range of food items proves frogs to be opportunistic feeders, rather than selective feeders. The study also exhibits that the smaller size classes had more insects in their diet as compared to bigger size classes whose stomach contents contained crabs and other vertebrates. Small vertebrates like fish, amphibians and reptiles, and to a larger extent molluscs such as snails, were found predominently absent in smaller size classes.

DIET AND ROLE IN AGRICULTURAL PEST CONTROL

The present study concludes that both R. tigerina and R. hexadactyla are carnivorous and feed on a very diverse diet, capturing whatever they can rather than being selective.

More than 50% of the frogs collected during this study had empty stomachs, which may be due to the fact that most of the collection work was restricted during the day time rather than night time, which is the most active feeding period.

SUMMARY

1. During a dry north-east monsoon season in Madras, only R. tigerina were found to be abundant. A negligible presence of R. hexadactyla was also recorded.

2. Both R. tigerina and R. hexadactyla have been confirmed to breed during the north-east monsoon season in India.

3. The minimum size and age at which both R. tigerina and R. hexadactyla are capable of breeding appears to be less than that for the same species in other areas.

4. R. tigerina is confirmed to be carnivorous with a considerable diversity in its diet requirements. This species is also found to be highly beneficial in controlling agricultural pests.

5. R. hexadactyla in confirmity with its aquatic habitat, is found to prefer a different diet than that of R. tigerina, perhaps a strategy to minimise competition.

6. Even though the present study was proposed to be carried out during a normal north-east monsoon, the study began after the monsoon and the season was comparatively dry during the study period. This may have given a less reliable finding, requiring a similar work to be taken up in a future normal north-east monsoon season.

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Mayiladuthurai
Tamil Nadu.

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A REPORT FROM R. A. T. S. (RODENT AND TERMITE ERADICATION SQUAD)

The rodent control project, an offshoot of the Irula Snake Catcher's Co-operative Society, reports on the cost effectiveness and feasibility of controlling rodents using Irula tribal methods.

TABLE I -(November 1985 to January 1987)

Total no. of trials	:	171
Total no. of rodents caught	:	8,928
Total cost	:	Rs. 14,463
Total area covered	:	1,275.5 acres of land, [illegible] chicken farms, hotels and houses.
Materials found in rat burrows	:	287 kgs. of paddy and 20 kgs. of raggi.

The best trial was carried out at Chitlapakkam, a suburb of Madras near Tambaram on 2.3.87. 6 Irulas worked 8½ hours and caught 487 rats and mice.

Species:		
Bandicota bengalensis	:	230 nos.
Rattus meltada	:	54 nos.
Mus species	:	203 nos.
Total:		487 nos.

TABLE II - (April 1987 to June 1987)

Total No. of trials	:	41
Total No. of rodents caught	:	3,506
Species of rodents caught	:	4 species:
		Bandicota bengalensis
		Rattus meltada
		Tatera indica
		Mus species
Total No. of Irulas employed	:	290
Total cost (wages only)	:	290 x 20 = Rs.5,800/-
Total area covered	:	252 acres
Type of locations	:	Paddy fields, chicken farms.
Total hours worked	:	316
Material found in rat burrows	:	194 kgs. of paddy, and 30 kgs. of groundnuts
Average No. of rats caught per acre	:	13.9
Average cost per acre	:	Rs.23.02
Average No. of Irulas per trial	:	7 to 8

The above field trials were carried out with the aid of a grant from Oxfam India Trust.

M. Murali
Field Officer - RATS
Irula Snake Catcher's Co-operative Society
Vadanemmeli Village
Perur P.O.
Mahabalipuram Road
Madras -603104.

AN UPDATE ON REPRINTS AND PUBLICATIONS AVAILABLE AT MADRAS CROCODILE BANK TRUST

Whitaker, R.

Crocodile Ranching: Animal Husbandry Opportunity For Tribal People

Zoo's Print/Journal of the Zoo Outreach Organisation February 1986 pg.1

The Management of Crocodilians in India

Wildlife Management: Crocodiles and Alligators Chapter 7, pp. 60-61 65-72.

