Cobra

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CHENNAI SNAKE PARK TRUST

Quarterly Newsletter of the Chennai Snake Park Trust

Cover

Travancore tortoise (*Indotestudo travancorica*)

Found in moist evergreen and semi-evergreen forests of Western Ghats. Largely herbivorous.

Photo: K. Ramachandran
Rajapalayam

The Viper

"Barefoot I went and made no sound;
The earth was hot beneath:
The air was quivering around;
The circling kestrel eyed the ground
And hung above the heath.

There in the pathway stretched along
The lovely serpent lay:
She reared not up the heath among,
She bowed her head, she sheathed her tongue,
And shining stole away

Fair was the brave embroidered dress,
Fairer the gold eyes shone:
Loving her not, yet did I bless
The fallen angel's comeliness;
And gazed when she had gone."

- Ruth Pitter.

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THE PLIGHT OF THE RIDLEY

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Introduction

During the months of December and March there is a marine reptile that visits the Chennai coast. This is the story of that reptile – the olive ridley. The olive ridley (*Lepidochelys olivacea* Eschscholtz) is the smallest of the sea turtles and is known to nest all over the coast of India. They are much larger than their terrestrial counterparts and can weigh close to 50 kilos. It has been proved by genetic studies that turtles return to the same beaches to nest for which purpose they migrate long distances using ocean currents. The clutch size varies between 50-180 eggs. The eggs are close to 4-7 cm in diameter. The hatchlings that emerge *en masse* on the nesting beaches instinctively head towards the sea at night. The nesting is of two types. The common one is the dispersed nesting that happens, as for instance, on the Chennai coast every season when individual females come ashore to lay eggs. The other one is a rare event called 'Arribada' which in Spanish means 'arrival'. This happens only on a few stretches of beach in the world and, in India, it happens in Gahirmatha , Rushukulya and Devi river mouth in Orissa.. Synchronized nesting of close to five lakh olive ridleys within a short period of two weeks is a breathtaking spectacle for the professional and layman alike.

Olive ridley is facing extinction in India due to various factors like pollution, accidental drowning of adults in trawler nets, poaching of adults and eggs for consumption, loss of nesting habitats and, sometimes, mega-development projects. Beachfront lighting and the construction of concrete structures close to the high-tide line have drastically affected the nesting. Bright lights on the beach disorient the hatchlings that are sensitive to light; instead of moving towards the sea they move towards the land and get killed by predators or are run over by vehicles.

Study area

South Chennai coast from Besant Nagar in Chennai to Marakkanam near Pondicherry was monitored for nesting and adult mortality during the period of December 2003 to April 2004 as part of a study. The approximate length of the sandy beach is close to 150 km. The various kinds of beach habitats include open beaches with little vegetation, beaches with major vegetation like *Ipomoea pescaprae, Casuarina equisetifolia, Spinifex littoreus and Pandanus spp* in varying magnitudes of distribution, sandbars at river mouths and residential areas. There are also beach resorts, rocky outcrops and beaches that are used for recreational purposes. The nesting season starts from late December and goes on till April. There is mist in the months of December and January with occasional rain. Fishing villages are present at regular intervals along the coast. Problems associated with conservation will be discussed briefly.

The plight of the ridley

In Tamil Nadu, south Chennai beach is an important nesting ground of the olive ridley. Thanks to a conservation effort started in 1974 by Romulus Whitaker, close to two lakh hatchlings have been released so far through hatchery operations. Sighting ten nests as one walks along a 10 km stretch anywhere in South Chennai coast on a single night during the nesting season wouldn't have raised an eyebrow 30 years ago. But now such a sighting has become a rarity. Several non-governmental organizations are

working hard to save the olive ridley but how successful they will be in their efforts remains to be seen.

