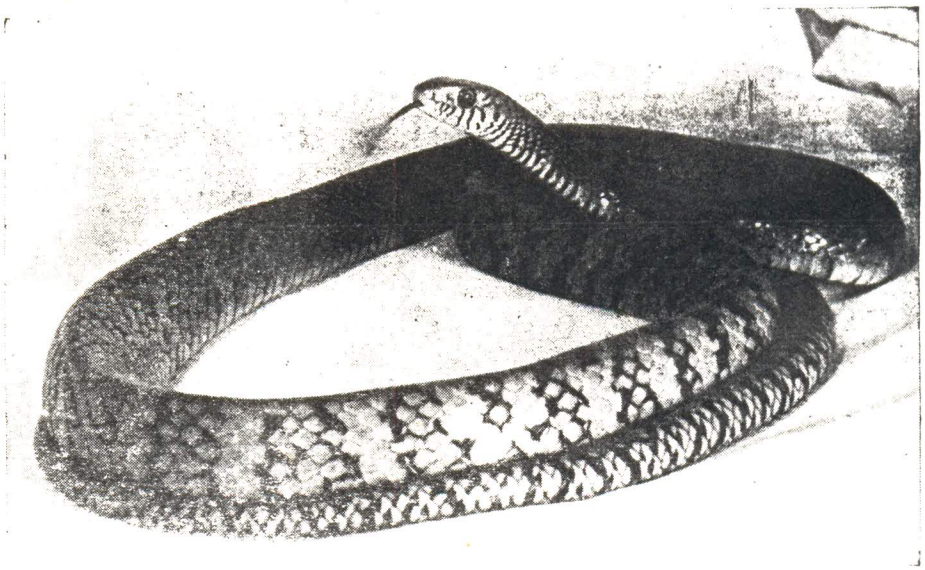
HAMADRYAD

9: No. 2

May 1984



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HAMADRYAD: NEWSLETTER OF THE MADRAS SNAKE PARK TRUST

9: No. 2 May 1984

News from the MADRAS SNAKE PARK AND MADRAS CROCODILE BANK

The Director and Shekar Dattatri (representing Sanctuary magazine were in Gahirmatha, Orissa in early February for the annual Ridley (Lepidochelys olivacea) arribada.

Shekar Dattatri attended a national symposium on rodentology in Delhi and presented the Director's paper on the role of reptiles in controlling rodents. This is in line with the Snake Park's attempt to publicize the rodent destroying capacity of snakes.

Dr.J.G. Frazier from the Smithsonian spent a month at the Crocodile Bank working together with the Forest Department to chart a sea turtle management programme for Tamil Nadu. During his stay, the Central Marine Fisheries Research Institute organized a workshop on marine turtle conservation for the benefit, mainly, of state government personnel.

Chandra Shekar Kar, sea turtle biologist based in Gahirmatha, Orissa, spent a week at the Crocodile Bank and Snake Park using our reprint library facilities.

Dr. Jeff Lang of the University of North Dakota is currently at the Crocodile Bank for six weeks on the first phase of his mugger (Crocodylus palustris) breeding biology study.

Visitors to the two institutions included the Indonesian ambassador to India, the Governor of Tamil Nadu and a tour organized by the Harward Museum of Comparative Zoology.

We have started a series of informal seminars at Madras Crocodile Bank. The first was in February when Vijaya Jagannathan Research Officer described her project on the ecology of two forest chelonians: Heosemys silvatica and Geochelone travancorica. Also, Chandra Shekar Kar, CSIR scholar working at Gahirmatha in Orissa, gave us a fascinating account of the six years of olive ridley arribadas that he has observed and studied.

At the second seminar, on 18/4/84, Vijaya brought us up to date on her project and Dr. Jeff W. Lang, of the University of North Dakota told us his latest findings on temperature regimes and preferences of hatchling crocodilians.

Crocodylus palustris: study of the reproductive biology

Dr. Jeffrey Lang, University of North Dakota, U S A, is currently working at the Madras Crocodile Bank in collaboration with the Director on a study of the reproductive biology of the mugger, Crocodylus palustris. The study is supported by grants from the Smithsonian Institution, the National Science Foundation and the National Geographic Society. Dr. Lang is also a guest lecturer in the Department of Zoology at the Madras Christian College.

The project objectives are 1) to describe the reproductive behaviours of mugger 2) to investigate multiple clutch production; 3) to quantify thermal effects on development; 4) to determine temperature thresholds for sex determination during incubation; and 5) to formulate management recommendations which will be relevant to on-going rearing and breeding programmes now underway in India.

One of our muggers acknowledged Jeff's arrival by laying a second clutch of eggs the night following his arrival. Pilot incubation studies are now underway using modified thermoelectric portable incubators operated from a reliable 12 VDC power supply, and monitoring of nest temperatures in several breeding pens is proceeding. Numerous juveniles hatched at the MCB from nests in which temperatures were monitored are being sexed in an attempt to correlate sex with the thermal regimes of 'natural' nests within the breeding enclosures. Jeff will be at the MCB from April through May to initiate the study and get organized for the next breeding season when he plans to return to study reproductive behaviour and continue incubation studies.

Gharial in Bangladesh

Letter from Simon Wakefield, 14 Wheatsheaf Close, Wimblehurst Park, Horsham, West Sussex, RH12 4TH, UK, dated 26 September 1983.

