

BACK BOX

Sea snakes in the prawn net

Of all the different types of sea creatures harvested around Australia, prawns are the second-largest export earner — and most of them are caught in the Gulf of Carpentaria.

Also captured in the prawn-fishermen's nets, although never by design, is another component of the fauna of tropical waters — sea snakes. These reptiles live in the same habitat as prawns and hence encounter the same fateful prawn net.

As conspicuous as a cat among pigeons, a sea snake in a recovered prawn net causes a seething and writhing such that the fisherman is in no doubt as to what he has retrieved.

Dr Jim Redfield has also been catching sea snakes in his prawn nets. Dr Redfield, of the CSIRO Division of Fisheries and Oceanography, is engaged in the study of prawn life cycles in the Gulf. He is trying to determine the factors that cause the prawn population to vary, with a view to managing this resource more effectively. However, in the course of his study, which involved sampling of prawns by trawling, he inevitably caught large numbers of sea snakes.

He was impressed by the beautiful creatures, intrigued by the little that is known about them, and interested in learning more about their population biology and natural history.

Although they are not as dangerous as the fabled sea



A sea snake from the Gulf of Carpentaria.

serpent, sea snakes have extremely powerful neurotoxic venom, just like that of their close relatives, tiger snakes, black snakes, and taipans. Fortunately, the snakes are not aggressive and are fairly helpless out of water, so much so that many fishermen habitually remove them from their nets with bare hands.

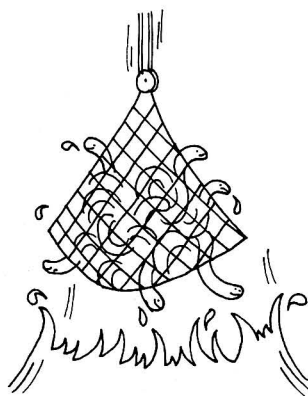
Reports of prawn fishermen being bitten by sea snakes are rare. Because sea snakes have short, grooved fangs, less than 20% of victims develop symptoms (yet half of these die if not given anti-venene).

Some of the ornate and richly coloured sea snakes are occasionally killed for their skins. Others are simply discarded, either dead or alive. The reptiles are skilfully adapted to an aquatic existence, having flat, paddle-like tails and valved nostrils on the tops of their heads. Their whole life is spent at sea, where even the young are born alive. Although they breathe air

like other reptiles, they can dive to 100 metres at times and remain submerged for up to 2 hours.

Some species live near the mouths of rivers; others live further offshore. Most types feed on small fish and fish eggs. Surprisingly, prawns are a rare item in their diet.

Dr Redfield's catches soon revealed that the distribution and abundance of various species of sea snake in the Gulf varied considerably from previous reports. He therefore began a systematic study of sea snake distribution and abundance,



and in 307 hours of trawling caught 341 sea snakes.

Some 61% of this catch was identified as *Lapemis harwickii*; each of the other 12 species caught made up less than 10% of the sample. In earlier studies, naturalists had found *L. harwickii* to make up only 10–20% of snakes caught, with other species dominating.

Dr Redfield surmises that this change may be an effect of prawn fishing. To find out, he is continuing his study, widening it to encompass the snakes' ecology and life history.

He and his colleagues have tagged more than 500 snakes and returned them to the Gulf. None has ever been recovered, suggesting that the snake population must be very large. Dr Redfield thinks that no species of sea snake there is in danger of extinction, and particularly not through the activities of prawn fishermen.

The study is still at an embryonic stage, but even so, it is by far the most thorough one ever undertaken on the ecology of sea snakes. We have much to learn about these alluring, yet somewhat frightening, creatures.

Sea snakes of the eastern Gulf of Carpentaria. J. A. Redfield, J. C. Holmes, and R. D. Holmes. *Australian Journal of Marine and Freshwater Research*, 1978, 29, 325–34.