Awareness creation on the plight of the ridley has been the target of conservation efforts. On a 7-km stretch of beach in Chennai, a non-governmental organization has been involved in awareness creation and running a hatchery under near - natural conditions. Their efforts have been fruitful since nesting of the olive ridley is still observed though the habitat has become predominantly semi-urban or urban. During an intensive study on a 50 km stretch of beach south of Mamallapuram which could be considered a natural setting, a total of 139 turtle carcasses were recorded out of which five were green turtles (*Chelonia mydas*) and the rest olive ridley. The cause for mortality was mainly trawler operations as could be seen from the blotted bodies and chopped-off flippers. Such a scenario where hatchlings are released in one area and get killed in large numbers in another area is not a positive indication of conservation in action. There are both natural and man-associated predators that increase in magnitude as one approaches Chennai City. The survival rate of hatchlings in the hatchery is very slim if the hatchlings are released in the same place day after day. A most important question that arises is whether the olive ridley can really be saved by releasing hatchlings alone.

Suggestions for managing the olive ridley off Chennai coast

For long term survival of a species there should be healthy breeding population in the wild. Prevention of drowning of adult turtles during fishing activities must be the major objective of NGO's working in the field. Hatcheries can act as field laboratories for conservation education but for the stabilization of the wild stock some effort should be made to prevent turtles from drowning. Turtle Excluder Devices (TED) on trawler nets provide the solution for saving adult turtles. The TED facilitates escape of the turtles caught inadvertently in the trawler nets while the fishes are retained within. If this device is made mandatory for all fishing boats it could save lots of adult turtles. There should be a coordinated effort by all

NGO's concerned with sea turtle conservation in Chennai coast so that there is a proper management plan for long term survival of the population.

Acknowledgement

The observations in this paper were recorded during an MS project on sea turtles in Mammalapuram coast during the 2003-2004 nesting season. I would like to thank Dr. V.S.Vijayan for providing facilities in Salim Ali Centre for Ornithology and Natural History (SACON) and Dr.S.Bhupathy of SACON for giving financial help and technical guidance for the successful completion of the project. This is part of a larger project coordinated by the Madras Crocodile Bank Trust. My sincere gratitude to the Chief Wildlife Warden, Tamil Nadu for issuing permits to undertake the study.

Reference

J.Subramanean, M.Vijay, Dr.S. Bhupathy. 2004. Status of olive ridley sea turtle along the Chennai coast, Southeastern India - Salim ali Centre For Ornithology and Natural History.

PREDATORY BEHAVIOUR OF COMMON INDIAN MONITOR LIZARD (*VARANUS BENGALENSIS* DAUDIN)

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Introduction

The monitor lizards belong to the family Varanidae and are distinguished by their long and flattened body, long tail, long neck and the extremely elongated, slender, forked tongue similar to that of snakes. They are widely distributed and live in all biotopes from evergreen forests to desert fringes. It is the commonest among the four species. Out of the four species, the common monitor *varanus bengalensis* Daudin, is the most common.

The present observation was on behaviour of common Indian monitor lizard (*Varanus bengalensis*) feeding on a common garden lizard (*Calotes versicolor*). This was observed in the Arignar Anna Zoological Park, Vandalur, Chennai, situated 28 km away from the metropolitan city of Chennai on the GST road.

Observation and Results

On the 24th October 2004 at 11.00 A.M. the author while observing a group behavior of common langur (*Semnopithecus entellus*) in a spacious, wooded, dry moated and naturalistic enclosure, noticed a common monitor lizard chasing a garden lizard and finally grab it in its mouth. It started to hit the garden lizard against the floor vigorously in order to immobilize it. Then

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it moved its mouth towards the head of the garden lizard and started swallowing it. The prey was fully swallowed within 5 minutes. The garden lizard was presumed to be an adult female judged by its size and colouration.

Discussion

The monitor lizard is a carnivorous reptile. The available information on the food of varanid lizards is largely in the form of prey lists only. (Stirling, 1912; Burden, 1928; Waite, 1929; Cowles, 1930; Zakhidov, 1938). Few publications provide data useful in determining the predatory strategy of the varanids. Exceptions are Drydon, 1965; Pianka; 1968; 1970, 1971 and Auffenberg, 1981. Daniel (1983) in his *Book of Indian Reptiles* reports that the monitor lizard feeds on small mammals, birds, eggs of birds and crocodile babies and snakes, fish, crabs and arachnids and carrion. Most of the published data are of a very general nature. (Smith, 1931; Deraniyagala, 1931; Smith, 1935; Misra, 1960 and Minton, 1966). The most detailed studies are those by Sharma and Vazirani (1977) and Auffenberg and Ipe (1983). The above studies are based on the food remnants found in the digestive tract of the monitor lizard. This observation is the first report of feeding of garden lizard by the common monitor lizard.