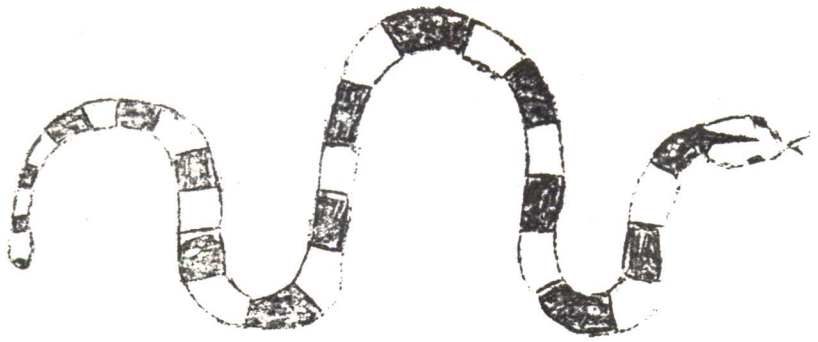
"I first visited Char Diar Khidipur from March to May this year and was pleased to observe a large male and two female Gavialis gangeticus though a villager claimed to have seen five females basking on a recent occasion. The BDR camp is still supposed to be guarding the gharial and their nest sites and I never heard of any animals or nests being interfered with this year. One nest was opened last year despite a notice-board erected in the village by the Wildlife Circle claiming that such an offence carries a fine of TK 1000. The adults were wary when closely approached by villagers but were often seen to be

basking in the early morning. I often saw the male as I was rowed across the river in the country boat so a reasonable co-existence has been established between the villagers and the gharial. Indeed, they often seemed surprised at the interest shown by a foreigner but once they knew my purpose they readily came forward with information each time I visited the Char. At this time I was unable to establish whether any nests had been laid. My notes indicate that the male may have moved away from the area (or towards mid-river?) during early May, though as I had to live in the town of Rajshahi my access to the Char was limited to day-time trips only and this may have given me an unbalanced picture.

I returned to Rajshahi, after a brief trip to the Madhurpur National Park, in late June and was told by the villagers that there were three places along the cliffs where females had been regularly seen; so it is possible they had nested. I could only obtain conflicting reports as to whether nesting took place in the sandy inlet. On my arrival, only one of these female gharial remained and I watched her for nine days. She was by the cliff and repeatedly surfaced at twelve or thirteen minute intervals, keeping an eye on things.

One of the few recorded incidents of friction between man and gharial took place during my stay. One of the women of Char Khidipur went down to the river's edge to wash and was grabbed by the leg because she had gone too close to a nest. However she was rescued and thankfully recovered after a spell in hospital. To my unforgettable bad luck I got an attack of bacillary dysentary at about the time the nest was likely to hatch so I could not observe it myself. Nevertheless, villagers had seen hatchlings this year so I would estimate that two, perhaps three nests were hatched at Char Diar Khidipur this year.

The soft-shell turtles I saw on the Padma seemed to be the Ganges soft-shell s Trionyx gangeticus. Incidentally, while talking to various officials of the Forest Department's Wildlife Circle in Dhaka, they mentioned that feasibility studies for farming estuarine crocodiles in the Sunderbans were being carried out, but I am not sure how advanced these are.



Malayalam names of some common snakes in Kerala

There are usually several local or dialectic vernacular names for snakes which differ considerably even within the same state or district. More information on local snake, lizard, frog and turtle names would be most valuable.

English	Malayalam
Worm snake (*Typhlops* sp.)	Chevipambu,; kozhipambu
Shield-tail (*Uropeltis* sp.)	Kozhipambu; kurudipambu, iruthalamoori
Rock python (*Python molurus*)	Perumpambu; malampambu
Red sand boa (*Eryx johnii*)	Iruthalamoori
Common wolf snake (*Lycodon aulicus*)	Shankuvariyan, vellivariyan
Common kukri (*Oligodon arnensis*)	Churute
Rat snake (*Ptyas mucosus*)	Chera
Striped keelback (*Amphiesma stolata*)	Theyyanpambu
Green keelback (*Macropisthodon plumbicolor*)	Pachanagam, pachamoorkhan
Checkered keelback (*Xenochropis piscator*)	Pallavan
Olive keelback (*Atretium schistosum*)	Neerkoli
Common bronzeback (*Dendrelaphis tristis*)	Villukunni
Common vine snake (*Ahaetulla nasutus*)	Pachapambu, pachelapambu
Flying snake (*Chrysopelea ornata*)	Parakunnapambu
Common cat snake (*Boiga trigonata*)	Vaarimoorkhan
Common krait (*Bungarus caeruleus*)	Vellikettan
Coral snake (*Callophis melanurus*)	Ettadiveeran
Spectacled cobra (*Naja naja*)	Moorkhan; sarpan; pathikaaram
King Cobra (*Ophiophagus hannah*)	Rajavembala, karinchaathi
Hook-nosed sea snake (*Enhydrina schistosa*)	Vallakadianpambu
Russells viper (*Vipera russelli*)	Anali, rakthamandali, chenathanden
All pit vipers	Chattithalayan

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Indian snakes on Appendix III

India submitted the following list of species for inclusion in Appendix III of CITES which took effect from 13 January 1984:

Olive keelback watersnake (Atretium schistosum)
Dog-faced watersnake (Cerberus rhynchops)
Checkered keelback watersnake (Xenochropis piscator)
Asiatic rat snake (Ptyas mucosus)
Asiatic cobra (Naja naja)
King cobra (Ophiophagus hannah)
Russell's viper (Vipera russelli)

(Source: Traffic Bulletin, Vol. V nos. 5/6, February 1984).

Snake skin trade in Bangladesh
(from Jane Gilmour's article "The Reptile Skin Trade in Bangladesh" Traffic Bulletin Vol V nos. 5/6, February 1984).

Although only skins of poisonous snakes can now be legally exported, internal and external trade in other species still continues. The species of snakes involved in internal trade are, in order of importance, the Asiatic cobra Naja naja, checkered keelback watersnake Xenochropis piscator, Asiatic rat snake Ptyas mucosus, Indian python Python molurus, Russells viper Vipera russelli and king cobra Ophiophagus hannah. The reticulated python may also be involved. Python molurus is listed on appendix I and the reticulated python on appendix II of CITES which Bangladesh ratified in November 1981.

