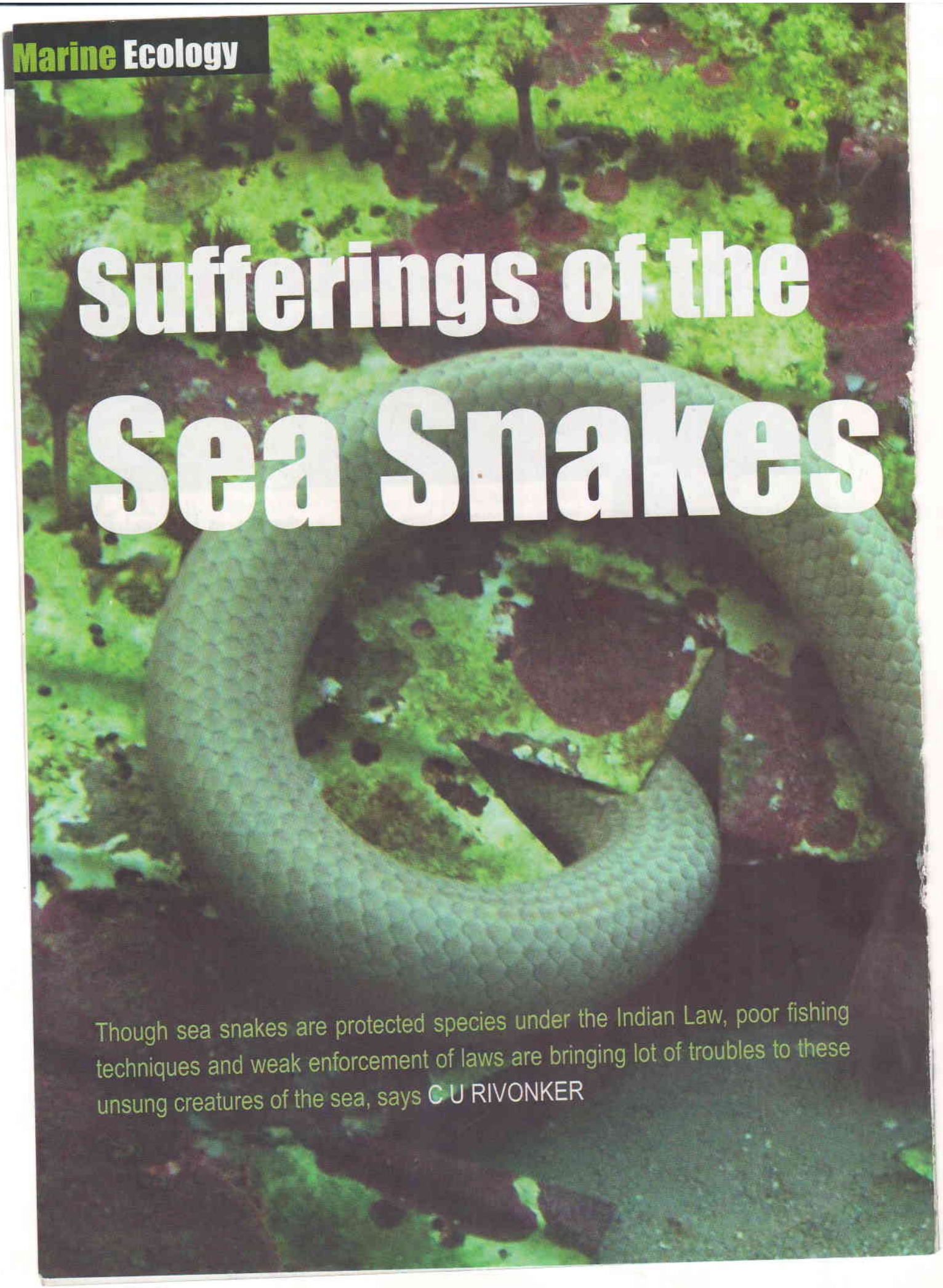
Sufferings of the Sea Snakes



Though sea snakes are protected species under the Indian Law, poor fishing techniques and weak enforcement of laws are bringing lot of troubles to these unsung creatures of the sea, says C U RIVONKER

Sea snakes are marine reptiles endemic to the Indo-Pacific region and known to occur widely throughout the region. Five distinct lineages of snakes, namely file snakes (Family Acrochordidae), mud snakes (Family Colubridae: Homalopsinae), water snakes ((Family Colubridae: Natricinae), sea kraits (Family Laticaudidae), and the true sea snakes (Family Hydrophiidae) inhabit the marine environment.

