LARGE SCALE EXPLOITATION OF SEA HORSE (*HIPPOCAMPUS KUDA*) ALONG THE PALK BAY COAST OF TAMIL NADU

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Concomitant with the recent heavy demand for the dried seahorse in the international export market and also decline of sea cucumber fishing, there has been a sudden spurt of fishing effort towards specific exploitation of sea horse along the Palk Bay coast of Tamil Nadu. The hitherto traditional holothurian divers are presently actively engaged in the collection of sea horse, which find immediate market with a lucrative income. The observations on this new trend of exploitation, the catch particulars, the fishery, the marketing aspects and uses of sea horse are highlighted in this article.

Fishing grounds, catch and effort

Specific diving for sea horse is being carried out in Thirupalaikudi, Mullimunai, Morpanai and Thondi areas of Ramnad coast (Fig. 1). In addition, stray catches in trawl nets operated in deeper grounds are also brought to the procurement centres all along the coast of Ramnad. There are two species of *Hippocampus* occurring in Indian waters, of which *H. kuda* is more common in southeast coast of India.

Sea horses are caught by divers, who depending on the weather conditions set out to sea by boat in the morning. They select grounds in the sea with abundant growth of seagrasses, seaweeds or sponges, and dive to depths ranging from 4 meters to 8 metres. Usually 8 to 10 persons go out in each boat for diving. Depending on the clarity of water and other conditions, diving for sea horse is carried out from 3 to 4 hours. The sea horses, which cling on to the grasses, seaweeds or sponges using their prehensile tail are collected without much difficulty. A diver, on an average collects 10 to 30 numbers of sea horse per day. On observation days, the catch per effort was estimated at 7 to 10 sea horses/hour of diving day. Each specimen is sold to the agents @ Rs. 5 to Rs. 15 per sea horse depending on size.

Size range

The size of sea horse ranged from 60 to 170 mm. The observed values were modified to calculate frequency.

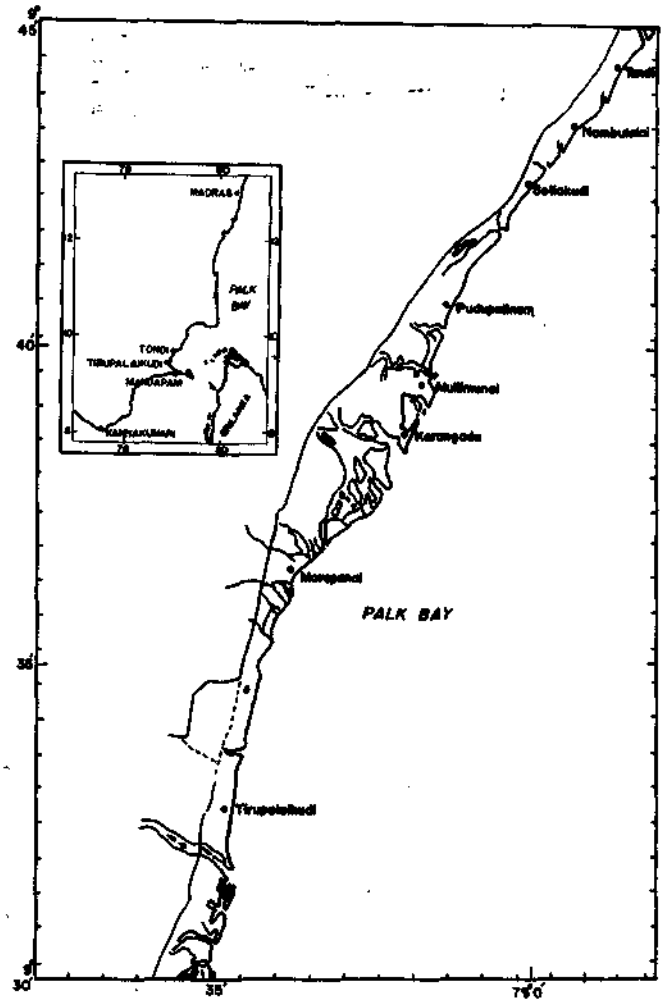

Fig. 1. Map showing areas along the Ramnad coast of Tamil Nadu presently engaged in diving for Sea horse (*Hippocampus* spp.) resources.

The values were plotted in a graph and the results thus obtained could be seen in Fig. 2. It could be noted from the Fig. that the dominant size of sea horse in the catch ranges from 100 to 129 mm in the freshly caught specimens. The average weight of the sea horse was 7.86 g and the mean size of the sample was 110.75±16.07 mm.