It is legal to trade internally in reptile skins and products and this provides a useful loop-hole for export. There are some 20 shops in Dacca which offer wallets, purses, belts etc to tourists, some of them having 2-3000 articles on display. The most commonly used skins seemed to be cobra, checkered keelback and rat snake. Goods made from Russell's viper were the least commonly available.

"There has been continuous, registered export of snake skins since 1978 and small quantities were exported previously e.g. to Japan in 1973, 1975 and 1977. The majority have been reported to be rat snakes and checkered keelback watersnakes even though only cobras, kraits and vipers are legally exploitable. At the Semaine Internationale du Cuir (Paris) in September 1979, the Bangladesh Handicraft Co-operative Federation was displaying bags made from Python m. molurus. These were presumably available for export from Bangladesh. In 1981 fifteen dealers had export permits and the main destinations of skins were Thailand and Italy. As with lizard skins however, Bangladesh seems to be acting as a staging post for illegal export of Indian snake skins. India had banned the export of all snakes by 1975 and the last legal export was in 1976 to liquidate the stocks held by registered exporters. This coincided with the start of recorded exports from Bangladesh. In April 1982 there were applications for import into the U.K. of 60,000 checkered keelback watersnake skins from West Germany. The origin of these skins was given as Bangladesh, which either suggests very large scale exploitation or that some skins came from elsewhere."

Non-venomous venomous bites of venomous snakes

As a medical practitioner in rural West Bengal I have been treating snakebite for several years (see also Hamadryad 6; no. 3). and we have had some cases of "dud" venomous bites, mostly cobra as it is the commonest culprit in the area. Our experiences seem to prove that at least half- if not the majority- of venomous bites are not fatal. The following two case histories illustrate my point. It is fortunate that snakes have as yet not discovered the fatal-dose statistics. Long may they remain ignorant.

Case 1: Mrs Bemala Mandal, about 45 years, was bitten by a monocled cobra (Naja kaouthia) at 8 am on 5.7.82, while cutting grass near Baribhanga village. The bite was on the dorsum of the she/ right hand and/had to actually shake off the snake. When she arrived at the clinic at 9.40 a.m. a scratch was visible, oozing blood. Patient complained of burning pain around the bite. A ligature was tied on the upper arm.

Management of bite:- Ligature was removed and patient given assurance, bed and food. Tet./vac. 0.5 ml. IM Stat. Inj. Benzyl Penicilline 10 lacs IM Stat and 10 lacs IM B.D. x 5 days. Inj. Betnesol 8 mgm IM Stat and Prednisolone 5 mgm. 1 tab. TDPC x 7 days. Proxyron cap 1 cap BDPC x 3 days. Antiseptic dressing of wound

Since the patient had not developed symptoms of poisoning 8 hours after bite, no anti-venom serum was administered. She was discharged 40 hours later.

Case II: Md. Ashad of Goalara village was bitten by a monocled cobra on the left foot on 17.7.83 at about 2.30 pm while sweeping his room. I examined him at 3.45 pm. There was a one-fang mark with slight oozing of blood and he complained of pain and swelling around the bitten area. There was a bluish discolouration due to a very tight ligature on the thigh and the patient was screaming with pain and fear. On removing the ligature he calmed down somewhat Treatment was along the lines of Case I. There were no symptoms of poisoning and the patient was discharged.

In both these cases the major problem was, typically, panic. It is reasonable to say that a majority of venomous bites could be successfully 'treated' (since most are not fatal) with placebos and psychological help.

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A case of cannibalism in wild kraits (Bungarus caeruleus)

While the ophiophagus nature of the common krait Bungarus caeruleus is widely acknowledged and has been commented on by several authors (Smith, 1943; Deraniyagala, 1955; Deoras, 1965; Whitaker, 1978) cannibalism is poorly documented. Whitaker says "Kraits are true cannibals and it is not unusual to find a few smaller kraits missing from a captive group." It may be useful to place on record an observed instance of cannibalism among free-living snakes.

Three adult B.caeruleus comprising of two females (with two freshly laid clutches) and one adult male were collected at 12.00 hours on 3rd March, 1983 from within a low termite mound in the Taramani area on the outskirts of Madras city. While being handled prior to bagging, the male regurgitated, tail first, a gravid female conspecific. It had apparently succumbed to temptation and eaten a friend only a few hours earlier as just the head and neck showed signs of having been digested. The eater and eaten were both average sized specimens for south India measuring 123 and 98 cms respectively.

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Deraniyagala, P.E.P. (1955): A colored atlas of some vertebrates from Ceylon, vol. III.
Smith, M.A. (1943): The fauna of British India, Vol. III (Reptilia and Amphibia), Serpentes.
Whitaker, R. (1978): Common Indian snakes: a field guinde.

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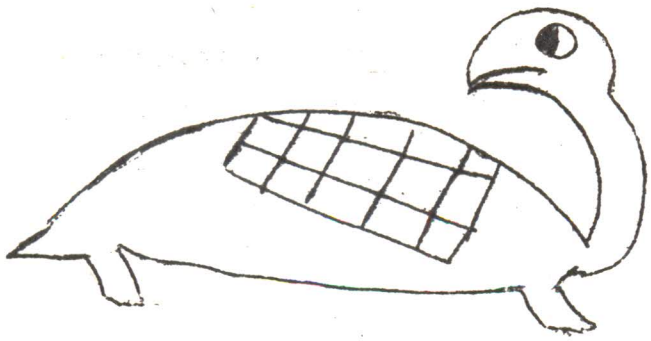

Notes on nesting activity of the black pond turtle, Melanochelys trijuga trijuga.

On October 23, 1983 I watched a Melanochelys nesting at the Snake Park. The turtle began digging at 1630 hours under a low palm in the enclosure. She used her left hind leg to dig, and the excavated earth was pushed back with the right hind leg. Each leg was used in digging for 3 minutes at a time, bringing out about 6 scoops of earth. The digging phase lasted for half an hour, until 1700 hours.