The true sea snakes possess paddle-like tail, single lung, dorsally positioned nostrils each with a valve, fangs and a hinged opening at the front of the mouth with protruding tongue and salt-regulating glands (Dunson, 1975). Most true sea snakes are extremely venomous, as compared to their terrestrial counterparts and they exhibit extremely offensive nature. These adaptations enable these organisms to dive underwater for long duration and prey efficiently. The diet of sea snakes primarily comprises of finfish.

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Sea snakes play an important role in the ecosystem function as they occur at the highest tropic level. Altogether 62 species have been recorded so far, and approximately

sixty per cent of these are known to occur from the Australian territorial waters (Heatwole, 1999). The Indian waters are known to harbour about 25 species, and the richest diversity (11 species) has been reported from the Gulf of Mannar. While working on the sea snakes diversity along the coast of Goa reported four species, namely Lapemis curtus, Enhydrina schistosa, Thallasophina viperina and Acrochordus granulatus from this region.

The Bane of Modern Fishing

Modern fishing techniques involving the use of non-selective fishing gears like bottom trawls and dredges unintentionally trap a variety of living organisms. The operation of non-selective fishing gears along the coast of India has increased considerably in the past mainly due to increased demand for the shrimps. The indiscriminate removal of biological species from the benthic environment includes sea snakes. These resources in India

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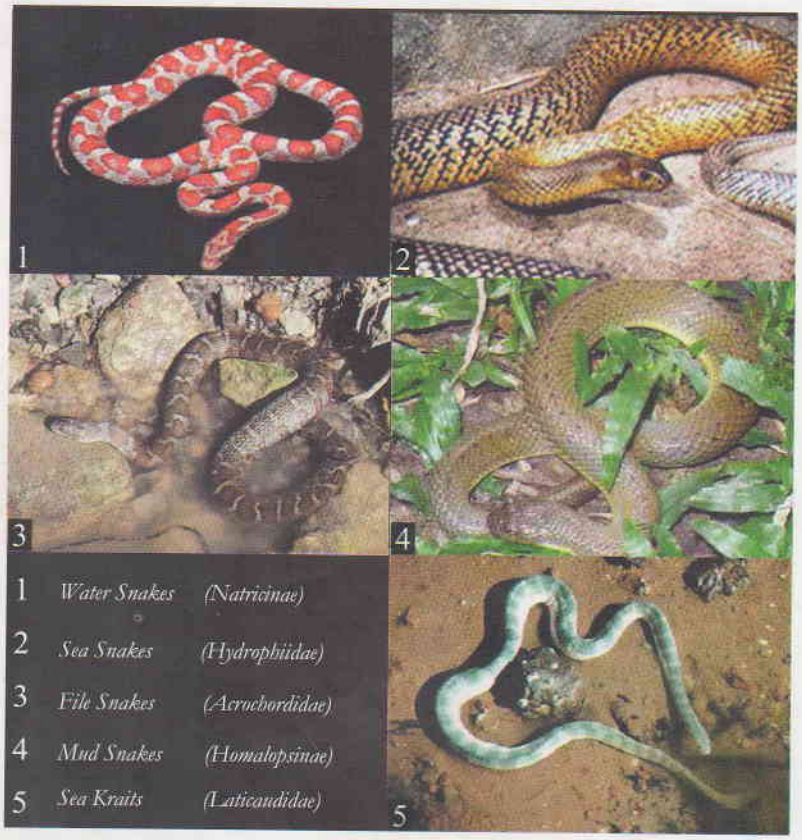
are discarded as incidental by-catch in view of their venomous nature and commercial non-viability, whereas in Far Eastern countries the sea snakes are hunted for leather. Along the Goa coast, sea snakes are trapped in bottom trawls used to exploit the abundant shrimp resources, and occasionally in beach seines, locally known as "Rampani". *(Personal observations).*

