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11. COMMENTS ON THE REVIEW BY ASAD RAHMANI, ON 'HANDBOOK ON INDIAN WETLAND BIRDS AND THEIR CONSERVATION'[1]

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While reviewing the 'HANDBOOK ON INDIAN WETLAND BIRDS AND THEIR CONSERVATION' by Kumar *et al.* (2005), published by the Zoological Survey of India (ZSI), the reviewer commented, "unfortunately the ZSI is also famous for bringing out boring tomes, full of jargon and technical descriptions of new species which interest only the subject experts. This is now changing, thanks to the book brought out by Dr. Arun Kumar and his team" (Rahmani 2005).

According to the Oxford Advanced Learner's dictionary, the word 'tome' means a large heavy book, especially scholarly or serious one. A scholarly or serious book becomes boring only to the illiterate ignorant. Obviously, it is to the interest of subject experts only.

As rightly pointed out by the reviewer, the mandate of ZSI is to document the animal diversity of the country. In the Convention on Biodiversity of 1992, and later in several new global agreements, the message of conservation and sustainable use of biodiversity has been on the prime agenda. The sole reference system for biodiversity interpretation is catered by the science of Taxonomy (Narendran 2006). Faunal documentation, including describing new species, as practiced by ZSI has to follow the principles of taxonomy using the technical or specialized words particular to that branch of science. Every branch of science uses its own recognized terminologies, however difficult it may be for others to understand.

If the taxonomic descriptions are boring to the reviewer, being the Executive Editor of the *Journal of the Bombay Natural History Society*, why the reviewer provides a section called New Descriptions in his *Journal* that uses only the taxonomic jargon? Obviously, it is to the interest of subject experts only.

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12. FOOD AND FEEDING HABITS OF THE GREEN TURTLE *CHELONIA MYDAS* IN RELATION TO MARINE PLANTS IN THE GULF OF MANNAR BIOSPHERE RESERVE, INDIA[1]

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Introduction

Green turtles are the most abundant sea turtles in the Gulf of Mannar and Palk Bay (Deraniyagala 1939; Kuriyan 1950; Carr 1953; Jones and Fernando 1968; Agastheesapillai and Thiagarajan 1979; Bhupathy and Saravanan 2001), they are primarily herbivores, feeding on a variety of marine algae

and sea grasses in selected grazing areas (Russel and Balazs 2000). Young Green Turtles are believed to occupy open ocean pelagic habitats, perhaps in association with sargassum rafts in some areas, after leaving the nesting beach (Walker 1994). They are omnivorous with a strong tendency to carnivore during this life stage (Bjorndal 1985). Green Turtles leave pelagic habitats and enter benthic foraging areas at a size of 20 to 25 cm carapace length, at this time they shift to herbivorous diet (Bjorndal and Bolten 1988; Limpus *et al.* 1994). Studies are available on the diet of Green Turtles in Oman (Diez and Dam 1992). In Australia, feeding of Green Turtles was discussed by Limpus *et al.* (1994). Records of the diet of Green Turtles are available from a number of locations in the Pacific (Kurata *et al.* 1978). In the Caribbean, the sea grass is the primary diet species for the Green Turtle (Bjorndal 1982). About 271 genera and 1,153 species of marine algae belonging to four groups of algae namely Chlorophyceae, Rhodophyceae, Phaeophyceae and Cyanophyceae have been recorded so far from Indian waters. The standing crops of sea weeds from intertidal and shallow waters of all maritime states and Lakshadweep was estimated as 91,339 tonnes wet weight (Kaliaperumal and Kalimuthu 1997).This note provides information on the diet of Green Turtles as well as the present status of marine plants in the Gulf of Mannar area.