Acknowledgements

The author is thankful to Mr. P.C. Tyagi I.F.S., Director and Mr. Dinkar Kumar I.F.S., Deputy Director, Arignar Anna Zoological Park, Vandalur, Chennai for their encouragement in the research. I also thank Mr.G.Srinivas JRF (Project on LTM Co–ordinated Captive Breeding Programme) for his valuable help in manuscript preparation.

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A JUVENILE COMMON INDIAN MONITOR LIZARD (*VARANUS BENGALENSIS* DAUDIN) SEARCHING THE NEST OF A HOUSE SPARROW (*PASSER DOMESTICUS* LINNAEUS)

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All varanids are exclusively carnivorous, except *Varanus olivaceous* (found in the Philippines) which is partially frugivorous (De Lisle, 1996). They are active foragers and take a wide range of prey items available in their habitat such as insects, scorpions, spiders, centipedes, crabs, crustaceans, toads, birds, rats, even rotting fish and are very fond of eggs of birds and reptiles. It steals eggs from nests of birds. (Luxmoore et. al., 1990; De Lisle, 1996 and Sharma, 2002). It seeks the prey by smell and sight (Luxmoore et. al., 1990). Though adult varanids are known to be important predators of smaller species and even the young of their own species, birds are the primary prey of the juvenile varanids. (De Lisle, 1996).

On the 23rd May 2004, I noticed a juvenile common monitor lizard (*Varanus bengalensis*) searching the nest of a house sparrow (*Passer domesticus*) in Zoological Survey of India campus, Jodhpur. At 11.00 hrs I found the lizard on the window of my house. Suddenly, it came to my mind that there was a nest of a house sparrow in one corner of the window. Taking my camera I went outside and started to observe the behaviour of the lizard. The lizard approached the nest slowly, flicking its tongue in and out. On approaching the nest, it first put its head into the nest, exploring it

for 2 - 3 minutes and then moved ahead of the nest and took rest. After 5 - 7 minutes, again it came back to the nest. This time it started removing some nest material with its mouth. Since it could find nothing of interest, it climbed down to the ground and disappeared in the vegetation. The observation extended for 5 - 20 minutes.

I have observed more than five *V. bengalensis* living in the campus. They were found living inside the drains covered with cement slabs and not in burrows in the ground which are the usual habitation of this species. In the last one month since this observation, I have come across juveniles of common Indian monitor lizard at least on two occasions inside the campus. This indicates breeding of this vulnerable species inside the campus.

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REPTILES FROM SHILLONG (MEGHALAYA)

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Shillong, the capital of Meghalaya, situated at 5000' above mean sea level in the foot hills of Eastern Himalayas is one of the most sought-after hill stations in North East India. It has an annual rainfall of 178.2 cm, relative humidity ranges from 84.6° to 90.8° and the temperature varies from 2.2° C to 28° C. The Zoological Survey of India established its Eastern Regional Station here in March 1959 and the results of various surveys conducted and projects undertaken have been published as research papers under State Fauna Series in the Fauna of Maghalaya. We searched these collections and records to pinpoint the reptile material from Shillong and its environs and it revealed 33 species of reptiles as listed below:

Class : Reptilia
Order : Testudines
Family : Emydidae

1. *Kachuga tectum* (Gray)

Order : Squamata
Family : Gekkonidae

2. *Cosymbotus platyurus* (Schneider)

Family: Agamidae

3. *Calotes jerdoni* Gunther
4. *Calotes versicolor* (Daudin)
5. *Ptyctolaemus gularis* Peters

Family : Scincidae

6. *Mabuya macularia* (Blyth)
7. *Sphenomorphus indicus* (Gray)
8. *Sphenomorphus maculatus* (Blyth)

Family: Lacertidae

9. *Takydromus sexlineatus khasiensis* Boulenger

Family : Varanidae

10. *Varanus bengalensis* (Daudin)

Family : Anguidae

11. *Ophisaurus gracilis* (Gray)