Egg laying began at 1700 hours. Each of the 7 eggs was laid at an interval of about one minute. While the first four eggs were laid the left hind leg was placed within the nest chamber. Later the turtle shifted her right leg into the chamber and laid 3 eggs. (Is it possible that the leg shifting during laying is related to numbers of eggs in each oviduct?- Ed.) The animal rested on the posterior part of its shell while laying; no definite change in body position was noticed. Throughout nesting activity the turtle 'stood' on its fore legs which were planted on the ground (by raising the anterior part of the shell).

When filling the nest cavity, the turtle moved back without any change in direction, enabling it to reach the excavated mud which it began pushing into the hole by the forward movement of the hind legs. While one of the hind legs was pushing earth into the nest hole, the other was placed inside the chamber to stamp down the earth. The nest closing cycle lasted for 40 minutes. Throughout nesting the forelegs were not used. After the nest hole was filled and stamped down, the area was beaten flat by the turtle's shell for ten minutes. The ground was thumped by each side of the shell alternately, by letting first one foreleg drop and then the other. After completing her hectic maternal duties, the female entered the water.

Nest and eggs: Nest depth to the top-most egg was 100mm. The substrate was damp due to recent rains. Measurements of 6 of the 7 eggs were taken:

	length	width	weight
1.	42.5 mm	26 mm	25 gm
2.	40.5 mm	25 mm	30 gm
3.	40.5 mm	26 mm	25 gm
4.	42 mm	25.5 mm	35 gm
5.	42.5 mm	26 mm	30 gm
6.	40.0 mm	25.5 mm	20 gm

References

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Turtles in the Chambal River

While visiting a gharial research project on the Chambal between 29-30 October '83, I found a predated turtle nest on the Rajasthan side of the river near Basaidang village. Further on there were three more nests (also predated). Two days later near Rohughat I found an intact egg on an island but could not locate any nest. However, the opposite bank was strewn with egg shells. (The Island Egg was very small, length- 50 mm, width 27 mm in comparison to Kachuga dhongoka eggs which average 60 mm in length).

On the return journey we found a Kachuga tentoria circumdata neat Batesra village (carapace length 23 cm, width 18 cm and plastron length 22.5 cm). It was returning to the river after egg laying and we located the nest containing 7 eggs. (This was in early November). I went back to several sites visited earlier and found many predated and unpredated nests. (In '82, J. Vijaya of the Crocodile Bank located 6 clutches between 6-8 December on the Rapti near Gorakhpur- ed.)

The hard-shelled K. t. circumdata is a common species in the Chambal and can be seen basking on small rocks in the river or on sand banks. It nests on open sand a few yards from the water or under Xeromhyte bushes. Nesting seems to occur from early October to late January and jackals are the main egg predators.

During frequent visits to the Chambal I have found numerous carcasses of hard-shells as well as soft-shells (Trionyx gangeticus and Lissemys punctata). We found a large female Kachuga kachuga , freshly dead, which measured:

carapace length - 48 cm
carapace width - 37 cm
plastron length - 46 cm

We also collected a mature male Kachuga kachuga by net near Pureni in Rajasthan which was in its breeding splendour, with the red longitudinal neck stripes, the yellow oblong spots on the throat and the brilliant red head markings. His vital statistics:

carapace length - 29.5 cm
carapace width - 23.5 cm
plastron length - 29.0 cm

The relatively undisturbed habitat within the National Chambal Sanctuary is ideal freshwater turtle area. The comparative lack of disturbance is partly due to the dacoit problem which has intensified over the years.

My study on freshwater turtles was conducted through a senior research fellowship of the Council of Scientific and Industrial Research, New Delhi. The Madhya Pradesh Forest Department kindly permitted me to carry out the work.

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Range of Lissemys punctata punctata from the foot-hills of the Siwaliks

A spotted mud-turtle was caught on 3rd October '82 in the dry river bed of the Gargara at Punchkula, Ambala district, Haryana. It was found at mid-day on the embankment of a rice field 100 m from the stream. Annandale (1912) observes that it rarely leaves water. Smith (1933) mentions its occurrence in the Ganges, and Indus and their tributaries in western India. The turtles measurements were: Carapace length 14.8 cm; car. breadth 11.00 cm, length of plastron 13.8 cm.

References:

Annandale, N. (1912): The Indian mud-turtle (Trionychidae). Rec. Ind. Mus. 1:151

Smith, M.A. (1933): The Fauna of British India. Reptilia and Amphibia. Vo. 1. Loricata, testudines.

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Occurrence of the Indian Salamander (Tylotriton verrucosus) in Shillong.

Meghalaya, the 'abode in the clouds' is bounded by Assam on the north and east and by Bangladesh on the south and west, making it one of the more inaccessible states of North Eastern India. Winter in the Khasi Hills lasts from October to March, the mean annual maximum and minimum temperatures of the area being 24°C and 12°C respectively. Annual rainfall averages 203 cm in the summer months.

In the months of May and June '83 I was looking at herps in the Khasi Hills including a pocket of hills forest comprising Khasi pine enclosed by army cantonements and villages, in Shillong. Various small streams criss-crossed this forest creating ideal amphibian habitat.

In early June I saw an Indian salamander around 12 cm in length in a stream. Attempts to approach it caused it to retreat into the hollows and cracks in the mud and boulders on the stream's bank. I was told that salamanders are found in water only during the breeding season thus June seems to fall within the season. Apparently salamanders are eaten by some of the local people (probably as a purported medicine). Some of the non-local residents talked of a strange lizard-like fish which sometimes appeared in the market mixed with other river produce. I was also fortunate in seeing the wormsnake Typhlina diardi and the white-tailed mole Talpa micrura leucura, both species endemic to north-eastern India.