Study Area

The Gulf of Mannar extended from Cape Comorin (8° 4' 40" N; 77° 33' 4" E) to Dhanushkodi (9° 9' 9" N; 79° 26' 46" E) and has about 250 km of coastline. Extensive coral reefs and patch reefs rise from shallow areas of the seashore. Fringing reefs are located mostly at a distance of 50-100 m, from the Islands and are narrow. The Gulf of Mannar Marine Biosphere Reserve is India's first Marine National Park. The luxuriant growth of several species of green, brown and red algae occur in the Gulf of Mannar. There are 147 species of seaweeds and 52 species of sea grass recorded in this area. The area between Rameswaram and Kanyakumari provides 75,372 tonnes (wet wt) of seaweeds in an area of 1,863 sq. km (Kaliaperumal and Kalimuthu 1997).

Samples were collected from the incidentally caught Green Turtles during fishing operations. These turtles had died due to incidental catch, forced submergence in fishing nets, being hit by boats and simultaneously washed ashore. Their carcasses were salvaged for research purpose. Observations on stomach contents were made during April and May 2004 near CMFRI Jetty and Dhanushkodi along the Gulf of Mannar Biosphere Reserve. The stomach contents of six Green Turtles (2 male, 3 females, and 1 subadult) were collected. The morphometric measurements such as curved carapace length and width, and plastron length and width were also collected, as suggested by Bolten (1999).

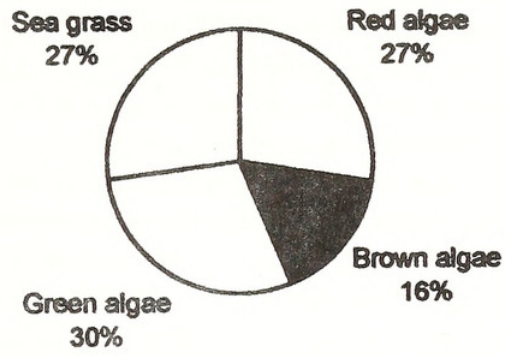

Fig. 1: Volumes of marine plants recorded in the stomach of green turtle *Chelonia mydas* at Gulf of Mannar

Partially digested seaweeds and sea grasses were noticed in the digestive tract and gut of six individuals of green turtles. Algae are characterized according to their general colours: 27% of red algae (Rhodophyta), 30% green algae (Chlorophyta), 16% brown algae (Phaeophyta) and 27% sea grasses. A qualitative list of the component present in the diet sample was prepared. The mean weight of the food items of the six turtles was as follows, *Gelidiella acerosa* 200 gm, *Hypnea valentiae* 37 gm, *Solieria robusta* 60 gm, *Sargassum* spp. 38 gm, *Pocockiella variegata* 66 gm, *Dictyota dichotoma* 100 gm, *Halimeda macroloba* 112 gm, *Caulerpa fergusonii* 58 gm, *Ulva reticulata* 29 gm and sea grasses, such as *Halophila ovalis* 192 gm, *Thalassia hemprichii* 205 gm and *Cymodocea serrulata* 89 gm. The curved carapace length of Green Turtle ranged from 50-104 cm and weight from 20-65 kg.

Discussion

By knowing the food and feeding of green turtle, one can understand the feeding ecology and physiology of the turtle. Data obtained from such studies can provide insight in to questions relating to habitat utilization, digestive physiology, estimation of diet contaminations, trophic ecology, endoparasitic load and health of the individuals (Forbes and Limpus 1993). Differences in diet either in quality or quantity is believed to cause the difference in mean growth rates of Green Turtles from different foraging areas (Balazs 1983). An herbivorous diet has important consequences for life history parameters and survival outlook of Green Turtles and it has major effects on the nutrient cycling and community structure in their foraging habitats (Bjorndal 1985). Russell and Balazs (2000) reported that the Green Turtles feed mostly on marine algae in selected grazing grounds. Stomach samples taken from Hawaiian green turtles had 275 species of green

algae, brown algae, red algae, blue green algae and sea grasses (Russell and Balazs 2000). Studies made by Balazs (1985), Balazs *et al.* (1987), Russell and Balazs (1994) provided information on list of seaweed species found in the stomach of Green Turtles. Based on the study of Forbes and Limpus (1993), the diet of 518 green turtles feeding on the reef surrounding Heron Island, Australia, was composed of 38 species of red algae, 21 species of green algae and 10 species of brown algae. The digestive tract of seven Green Turtles captured off the coast of Colima and Jalisco, Mexico contained green and red algae (Fritts 1981).