Family : Typhlopidae

12. *Typhlops diaridii* Schlegel

Family : Colubridae

13. *Amphiesma parallela* (Boulenger)
14. *Amphiesma stolata* (Linnaeus)
15. *Blythia reticulata* (Blyth)
16. *Boiga trigonatus* (Schneider)
17. *Elaphe porphyracea* (Cantor)
18. *Elaphe prasina* (Blyth)
19. *Lycodon jara* (Shaw)
20. *Pareas monticola* (Cantor)
21. *Psammodynastes pulverulentus* (Boie)
22. *Rhabdophis himalayanus* (Gunther)
23. *Rhabdophis subminiatus* (Schlegel)
24. *Rhabdops bicolor* (Blyth)
25. *Sibynophis collaris* (Gray)
26. *Trachischium monticolum* (Cantor)
27. *Xenochrophis piscator* (Schneider)

Family: Elapidae

28. *Sinomicrurus macclellandi* (Reinhardt)
29. *Ophiophagus hannah* (Cantor)

Family: Crotalidae

30. *Trimeresurus albolabris* Gray
31. *Trimeresurus erythrurus* (Gantor)
32. *Protobothrops jerdonii* Gunther
33. *Ovophis monticola* Gunther

Agamid lizards, *Ptyctolaemus gularis, Calotes jerdoni and Calotes versicolor* are commonly found from spring to summer. Equally available are *Sphenomorphus indicus*. There is record of two specimens of *Takydromus sexlineatus khasiensis* collected in July 1967. *Varanus* species being protected by law are not collected. *Ophisaurus gracilis*, the limbless lizard, once fairly common within Shillong is not commonly encountered. Of the *colubrid* snakes *Amphiesma, Rhabdophis* and *Trachischium* are not uncommon. Mountain pit viper, *Ovophis monticola,* is by far the most common venomous snake. Wall (1908) made the same observation. Very recently, we obtained a specimen with 15 eggs measuring 14 x 23 to 25 x 41 mm. All the pit vipers found here are colourful.

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The authors are grateful to Dr.J.R.B.Alfred, Director, Zoological Survey of India, Kolkata and to Shri.S.J.S.Hattar, Officer-in-charge, Eastern Regional Station, Zoological Survey of India, Shillong for permission to undertake the work and for laboratory facilities.

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SIZE COMPOSITION AND MORPHOMETRY OF INCIDENTALLY CAUGHT GREEN TURTLES (*CHELONIA MYDAS* LINNAEUS) ALONG THE SAURASHTRA COAST, GUJARAT

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Introduction

The size frequency of a population is an essential parameter of that population's demographic structure. By analyzing the size composition of sea turtles, habitat quality and physiological status can be understood (Bolten, 1999). Morphometric data on the incidentally caught turtles can be used as a tool to estimate from the measurement of one body part, the measurement of other parts and weight. Morphometric characteristics of a population can help to identify the population status and to find out the species and size group that get entangled in the fishing gears. It is also helpful to suggest measures to reduce the mortality by altering the mesh size or by other effective conservation measures.

The present investigation on the incidental catch of sea turtles was carried out in different coastal areas of Saurashtra coast from Somnath to Okha. The beaches such as Somnath, Veraval, Mangrol,Shill, Athroli, Madahavpur, Chingariya, Gorsar, Diwasa, Odathar,Narwaimandir, Porbandar, Dwarka, Okha and Bewt Dwarka were surveyed. Data were collected in the months of May 1999, December 2001 and January 2002. During the investigation, 69 green turtle were found caught in trawl nets in this area. All the details presented relate to this species. For taking measurements of different parts of the body, procedure given by Bolten (1999) was followed. All the linear measurements were taken to the nearest 0.5 cm accuracy.

Results

Size composition of the green turtles of Saurashtra coast

The curved carapace length of 69 green turtles *Chelonia mydas* ranged from 20.0 to 118.0 cm (mean = 85.6 ± 22.3 cm), curved carapace width from 21.0 to 107 cm (mean= 77.2 ± 19.3 cm), plastron length from 18.0 to 90.0 cm (mean= 66.8 ± 16.9 cm), plastron width from 18.0 to 89.0 cm (mean = 65. 5 ± 16.4 cm). The mean body weight was 71.8 ± 25.6 and it ranged from 2.0 to 160 kg.