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Frog-leg export ban under study

(from Livestock Adviser, Jan. 1984)

The Union Commerce Ministry is considering a ban on the trapping of frogs and export of their legs from April to June 1984. The Government is not inclined to impose a total ban on the export of frog-legs as the existing markets would be lost to other countries. Meanwhile, scientists at the Konkan Agricultural University have been asked to undertake further studies on a technology developed by the Central Fisheries Institute for commercial rearing of frogs.

Arribada: the Arrival

Chandra Shekar Kar, research officer with the Orissa Forest Department had predicted that the annual ridley mass nesting at Gahirmatha would be around the end of January this year. Eager to participate in this reptilian orgy, Jack Frazier of the Smithsonian, my colleague Shekar Dattatri and myself managed to make the tenuous train and boat connections in time to gape at 250,000 Ridleys stream ashore to lay their eggs. Most of the nesting was concentrated on a 5 km stretch of beach resulting in an acute space problem. Sand and eggs were flipped into the air as older nests were dug up by nesting females. When the chaos ended some 25 million eggs had been desposited.

When I arrived in Gahirmatha on the night of 26 January with the Divisional Forest Officer Mr. S.K. Mishra, over 10,000 Lepidochelys olivacea trundled past us to deposit their load of eggs on the beach of their birth. The Forest Department's 25 turtle markers walked through the mass of curved domes counting them with dabs of paint. Their kerosene lamps made an already incredible scene even more unreal.

Due to the international uproar about the slaughter of ridleys during the arribadas, the government has embarked on a most enlightened conservation programme to protect what is probably the largest sea turtle rookery in the world. It was gratifying to see a Navy plane fly low over the turtle beach and the Coast Guard making frequent offshore patrols. During one of the first nights of the arribada the Chief Minister of Orissa, Shri J B Patnaik and his wife who is a Member of Parliament visited the beach. Responding to the problem of huge numbers of turtles killed by drowning in trawler and gill nets just offshore, Mr Patnaik had announced on the radio that commercial fishing will be seasonally banned to a point 10 km offshore of the 35 stretch of beach the turtles nest on. Kar counted over 3000 turtle carcasses on the beach last year but the number dropped to 500 this year, reflecting the effectiveness of recent protective measures.

Captive rearing of the Olive Ridleys

The Bhagabatpur Crocodile Rearing Centre, 24 Parganas, West Bengal, has been involved in sea turtle studies since 1983 at Bhagabatpur near Kanak island where the olive ridley nests regularly. On 16th March 1983, 600 eggs were collected from 4 nests from the island and transferred to the hatchery about 25 km away. Nest temperature was maintained at 29°C. 61 days later 117 eggs hatched. Of these 18 were retained for biometric

studies; the rest were released at the nest site 12 days after hatching. The following growth statistics refer to the 18 hatchlings reared at the centre.

Chart I

Date of measurement		Carapace length		Weight
17.5. to 22.5	Maximum	4.44 cm		17.8 gm
	Minimum	4.15 cm		16.7 gm
	Average	4.33 cm		17.2 gm
3.6	Maximum	4.83 cm		24.7 gm
	Minimum	4.42 cm		15.7 gm
	Average	4.64 cm		22.7 gm
19.6.	Maximum	6.19 cm		50.4 gm
	Minimum	4.75 cm		22.2 gm
	Average	5.60 cm		37.96 gm
12.7	Maximum	8.19 cm		122.3 gm
	Minimum	5.06 cm		30.0 gm
	Average	7.13 cm		81.2 gm
			(Car. width)	
25.7	Maximum	9.51 cm	8.31 cm	176.0 gm
	Minimum	5.21 cm	4.48 cm	30.7 gm
	Average	8.07 cm		120.3 gm
20.8	Maximum	12.21 cm	10.45 cm	354.10 gm
	Minimum	9.06 cm	7.54 cm	138.50 gm
	Average	10.80 cm		244.72 gm
7.9.	Maximum	13.60 cm	11.79 cm	481.0 gm
	Minimum	10.50 cm	8.93 cm	225.2 gm
	Average	11.97 cm		351.5 gm
1984				
6.3	Maximum	22.20 cm		1500.00 gm
	Minimum	16.80 cm		600.00 gm
	Average	19.43 cm		1113.63 gm

Chart II- approximate feeding schedule (fish, prawn)

Hatching to 30 days (5-6 cm) ..... 5.5 gm/animal/day

31 days to 60 days (7-9 cm) .....14.0 gm/animal/day

61 days to 100 days (10.5-13.6 cm).....28.0 gm/animal/day

270 days to 300 days (22.0-22.2 cm).....40.0 gm/animal/day

Infection: The turtles were affected by a fungal skin infection when about a month old. Small yellowish-white patches appeared on the neck and flippers and as the patches increased feeding stopped. Carapace joints were also affected. Animals were quarantined and bathed in dil KMNO4 sol and the affected area cleaned with a

soft tooth brush. Electrol powder was administered to revitalize the dying animals and induce feed intake. They were also soaked in Terramycin antigerm sol. Infection first appeared on 19.6.83 and by 6.7.83 disappeared with no mortality.

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Sea turtle workshop

The Central Marine Fisheries Research Institute (CMFRI), the Madras Crocodile Bank and the Indian Sea turtle Specialist Group jointly organized a sea-turtle workshop from 27 to 29 February in Madras, as a first step toward coordinating sea turtle conservation and research in India. The workshop was inaugurated by Mr. S.A. Subramani, Secretary, Forests and Fisheries, Tamil Nadu and attended by about 40 representatives from the CMFRI, MSPT, MCBT, various State Forest Departments, universities, non-governmental organizations and naturalists. The following papers were presented and discussed:

Problems of sea turtle conservation in India and the goals of this workshop	J C Daniel B N H S
Sea turtles in India, their status and distribution	Satish Bhaskar WWF-India
Mass nesting beaches of Orissa	C. Kar
Value of sea turtles to India	M. Rajagopalan CMFRI
The threats to sea turtles in India	Shekar Dattatri MSPT
Recovery and management programmes for sea turtles in India their value, logistics and problems	Rom Whitaker MSPT
Contemporary problems in sea turtle biology and conservation- the urgent need for regional cooperation.	J G Frazier Smithsonian

The afternoon sessions of the last day were devoted exclusively to hearing State Status Reports from participants and recommendations for future research and conservation strategies for India. The proceedings of the workshop will be published as a special bulletin by the CMFRI (Post Bag 1912, Cochin 682 018, India).