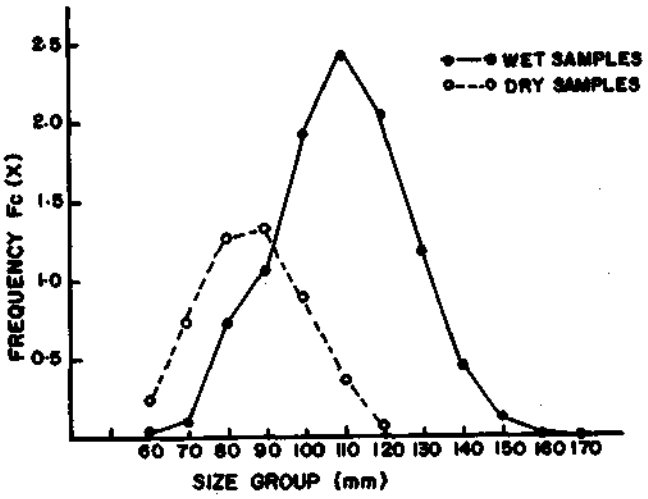

Fig. 2. Size frequency of *Hippocampus kuda* observed off Mullimnai.

Among the dried samples, the length group was found to range between 60 and 120 mm (Fig. 2). The dominant mode was between 80 and 99 mm. The mean length was 86.38±14.15 mm. The average weight of dried sea horse was 4.2 g.

Meristric and morphometric characteristics

Data on the different meristric and morphometric characteristics indicate that the sea horse occurring in these areas belong to the species *Hippocampus kuda* (Fig. 3 and 4 and the Front cover photo).

Biological characteristics

Hippocampus kuda swim in upright position and move by vibrating the dorsal fin. They are found to spend more time anchored to marine growths by their prehensile tail (Fig. 4). They feed on minute organisms and plankton which they

Fig. 3. The male and a female of *Hippocampus kuda*.

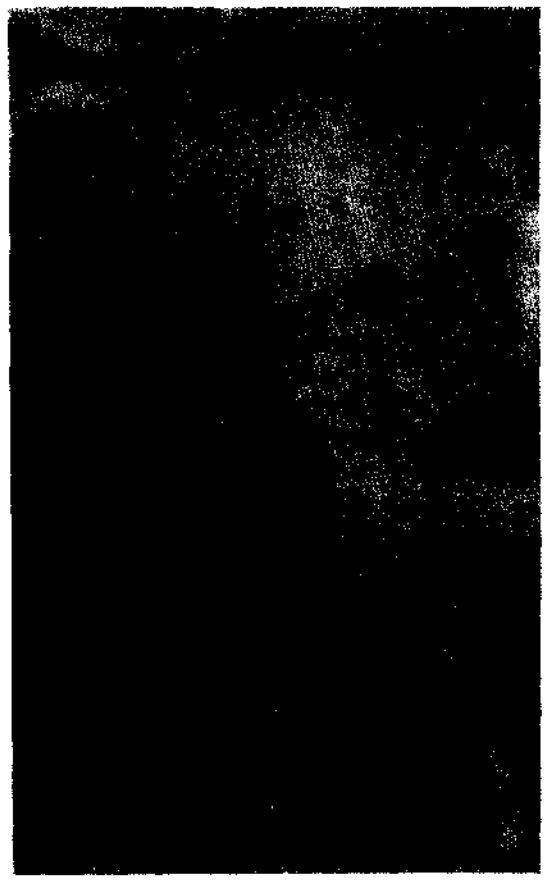

Fig. 4. The sea horse attached to sponge.

observe solemnly and then suck in through the tiny mouth located at the end of the tubular snout. As they are slow movers, their survival depend on their concealment. Sea horse is one among a few bony fishes which have a fovea (retinal area of clear vision). They are capable of moving their eyes independently. The protection of eggs and young ones is accomplished by the males. The eggs are placed by the females into the brood pouch of males and parental care for the baby fishes is given by the males.

Fishery

The specific fishing of sea horse *Hippocampus kuda* commenced in June 1992 and continues actively in the areas indicated in Fig. 1. along the Palk Bay coast of Tamil Nadu. The diving is carried out by chank and holothurian (Attai in Tamil) skin divers. According to the divers (Fig. 5) and fisherfolks of these areas, the sea horse fishery has come as a boon to them as the attai season of 1992 was not profitable to them.