Size frequency distribution of the green turtle in different trawl nets

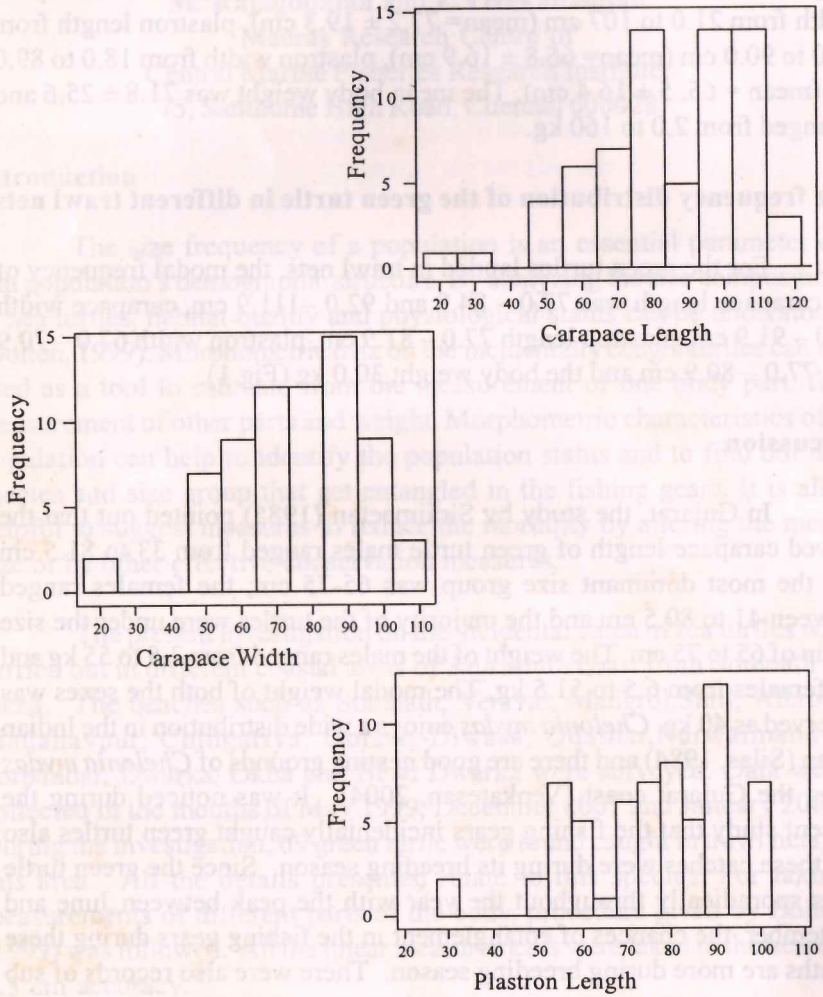
For the green turtles landed in trawl nets, the modal frequency of the carapace length was 77.0 – 84.9 and 92.0 –111.9 cm, carapace width 87.0 – 91.9 cm, plastron length 77.0 – 81.9 cm, plastron width 67.0 – 70.9 and 77.0 – 80.9 cm and the body weight 30.0 kg (Fig.1).