Special sea turtle publications

The CMFRI has produced two sea turtle bulletins, "Special issue on management and conservation" (Marine Fisheries Information Service, No. 50, June 1983) and "Sea turtle research and conservation (CMFRI special bulletin No. 35, February 1984). Of the 17 assorted papers on sea turtle conservation, management and research, two- "Turtle poisoning" and "Observations on mass nesting and immediate post nesting activities of the olive ridley at Gahirmatha, 1984" are of special interest

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HERP GUIDE TO SRI LANKA

Had early Arab traders not named Sri Lanka Serendib (from which we get the word 'serendipity') some herpetologist certainly would have, on discovering the reptilian surprises of this 432 mile long and 224 mile wide Indian ocean island. With 92 species of snakes, 60 species of lizards, 2 monitors, 2 crocodiles, 8 species of chelonians and 35 species of amphibians, Sri Lanka's herpetofauna is as varied as it is plentiful. Having once been a part of South India and earlier, the continent of Gondwanaland, Sri Lanka's herpetofauna is zoogeographically very interesting with forms from India as well as the Malaysian region. The several endemic species make it all the more attractive to the herpetologist.

Habitats range from semi-deserts to the true rain forests of the southern hills, from marine areas and beaches fringing the coast to plains and foothills and ultimately the montane forests of the Central and Uva Province (Gans in De Silva, 1980). Altitudinally Sri Lanka is divided into three peneplains, the first being the lowest with an average altitude of 100 ft above MSL) and the third being the highest, at 5000-6000 ft. Climatically the island has two categories: the dry zone of the north and east constituting two-thirds of the country receives an annual monsoon from October to April, and the south-western wet zone which gets two monsoons and remains humid and dripping year round (Senanayake, 1975).

The island seems to have been especially constructed to suit the jet-age herpetologist (with little time and no money). One can watch turtles nesting on the beach one night and the next morning arrive in the heart of virgin rain forest. Whether you are a taxonomist, behaviourist, zoogeographist or just plain interested a trip to the island will surely be very worthwhile. And if you haven't got a clue as to where to start looking, this brief herp travelogue may serve as a useful pointer.

Kellawatte canal, Colombo city

Speciality: Water monitors (Varanus salvator); "Kabaragoya" in Sinhalese. Once you slither down the garbage slope and reach the southern bank of the canal, you can spend many interesting

hours watching large water monitors basking, eating or just cruising along lazily. During my first visits to this 100 ft wide canal in 1980, the population seemed to be 8 adults (sex unknown) and 9 hatchlings in the approximately 2 km stretch between Wallawatte bridge on Galle Road and the one on Havelock Road to the east. The same number of adults (but not juveniles) were seen during August 1983 indicating that the population is a resident one. Kabaragoya are not hunted in Sri Lanka and are hence not unduly scared of humans; in fact they can be quite bold. My observations at the canal were made with 7 x 50 binoculars. The adults are most active in the morning between 9.30 and 11.30 and can be seen foraging along the canal edges. The early morning is reserved for basking on mats of floating vegetation or tree trunks in the water. On hot days the reptiles retire under the shade of overhanging vegetation between 12.00 and 16.00 hours when they become somewhat active again. In June 1981 I observed 9 hatchlings over a period of several days on the southern bank of the canal. They were distributed within a distance of 1 km and could be repeatedly seen at the same spot day after day. They seemed to bask longer than the adults. Several were easily approached and caught with a stick and noose arrangement. No juveniles were seen on subsequent trips.

Other excellent water monitor observation sites are the canals behind the slaughter houses at Minvoongoda, Ratnapura and the Kalutara estuary.

Sinharaja Rain Forest

Sinharaja, situated in the south-west, is the only near-virgin rain forest in Sri Lanka today. Although only 13 miles long and 5 miles wide, it is one of the most interesting herp areas in the country and supports numerous reptiles some of which are endemic to the island. Over 6 agamids, 3 skinks, 4 geckos, 19 snakes and 16 amphibians have been recorded from this area (Senanayake, 1975). Notable among the endemics which occur here are the agamids Ceratophora aspera and Lyriocephalus scutatus, both rather devlish looking animals. The former is a small species adult males of which attain a length of 3.1 cm snout-vent (females are slightly larger). Both sexes have a well developed, horn-like rostral appendage about 7 mm in males, 3 mm in females; (Deraniyagala, 1953). During a recent trip we found an adult male C. aspera at the base of a large tree near a stream. On the same afternoon we saw a black common cobra (Naja naja), several of the ubiquitous Otocryptis weighmanii, a Dendrelaphis and several Calotes calotes.

Lyriocephalus scutatus is a relatively large species growing to over 14 cm (s-v) in length. It has a prominent rostral knob. This lizard is also fairly common around Kandy and in the small patch of woodland known as Udawattakele outside Kandy in the Central Provinc

Among snakes, the rare Balanophis ceylonensis and Cercansis carinatus also occur in this area. Three species of pit vipers, Hypnale hypnale, H. nepa and Trimeresurus trigonocephalus are fairly common as are the vine snakes Ahaetulla nasutus and A. pulverulentus.

To visit Sinharaja permission must be obtained from the Forest Department offices in Colombo. By road it is 4 hours from Colombo. If you are using the bus service, take the following route: Colombo- Kalutara- Matugama- Mathana - Veddagala. From Veddagala it is a 3 km walk to Koduva camp, the entrance to the reserve forest.

