

Aggregation of Beaked Sea Snake *Enhydrinaschistosa* (Daudin, 1803) in Mudbank Area of Southwest Coast of India

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Introduction

The beaked sea snake *Enhydrina schistosa* (Daudin, 1803) is commonly found all along the Indian coast. The species is commonly known as hook nosed sea snake, common sea snake and *valakady* sea snake.

About 22 species of sea snakes belonging to 3 families and 3 sub-families are reported from Indian waters (Das, 2003). The distribution and diversity of sea snakes in east coast of India are extensively studied by various authors (Wall, 1909; Wall, 1918; Smith, 1926; Ahamed, 1975; Murthy, 1977; Murthy and Rao, 1988; Tripathy, 2006; Lobo, 2006; Karthikeyan and Balasubramanian, 2007; Damotharan et al., 2010). But the studies are limited in west coast of India (Lobo et al., 2005; Pandate, 2009). All the sea snakes in India are protected under India Wildlife Protection Act 1972 and most fishermen are unaware of this fact.

E. schistosa is commonly caught in the shrimp trawls operated off Kerala coast. Most fishermen in this area throw the snakes back into the sea in live condition as soon as they are caught in the net by holding the flattened portion of the tail in the upright position. Some fishermen kill the snake by hitting the head portion of the snake on the deck of the boat.

Material and Methods

In the planned weekly cruises onboard FRV *Silver Pompano* for mud bank research since April 22nd 2014, a shrimp trawl is operated in the near shore area at 6m where mud banks usually occur and at a deeper region (12 m depth) off Alappuzha coast. In all the cruises, about 2 to 5 specimens were regularly caught at 12 m depth in each haul and these were usually released back to the sea in the live condition. The numbers were always higher at 6 m depth.

On 5th June, 2014 about 20 numbers of beaked sea snakes were caught in the shrimp trawl operated in the same location (Fig.3). The substratum in this area was muddy indicating that beaked sea snakes preferred to live in shallow muddy bottom. The length of the specimens caught ranged between 51.7 to 112.6 cm. It carcass of about 4 to 6 dead beaked sea snakes were observed almost every day at Punnapara coast of Alappuzha, where the mud bank is formed during monsoon.

Results

Morphological characters: The body is vertically flattened with a relatively small head (Fig.1). Dark cross bands present in the body widest on the upper side and tapering on the flanks. The species has beak-like projection on the snout at the front of the upper jaw. Hence the name, 'beaked' sea snake. The species can be easily distinguished from all other sea snakes by an extremely long and narrow mental scale that is largely concealed in a deep notch between the lower jaws (Fig.2).

Food and Feeding habits: The food and feeding habits of beaked sea snakes was also studied based on the stomach content analysis. Fish was the main food item in all the stomachs analysed. It was observed that in the snakes caught at 6 m depth cat fishes were observed in all the snakes while in the stomach of snakes caught at 12 m depth puffer fishes were more. The cat fishes were identified as *Arius jella* and the puffer fish was *Lagocephalus inermis*. Incidentally, school of *Arius jella* has been observed in the mud bank area where beaked sea snakes abundance is also high. The feeding behaviour of beaked sea snakes also noticed. It was observed that it always ingested the head portion of the prey (fish) first (Fig.4).

It was observed that it always ingested the head portion of the prey (fish) first (Fig.4). The present study also revealed that *Arius jella* is the most preferred food for beaked sea snake. Matured ova were observed in some of the females in the present study. (Fig. 5)

Sea snake venom and risks: These beaked sea snakes are responsible for 90% of fishermen death around the world. It has been reported that about 45,900 snakebite death (including terrestrial snake bite) occur in India (Mohapatra et al., 2011; Warrellet al., 2013). Of this most of the fishermen deaths have been reported from Andhra Pradesh. The 1.5 milligrams of *Enhydrina schistosa* venom which is rated four to eight times as toxic as cobra venom can cause death to humans. It has been reported that the snake bite is primarily myotoxic envenoming. First signs and symptoms occur in the skeletal musculature. The secondary effects are rhabdomyolysis, myoglobinuria (dark urine), acute renal failure, hyperkalaemia (cardiac dysrhythmias) (White, 1995). Sea snake antivenom is available now.

Conclusion

The Beaked Sea Snake *Enhydrina schistosa* are generally preferred to live in muddy waters. During the onset of southwest monsoon, the mudbank started forming in southwest coast of India. During the month of April and June the waters were muddy in Alappuzha coast and yielded good catch of catfishes. The catfishes are the most preferred food for beaked sea snakes. Creation of awareness among fishers only can save the sea snakes.