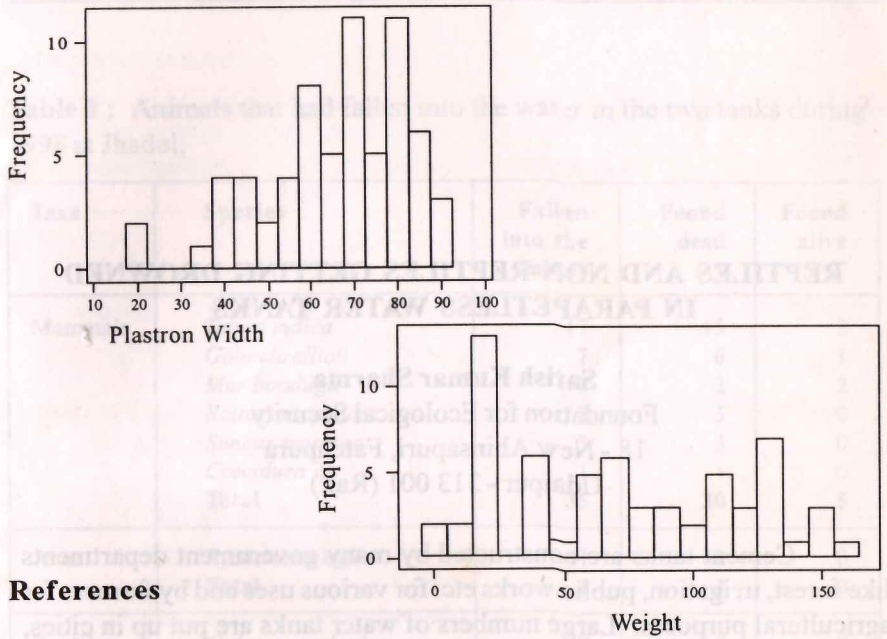
Discussion

In Gujarat, the study by Siraimeetan (1985) pointed out that the curved carapace length of green turtle males ranged from 33 to 81.5 cm and the most dominant size group was 65-75 cm; the females ranged between 41 to 80.5 cm and the majority of the turtles were under the size group of 65 to 75 cm. The weight of the males ranged from 3.5 to 55 kg and the females from 6.5 to 51.5 kg. The modal weight of both the sexes was observed as 40 kg. *Chelonia mydas* enjoys a wide distribution in the Indian ocean (Silas, 1984) and there are good nesting grounds of *Chelonia mydas* along the Gujarat coast (Venkatesan, 2004). It was noticed during the present study that the fishing gears incidentally caught green turtles also and these catches were during its breeding season. Since the green turtle nests sporadically throughout the year with the peak between June and September, the chances of entanglement in the fishing gears during these months are more during breeding season. There were also records of sub

adults being landed during the study period, and probably these individuals were incidentally caught while feeding in shallow waters (Carlson, 1999). Steps should be taken to prevent capture of turtles in the fishing gears.

Fig. 1. Frequency histogram for the green turtles caught by trawl net in Saurashtra coast, Gujarat





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REPTILES AND NON-REPTILES GETTING DROWNED IN PARAPETLESS WATER TANKS

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Cement tanks are constructed by many government departments like forest, irrigation, public works etc. for various uses and by farmers for agricultural purposes. Large numbers of water tanks are put up in cities, towns and villages during building construction works. Many of these lack parapet walls and they often cause the death of land-dwelling creatures by drowning. When the animals fall into the vertical-walled tanks, they are unable to come out and meet their death either by starvation, injury or by drowning (Sharma 1993, '94 and '95).

A study was conducted at Jhodol in Udaipur district during 1998 from January to December to know the extent of casualties to reptiles and non-reptiles that stumble into tanks having no parapet wall. Observations were made in two small water-storage tanks, which were generally kept half-filled with water. They were located amidst thickets. Observations were made around 07.00 hrs every third or fourth day to count the chordate creatures that had stumbled into the tanks during the preceding days. Dead and live animals were counted separately. All the dead animals obtained from the tanks were buried and live ones were released in surrounding terrestrial habitat then and there after counting. The data are presented in Tables 1 and 2.

Table 1 : Animals that had fallen into the water in the two tanks during 1998 at Jhadol.

Taxa	Species	Fallen into the water	Found dead	Found alive
Mammals	*Tatera indica*	17	15	2
	Golunda ellioti	7	6	1
	Mus booduga	4	2	2
	Rattus cutchicus	3	3	0
	Suncus murinus	3	3	0
	Crecidura sp.	1	1	0
	Total	**35**	**30**	**5**
Aves	*Pycnonotus cafer*	1	1	0
	Total	**1**	**1**	**0**
Reptiles	*Calotes versicolor*	8	0	8
	Varanus bengalensis	3	0	3
	Mabuya carinata	7	0	7
	Elaphe helena	1	0	1
	Oligodon arnensis	1	0	1
	Lycodon aulicus	1	0	1
	*Xenochropis piscator**	2	0	2
	Bungarus caeruleus	1	0	1
	Total	**24**	**0**	**24**
Amphibians	Rana tigerina*	3	0	3
	*Euphlyctis cynophlyctis**	15	0	15
	*Sphaerotheca breviceps**	8	2	6
	*Uperodon systoma**	3	0	3
	*Bufo melanostictus**	7	2	5
	*B. stomaticus**	9	3	6
	Total	**45**	**7**	**38**

* Not likely to be accidental fall. Cause of death not ascertained.