If especially interested in the conservation of this unique area, contact: March for Conservation, c/o Dept of Zoology, University of Colombo.

Horton Plains Sanctuary

Rolling meadows and lush grasslands interspersed with stands of stunted windblown montane vegetation mark the topography of this montane forest sanctuary situated at an altitude of 8000 ft in the Central Province. The agamids Ceratophora stoddartii, Cophotis ceylanica and Calotes nigrilabris are among the endemic herps. The first is a medium sized (8 cm s-v), colourful, semi-terrestrial species with a prominent rostral appendage which is longer in males. Cophotis is a small arboreal form found on tree trunks at eye level. This species is ovoviparous, giving birth to five young at a time (Deraniyagala, 1953). According to Smith (1935) such a condition is unknown amongst the Agamida with the exception of Phrynocephalus. Calotes nigrilabris is extremely common throughout and several gravid females were seen in the third week of August 1983.

To get there, take a train from Colombo to Ohiya; then an 8 km walk from Ohiya Railway Station to Anderson Lodge. Permission to visit should be obtained from the Wildlife Dept., Zoological Gardens, Dehiwala.

Kosgoda

45 miles south of Colombo is Sri Lanka's finest sea turtle nesting beach, Kosgoda. Four species nest at different times of the year on this broad sandy stretch. The green (Chelonia mydas) nests in fairly large numbers year round with a peak in April-May, Olive Ridleys (Lepidochelys olivacea) and hawksbills (Eretmochelys imbricata) nest between December and February. Leatherbacks (Dermochelys coriacea) nest mainly during June-August; small numbers nest during December-February.

Water monitors and the pond terrapin Melanochelys trijuga thermalis are found in the Kosgoda lagoon.

To get there take any bus going south past Bentota; get off at the Kosgoda police station and ask for the Wildlife and Nature Protection Society hatchery (there is also a signboard). A local fisherman called Similiyas Abrew is knowledgeable about turtles and a good guide.

Yala and Wilpattu National Parks

Yala on the southern coast and Wilpattu on the north-western coast are both more or less identical in topography, climate, vegetation and fauna. Marsh crocodiles (Crocodylus palustris), common monitor

/- identical

lizards (Varanus bengalensis), star tortoises (Geochelone elegans) and flap-shell turtles (Lissemys punctata) are abundant in both parks and can be seen fairly easily. Both places are easily accessible by road.

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A Calotes grandisquamis nest

24 October '83; Nadukani (Vellikulangara), Trichur District, Kerala State.

During the course of my Heosemys study I found a female Calotes grandisquamis just as she was closing her nest after egg laying. She knocked the ground with her snout to pack the nest; 33-35 knocks alternated by shovelling earth into the hole mostly using the right fore-arm and alternatively the left.

The nest was close to a small rock in the open under sparse trees, shrubs with access to sunlight. The procedure was still incomplete at 1555 (we found her at 1610 hours). She was aware of our presence, warning us at intervals by letting down her dewlap. She laid 11 eggs and the nest hole measured 60mm x 40mm. Nest depth was 40mm. Total area cleared was 200mm.

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Spiny-tailed lizard oil

Although the spiny-tailed lizard (Uromastix hardwickii) is on Schedule II of the Wildlife (Protection) Act of 1972, Calcutta abounds in 'medicine men' who sell its oil. "Sanda" oil is a purported cure for rheumatism. The traders are generally tribals from the arid regions of north-western India and the procedure for extracting the oil is described by Kehimkar (Hornbill, July-August 1983). The sanda is turned over on its back and the belly slit open. The still alive and writing lizard is then thrown into a pot of hot oil. In storage, the lizards' spines are broken to prevent escape.

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RIDLEY HATCHLINGS AT GAHIRMATHA

On the 3rd and 4th of April, 1984, I was at Gahirmatha (Bhitar Kanika Sanctuary, Orissa), observing the hatchlings of the olive ridley turtle (Lepidochelys olivacea) for the World Wildlife Fund-India.

While approaching Gahirmatha beach, via Dangmal, a large number of hatchlings were seen swimming upstream. In fact at one point in the river, 10 Km from the sea mouth, the hatchling flow rate was calculated at around 18,000 per hour, the concentration being at the middle of the 200m wide river.

Some areas at Gahirmatha beach seemed to be be covered by a moving carpet of ridley hatchlings racing towards the sea; From one nest 80 hatchlings were observed to emerge at dusk; they were 140 mm in average carapace length. Hatchlings are positively phototrophic, like the adult females I saw on a previous visit, being attracted to the torch beam shone near them. A great many of them gathered in front of our hut at night, drawn by the bright light issuing from the petromax lamp.

Probably the incredible number of hatchlings produced from a nest have ensured the survival of the species, which does not seem to be lacking either in number or variety of predators, both terrestrial and aquatic. At Gahirmatha, I saw several hatchlings in the clutches of ghost crabs (Ocypode sp.), one being recovered from a hole with a neatly severed head. Dogs were seen following the tracks of the nesting adults, sniffing and digging up the nest, and eating the exposed eggs. Avian predators however were seen to take the heaviest toll. Jungle crow (Corvus macrorhynchos) and three species of gulls - blackheaded (Larus ridibundus), brown headed (L. brunnicephalus) and great blackheaded (L. ichthyaetus) were seen both eating the hatchlings outright and acting as secondary predators, feeding on the eggs excavated by the dogs. Terns, because of the structure of their bills, are usually unable to make a meal of the hatchlings. However, one of the larger species, the Caspian tern (Hydroprogne caspia) was seen swooping down to the river, to pick up hatchling ridleys.