Captive Breeding of Crocodilians in India

Acta Zoologica Et Pathologica Antverpiensia - Maintenance and Reproduction of Reptiles in Captivity- Volume I No.78/1984, p. 309-318.

Lang J.W., Whitaker, R., Andrews, H.

Male Parental Care in Mugger Crocodiles

National Geographic Research 2(4): 519-525 (1986)

Moll E.O., Groombridge, B., Vijaya, J.

Redescription of the Cane Turtle with notes on its Natural History and Classification

Journal Bombay Natural History Society , Vol.83 (Supplement) pages 112 - 126.

Whitaker, R.

Our Next Domestic Animal (in print)

Books available

'Common Indian Snakes' - a field guide by Whitaker, R.

Price: Local - Rs.22/- (including postage)
Abroad - U.S. $3 (including postage- air mail)

'The Snakes Around Us' by Whitaker, Z., and Whitaker R.

Price: Local - Rs.5/- (including postage)
Abroad - U.S. $1 (including postage - air mail)

Note: Please refer'Hamadryad' Vol.10(3) 1985 for a complete list of publications.

'THE SNAKES AROUND US' - A REVIEW BY SHYAMALA NATARAJ

A thoroughly interesting book on a subject that most children and adults as well [illegible] find one part fascinating and three parts fearful. Snakes as a species hold a special place, both in Indian religion as well as its folklore. As objects of worship, they have inevitably been vested with a mysterious power that has unfortunately been translated to mean dangerous. While this has, in part, caused their unnecessary destruction, a flourishing snake skin export trade, (legal injunctions notwithstanding) is largely to blame for their systematic and ruthless extermination.

Against this background, Rom and Zai Whitaker, have written, what is probably the first clear, lucid book on a subject that people are so ignorant about. While the book is obviously targetted for kids, their parents would surely enjoy reading it too, if only to prevent a near heart attack at the mere sight of snakes, in or around their homes. Snakes found in different parts of the country have been described, from the common vine snake that seems to especially love the drumstick trees in my compound, to the awesome king cobra and the python. A fairly detailed description of their physical charecteristics, food and living habits, as well as their potential danger in terms of their bites being poisonous or otherwise, has been included. The stray personal anecdotes, like the one about the fake snake catcher, make enjoyable reading- there should have been more.

The authors stress that most of the snakes are not poisonous and clearly describe the ones that are. The most common of these that you have to watch out for are the Cobra, Krait, Saw-scaled viper and the Russells viper. Follows a list of do's and don'ts in case of a bite from any of these.

The book falls short of being totally fascinating, simply because there are so few photographs that complement the text. Shekar Dattatri's black and white pictures are good in themselves, but hardly explanatory. And for a novice, so many of the different snakes, though meticulously described, look so similar in the pictures. Colour photographs would have made a considerable difference.

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A LOSS TO CONSERVATION

Dr. Salim Ali, one of the most dedicated and renowned Ornithologist's of our time and Trustee of the Croc Bank, died on the 20th of June '87. His generous donations kept **our newsletter afloat through many a dark phase.** His death is a very great loss to conservation, may his work and spirit live on.

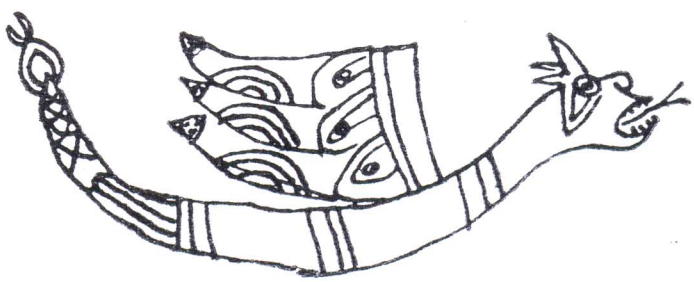
DONATIONS

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 Information presented here may be used elsewhere with acknowledgement to Hamadryad.