Table 2 : Casualities of animals of different taxa that fell in to the two tanks.

Taxa	Total number	Animals found		% Dead animals
		Alive	Dead	
Mammals	35	5	30	85.7
Aves	1	1	1	100.0
Reptiles	24	24	0	0.0
Amphibians*	45	38	7	18.4

* Not likely to be accidental fall. Cause of death not ascertained.

It is evident from Tables 1 and 2 that reptiles are less prone to death when they stumble into such tanks from which escape is not possible. Reptiles keep themselves near the wall. They get good support of even vertical walls and keep their head high enough from water level. Sometimes they even cling on the vertical wall high up from the water level. They have good swimming capacity in water. Being cold-blooded animals, they can bear the temperature loss. They can draw good support by touching whole ventral surface from rough plastered walls also. All these capabilities are not available to mammals and birds and they die of drowning. Once hair or feathers of these animals become wet, thermal losses start and their swimming performance gradually becomes poor. Their body is not adopted to get good support from vertical walls. They ultimately die if not saved in time. It is true that non-aquatic reptiles also die if not removed from water for long time but they outlast mammals and birds. Fossorial and terrestrial amphibians also have poor swimming capacity, specially during non-breeding period and die of drowning.

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HIBERNATION OF A COMMON GARDEN LIZARD (*CALOTES VERSICOLOR* DAUDIN) IN A DESERTED NEST OF PURPLE SUNBIRD (*NECTARINIA ASIATICA* LATHAM)

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The Purple Sunbird, *Necterinia asiatica* (Latham) is a common bird in gardens and forest outskirts of southern Rajasthan. Pendulous nests are constructed by the bird in the months of February - March. By the end of summer, breeding is completed and nests are deserted by the birds. During summer of 2002, a nest was constructed by a pair of purple sunbirds on a branch of a potted climber of *Asparagus racemosus*, kept in the varandah of a house at Hiran Magri Sector - 11, in Udaipur City. Though a good number of plants of various height were present in the home garden, the climber in the verandah was selected for nesting by the birds.

The deserted nest remained intact after the breeding season was over in March and a female garden lizard *Calotes versicolor* occupied it in the second week of November-2002 for passing the winter. Sometimes, the lizard was seen basking on the garden plants in the hotter hours of the day but it used to return in the nest before sunset. It left the nest after hibernation on the 12th February - 2002.

Deserted nests of many birds may prove useful for wintering cold-blooded animals like *Calotes versicolor*. Nest of purple sunbird has just enough space to accommodate a *Calotes versicolor*. Since the walls of the nest are sufficiently thick, it can provide good insulation to the wintering animal inside.

Relationship between nests of various birds and *C. versicolor* should be studied. It has been seen scaling the outer surface of nests of baya, *Ploceus philippinus* Linnaeus (Sharma 1995) also. Perhaps deserted nests of baya are also used by *C. versicolor* for wintering purposes.

Acknowledgement

The author is very grateful to Sh. V.S.Rana, Asstt. Conservator of Forests for help in studies.

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RANDOM HARVEST

The Tsunami and the turtles

Following the Tsunami that occurred on the 26th Dec. 2004, it is feared that the population of sea turtles on the coast of Sri Lanka might have suffered a terrible loss. The waves killed thousands of baby turtles that were released into the sea on the same day from the Bentota Sea Turtles Project. Of the 20,000 turtle hatchlings, only some 400 might have escaped the disaster.

(Source: *The New Indian Express,* 23rd Jan. 2005)

Ancient amphibian

While on a geology class trip, Adam Striegel, an undergraduate student at the university of Pittsburgh came across the fossilized skull of a previously unknown genus and species of a 300-million-year-old-amphibian. According to David Berman, Curator of vertebrate paleontology at Pittsburgh's Carnegie Museum of Natural History, this is only the third 300-million-year-old amphibian skull discovered.

(Source: *The New Indian Express,* 19th Dec. 2004)

UVB : villain or not?