Commercial fishing trawlers operating along the Goa coast employ bottom trawls to harvest the abundant demersal and pelagic resources those occur in the near-shore fishing grounds (up to 50 m depth). The above gear being of a non-selective nature incidentally traps commercially non-viable marine organisms like sea snakes. As these species are not economically important, most of the catch is being discarded from the fishing vessel itself and therefore information available on the sea snakes is quite limited *(Personal observations).*



Our field observations on the sea snakes trapped in trawl nets revealed the occurrence of three species, Lapemis curtus, Enhydrina schistosa, and Acrochordus granulatus. Among these, Enhydrina schistosa was found to be most common


Fish captured by commercial fishing trawlers along the Goa coast

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with an ave of two individuals trapped per haul. Our observations of live individuals revealed injuries ranging from superficial bruises to deep lacerations. The live snakes may be crippled or mangled as a combined effect of being squeezed in the enormous catch up to 300 kg and the dragging action of the boat for a minimum of 2 hours, while others are smothered to death as a result of twisting of their spines. These snake being commercially non-exploitable, are discarded back into the sea.

Our observations based on the fortnightly trawl catch data obtained from the offshore fishing grounds along the Goa coast in relation to studies related to benthic fin-fish and shell-fish community structure reveal that there has been a regular occurrence of marine snakes in the trawl catches, and the most common species known to occur is Enhydrina schistosa. However, earlier published reports (Lobo, et al., 2005) reveal the dominance of another species, Lapemis curtus. Secondly, our personal observation reveals that these species are commercially un-exploitable and therefore rejected. On the other hand, there is a dearth of baseline information regarding the species composition of these reptiles, their taxonomy, and eco-biological aspects.

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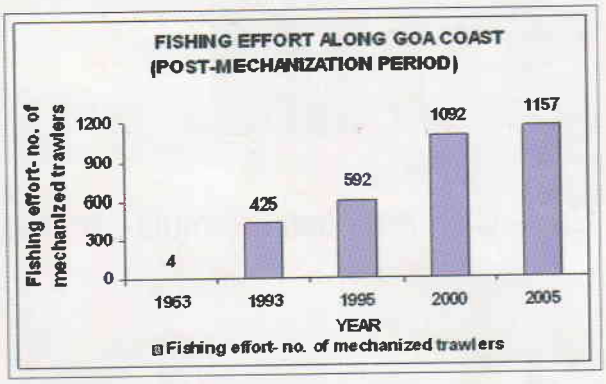
During the tenure of the present study, data on species composition of 41 trawl catches for duration of nine months was collected. The data obtained in the present study indicate that about two snakes per haul are incidentally trapped. Although, this figure appears to be too small, if one computes the cumulative effect of such undesirable removal, it appears that such action can influence significant changes in the benthic coastal environment. In light of the above statement on removal of sea snakes from the marine environment, it is necessary to trace the history of fishing effort in terms of numbers of mechanized trawlers along Goa coast. Mechanized fishing was first introduced to Goa in 1963. Since then, the number of mechanized fishing trawlers grew hundred-fold in the next three decades (425 in 1993). The latest figures reveal that 1157 trawlers operated along Goa coast (2005). These figures provide an idea about the extent of effect of removal of sea snakes on the benthic coastal habitats of Goa.




A trapped sea snake being discarded back into the sea

All in Theory

In India, sea snakes are protected under Section IV of the Wildlife (Protection) Act, 1972. However, prevention and control of unintentional trapping of sea snakes by legislation and its subsequent implementation is a difficult task owing to the lack of appropriate infrastructure and monitoring mechanism due to an extensive coastline. Further, information on the sea snakes is quite limited and therefore does not provide much scope to elucidate their possible role in ecosystem functioning in Indian waters, especially in Goa. However, no management strategies to avoid entry of such varieties of sea snakes in the benthic trawl net have been adopted, at least along the shelf waters of Goa.

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