The sea horse after their removal from sea

TABLE 1. *Monthly catch, effort and landing particulars of* Hippocampus kuda *along the Palk Bay coast, Ramnad*

Name of Centre	Number of boats/day	Number of persons/boat	Catch per person (Numbers)	Average landing per month (Numbers)	Dried production (kg/month)
Thirupalaikudi	10 - 20	8 - 12	10 - 30	20000	80
Morpanai	10 - 15	5 - 10	10 - 30	15000	60
Mullimunai	15 - 20	8 - 10	10 - 30	24000	96
Thondi	10 - 12	8 - 12	10 - 30	18000	72

is dried in sun and then sent to Keelakarai for (Fig. 6) further trading. Observations on dried sea horse indicate that on drying the samples retain 53.45% of the body weight (see also Fig. 2). Enquiries from the Keelakarai merchants indicate that on an average 300 to 400 kg of dried sea horses per month are exported to Singapore market by unknown methods. This could indicate an estimated landing of 600 to 800 kg of sea horse from this coastal area. The monthly catch details of four prominant fishing centres along Ramnad coast are given in Table 1. The average production varied from 60-96 kg/month and this trend has been noticed during the season June - September '92. The prize of dried sea horse ranges for Rs. 2,000 to Rs. 4,700 per kg depending on their size. The average revenue is about Rs. 8,00,000 per month.

Uses of dried sea horse

The dried sea horse is in great demand in the South East Asian Countries especially in Singapore and China not only for extraction of soup which is a delicacy but also for its medicinal values. Along the Ramnad coast, the dried sea horse is used as a medicine to arrest the

Fig. 5. Divers bring Sea horse and a few gastropods.

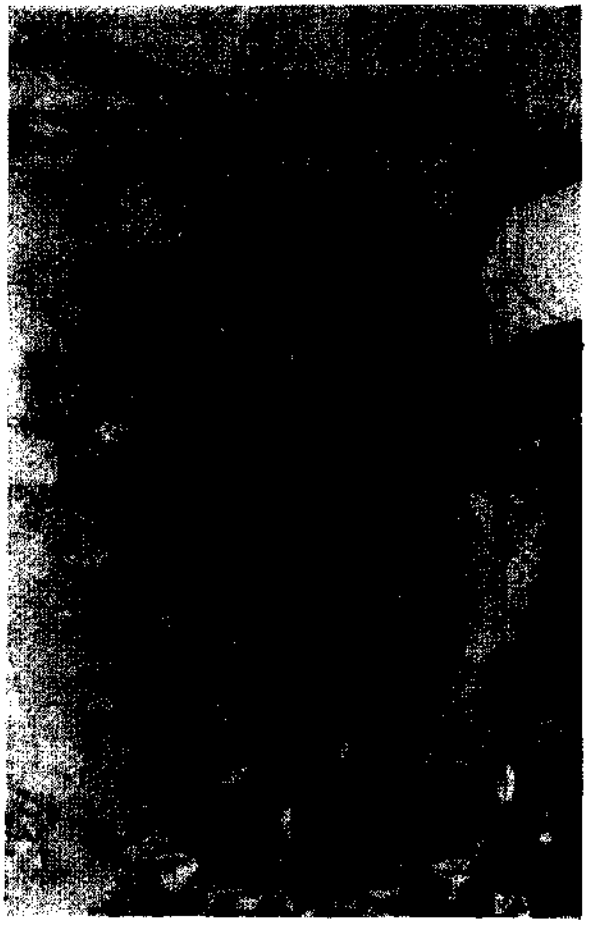

Fig. 6. A collection of Sea horse landed at Mullumunai.

whooping cough in children. For this, the dried sea horse is first powdered nicely and then heated in an earthern pot. After roasting it for sometime, the contents are taken out and mixed in honey and administered as medicine. In some places, along the coast, the dried sea horse is burnt in fire, mixed immediately with coconut oil and applied as medicine on cut wounds. A few aged fisherfolks informed that regular intake of dried sea horse powder with honey cures certain form of 'asthma' disease. Although a number of medicinal uses of sea horses were indicated, these are seldom practiced in this region. The present heavy demand of sea horse in foreign countries could therefore be due to its pharmaceutical qualities.

Conclusions

The recent trend of specific diving for sea horse for catering the export demand may in due course of time deplete the resource as such. At present there is no regulation of catch. As sea horses are mostly found attached to sponges, large quantities of sponges are also dislodged and thus drifted to shore. Such habitat destruction may lead the entire fishery to a vanishing point. Urgent measures are required to educate the fisherfolks and thereby regulate the optimum utilisation of resources. The following measures are suggested for the judicial expolitation of this valuable resource and propagation/replenishment of stock by sea ranching.

1. Research on biological aspects of this little known group, particularly on food and feeding habits, attainment of maturity and spawning behaviour, fecundity, migration, trend of growth, life history etc. has to be carried out immediately to suggest plans for organised fishing in the long run. Efforts should be made to observe the distribution pattern of this group at different depths.

2. Indiscriminate fishing of under sized and spawning size specimens and the males carrying young ones in the pouch should be avoided.

3. Diving in spawning grounds during breeding season has to be controlled.

4. Stock assessment studies becomes an imperative need to see the trend of production and level of exploitation.

5. Effective fishing methods have to be evolved like hand picking of beche-de-mer without damaging the natural ecosystem.

6. An awareness should be created among fishermen about the value of ecosystem, conservation and management.