Studies by Agastheesapillai and Thiagarajan (1979) reveal the occurrence of several species of seaweeds in the stomach contents of Green Turtles collected from Kilakarai and Vedalai areas in the Gulf of Mannar. Fifteen species of seaweeds and sea grasses recorded from the stomach contents of Green Turtles showed the preference of these species. When compared with the earlier studies, the present study confirms the earlier observations that the seaweeds and sea grasses are the major food for the endangered green turtle *Chelonia mydas*. Sea weeds are exploited for commercial purposes only from southeast coast of India, especially from Vedaranyam to Kanyakumari coast, which resulted in the depletion of standing crops and species diversity (Kaladharana and Reeta 2003). Despite rich resources of the sea weeds, the exploitation is not uniform in many areas; overexploitation is actually felt in the Gulf of Mannar, southeast coast of India. Effective conservation measures should be mandatory for the conservation of marine plants and green turtle..

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13. FIRST RECORD OF SLENDER RACER *COLUBER GRACILIS* (GÜNTHER, 1862) (SERPENTES: COLUBRIDAE) FROM RAJASTHAN[1]

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On December 22, 2004 in Nal Sandol Reserve Forest, near Dimri village, Jhadol tehsil, Udaipur district (24° 20' 37.74" N; 73° 29' 55.64" E; 690 m above msl), we came across a snake about 750 mm long that had been injured by labourers. It was slender bodied, and had two pale brown, black edged, forward-pointing V-shaped marks on top of the head followed by white coloured black-edged cross bars, which widen on the sides to join with adjacent bands. Towards the hind body, the bands were replaced by narrow, sometimes broken blackish cross lines. The belly scales were glossy white. The snake was identified as the Slender Racer *Coluber gracilis* based on its scalation: midbody scales in 21 rows; ventrals 217; subcaudals 131, paired; anal divided; preoculars 2, of unequal size; postoculars 2; temporals 2+2; supralabials 9 (5th and 6th touching eye). A black stripe was present below each eye at the meeting line of 6th and 7th supralabials. Subcaudals were more than recorded (118-127) by Whitaker and Captain (2004).

The specimen was deposited in the Department of Zoology, Mohanlal Sukhadia University, Udaipur, Rajasthan.

The snake was seen in a hilly, highly degraded deciduous forest, with a network of dry nullahs. *Anogeissus latifolia*, *Madhuca latifolia*, *Feronia limonia* and *Butea monosperma* grow on the slopes and at the foothills. *Sterculia urens*, *Lannea coromandelica* and *Ficus arnottiana* are present higher up on the hills. Thickets of *Lantana camara* are also present randomly. The grass *Aristida adscensionis* is common owing to degradation, but patches of *Themeda quadrivalvis*, *Apluda mutica* and *Heteropogon contortus* are also seen.

Coluber gracilis is endemic to India. Presently, this species has been recorded from a few localities in India: Pune district, Nane Ghat and Phaltan all in Maharashtra, and Asirgarh, Madhya Pradesh (Whitaker and Captain 2004). Literature scanning reveals that *C. gracilis* is a new record for Rajasthan (McCann 1946; Sharma 1999, 2001; Sharma *et al.* 2001; Sharma *et al.* 2002). The presence of *C. gracilis* in southern Aravallis in Rajasthan is interesting and worth mentioning.

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14. POSSIBLITY OF BREEDING GROUNDS OF MAHSEER IN THE PAISUNI R. (CHITRAKOOT DHAM), ITS ECOLOGY, AND STATUS OF *TOR TOR* (HAMILTON) IN THE NORTH VINDHYAN RIVERS[1]

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The genus *Tor*, known as Mahseer, is widespread from Afghanistan in the west through India, Pakistan, Nepal, Bhutan to Southern Asia (Thailand and Malaysia) in the east, and is also present in China. All the Mahseers are presently