Many reasons have been advanced for the well-known phenomenon of substantial global declines in amphibian populations. These include habitat destruction, disease, parasites, introduced exotic species, environmental contaminants, global climate change and ultraviolet radiation band 'B' (UVB). The last mentioned is perceived to be high on the list of concerns. But Prof. Larry Licht, who has been studying the potential effects of UVB on the biology of amphibians, is credited with the observation that "natural ambient UVB is unlikely to actually damage amphibians and plays little, if any, role in their global decline". "Although widely debated, this UVB hypothesis has become deeply entrenched in the public and scientific views of environmental and alarmist scenarios. My research and published work, on the contrary, has shown that the UVB hypothesis has little merit" (*Froglog,* the newsletter of the Declining of Amphibian Populations Task Force of Dec. 2004).

However, another recent issue of *Froglog* (Aug.2004) quotes from an article in *Ecology* (2004), a professional journal, which reiterates the conventional view. Referring to "some recent studies that have called into question whether UV-B radiation is causing severe health problems or mortality in amphibians", Andrew Blaustein, a professor of zoology at Oregon State University and the lead author on the *Ecology* commentary says "At this point we believe that broad body of research (which) conclusively demonstrates that UV-B radiation can cause damage in many species of amphibians at every stage of their life cycle from egg to adult". "Some recent studies that have questioned these effects did not have an adequate base of field experiments, made too many assumptions about how UV-B radiation in the life cycle of one species would releate to other species, and fail to understand the natural behaviour of amphibians and their evolution", the researchers said in their *Ecology* article.

Two-headed tortoise

BBC News Online of Nov. 12, 2004 reported a two-headed hatchling of a Mediterranean spur-thighed tortoise born in the incubator kept by John Jones of Dorchester, U.K. Said Jones: "It is perfectly healthy and is running around with all the other tortoises. I think each head has its own little brain because they try to move in different directions. Both heads eat and sometimes they start on the same piece of food and meet in the middle."

(Source: *Voice of the Turtle,* Newsletter of the San Diego Turtle and Tortoise Society. Vol.35. No.1. Jan. 2005)

And three-eyed frogs?

The New Indian Express of 29th Jan. 2005 reports that Prof. Om Prakash Jangir and his students at the Zoology Department of Dungar college in Bikaner (Rajasthan) have produced frogs with three eyes by transplanting on to adult frogs the pineal glands removed from five-day old tadpoles and rearing them in a medium enriched with vitamin A.

Reintroductions

Reintro Redeux is the newsletter of the Reintroduction Specialist Group, South & East Asia and published by Zoo Outreach Organisation and Wildlife Information & Liaison Development Society. In its first issue, December 2004, Sanjay Molur and Sally Walker give some instances of well-planned, acceptable reintroductions in the region. These include a few amphibian and reptile species: "*Rana taipehensis* frog in Taipei (in the planning stage), Gharial in India (done well to save the species, but not followed up, therefore partially successful. If nothing is done about it in future, the exercise will be a complete failure as the species might become extinct due to threats and lack of habitat), Romer's Tree Frog in Hong Kong". On the whole, it seems to be a bleak scenario so far.

Amphibian conservation in zoos

Kevin Zippel has put together a comprehensive account of amphibian conservation in zoos around the world. It is posted at the AmphibiaWeb web site: www.amphibiaweb.org/aw/declines/zoo/zoos.html

(Source: *Froglog*, Dec.2004)

Endangered: more than what is apparent

A bureau report in *The Hindu* of 16.9.2004 refers to a study at the university of Alberta the findings of which have been published in the journal *Science.* This points out that the common perception of the global extinction crisis actually ignores thousands of affiliated species that are also at risk of being wiped out. Dr.Heather Proctor from the University's Department of Biological Sciences says: "What we found is that with the extinction of a bird or a mammal or a plant you are not necessarily wiping out just one, single species. We are also allowing [the] dependent species to be wiped out as well." The researchers compiled a list of 12,200 plants and animals currently listed as threatened or endangered and the insects, mites, fungi and other organisms that are uniquely adapted to the host and found that at least 200 affiliate species have already been lost through co-extinction and a further 6300 should be classified as "co-endangered"

- B.Vijayaraghavan

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