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SOWERBY & LEAR'S

TORTOISES, TERRAPINS AND TURTLES

This book is generally regarded as the finest atlas of turtle illustrations ever produced, drawn by the famous nineteenth century artists James de Carle Sowerby and Edward Lear. The short text is by John Edward Gray. Orginally published in London in 1872, the book was reprinted by the Society for the Study of Amphibians and Reptiles in 1970 but this edition was sold out some years ago. The reprint includes an extensive introduction by Ernest E. Williams, of Harvard University, detailing the history of the book and its authors and artists, and equating the scientific names to current nomenclature.

The atlas includes 61 black-and-white plates of turtles, depicting species from all parts of the world. The book measures 8½ by 11 inches (about 22 by 28 cm) and is clothbound. Copies can be purchased for $20.00 from the SSAR Publications Secretary, Douglas H. Taylor, Department of Zoology, Miami University, Oxford, Ohio 45056, U.S.A. The price includes postage in the U.S.A., only the additional surface mailing costs will be charged for non-U.S.A. shipments. Payments from overseas should be made in U.S.A. funds, by International Money Order, or may be charged to Master Card or VISA (include account number and expiration date of credit card).

SSAR also publishes Journal of Herpetology, Herpetological Review, Facsimile Reprints in Herpetology, Herpetological Circulars, Catalogue of American Amphibians and Reptiles, Contributions to Herpetology and Recent Herpetological Literature. Inquiries about membership in the Society or purchase of back issues can be addressed to Dr. Taylor.

WORLD CONGRESS OF HERPETOLOGY

Planning for the first World Congress of Herpetology is proceeding on schedule. The Executive Committee, an international group of 17 persons, and the recently-elected 50-member International Herpetological Committee are now evaluating the criteria to be used in choosing a site and date, and discussing the format and content of the Congress. It is our plan to organize a Congress to be held in about 4 years that will be accessible to and of interest to all persons who study amphibians and reptiles. Potential hosts should contact the Secretary-General: Kraig Adler, Cornell University, Seeley G. Mudd Hall, Ithaca, New York 14853, USA. As soon as a decision on venue and date is reached, an announcement will be published in this journal giving the full details and the address to write for further information.

The Congress itself will be selfsupporting, but in the meantim during these all-important planning years, the organization will have considerable expenses--mostly printing and postage--yet it has, at the moment, no budget. The Committeee has decided to raise the necessary funds by asking interested individuals to make a one-time contribution. Those persons donating 100 Dutch guilders (U.S. $35) would be named as "Sponsors," a designation that would appear in the formal program of the meeting; those able to contribute 1000 guilders would be designated "Benefactors." In the meantime, all such persons will receive copies of our Newsletter which will keep them informed of Congress planning activities. We hope that many colleagues will join with us in promoting herpetology on an international basis through the Congress. If you are able to do so your contribution can be made to one of our official accounts:

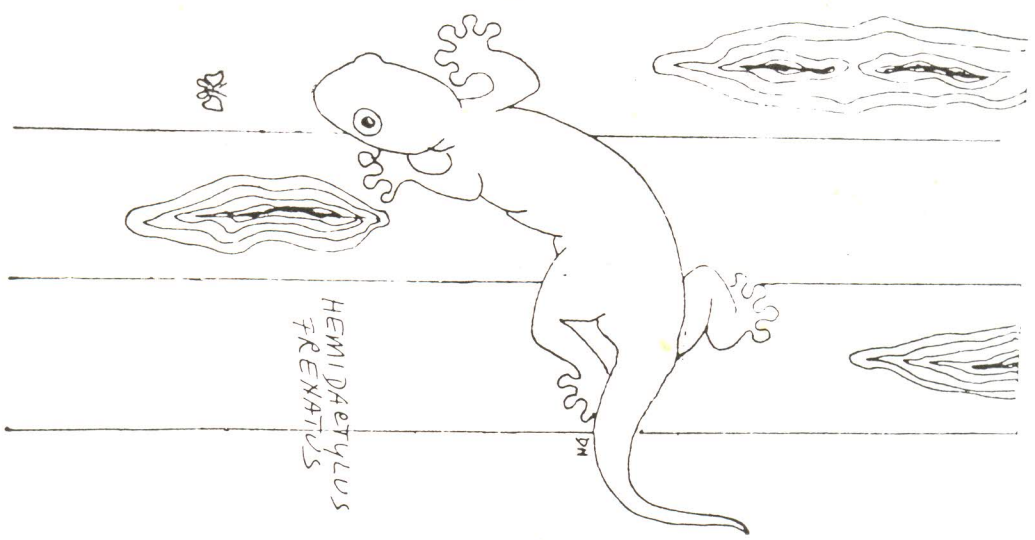
- POSTAL CHECKING ACCOUNT: Dr.M.S. Hoogmoed, Leiden, account number 5327161.
- BANK ACCOUNT: World Congress of Herpetology, Algemene Bank Nederland (A.B.N.), Leiden, account number 566274078.
- BANK ACCOUNT: World Congress of Herpetology, Marine Midland Bank, New York City, account number 006667341.

Contributions can be made in Dutch guilders to either account in Leiden or in U.S. dollars to that in New York. Checks may also be sent directly to the Treasurer: Marinus S. Hoogmoed Rijksmuseum van Natuurlijke Historie, P.O.Box 9517, 2300 RA Leiden, The Netherlands.

SUBSCRIPTION

Hamadryad subscriptions have been raised to Rs. 15 a year to meet increased paper and postage costs. Foreign subscriptions are now $5 air mail. Sea-mail requests are banned in order to cut down on sorting and mailing time. In any case we gather that newsletters sent by surface mail arrive in several small pieces and are difficult to read.

LOCAL	Rs. 15 per year (3 issues)
FOREIGN	$ 5 per year



Cover: **Ptyas mucosus,** the Indian rat snake

Newsletter of the Madras Snake Park Trust, Guindy Deer Park, Madras-600 022.
Edited by Zahida Whitaker. Information may be used elsewhere with acknowledgement given to Hamadryad, Madras Snake Park Trust.