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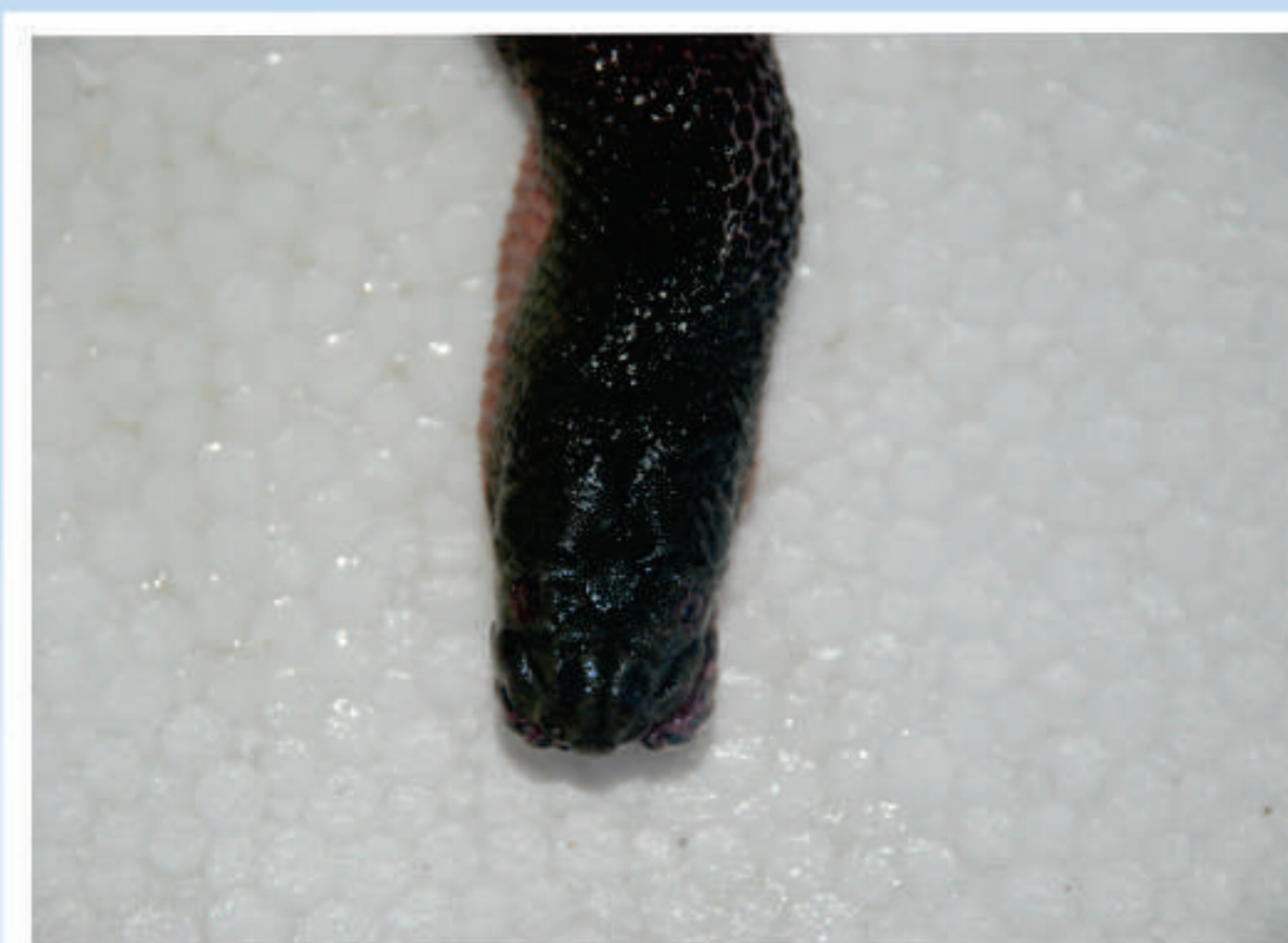
(Fig. 1a) Beaked sea snake *Enhydrina schistosa* (Daudin, 1803)



(Fig.1 b) Beaked sea snake *Enhydrina schistosa* (Daudin, 1803)



(Fig. 2 a) Long and narrow mental scale present in (lower jaw)



(Fig. 2 b) Head Dorsal



(Fig. 3 a) *Enhydrina schistosa* in the catch obtained in the shrimp trawl



(Fig. 4 a) Partially digested puffer fish *Lagocephalus inermis* in stomach of beaked sea snake



(Fig. 5 a) Matured ova



(Fig. 6 a) Sea snake