Studies on the sea cucumber fishery in the north western coastal region of Sri Lanka with emphasis on its management for sustainable exploitation

By
D.C.T. Dissanayake [B.Sc. (Hon.)]
Department of Zoology
University of Kelaniya
Sri Lanka.

Dissertation submitted as a partial requirement for the M.Sc. degree in Aquaculture and Fisheries and Management of the University of Kelaniya, Sri Lanka.

October 2003

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Abstract

During the present study carried out in Kalpitiya and Mannar areas of the North western coastal region of Sri Lanka from October 2002 to April 2003, a total of 16 species of sea cucumbers belonging to the Order Aspidochirotida were identified. Of these, 12 species belonged to Family Holothuridae and four to Family Stichopodidae. *Holothuria scabra* and *H. spinifera* were found to be restricted to the Mannar area whilst *H. fuscogilva, H.a nobilis, Actinopyga echinites, Bohadschia argus, B. marmorata,* unidentified *Bohadschia sp, Thelenota ananas* and *T. anax* were recorded only in the catches from Kalpitiya area.. *H. atra, H. edulis, A. miliaris, A. mauritiania* and *Stichopus chloronotus* were found both in Mannar and Kalpitiya but these species are not very frequent in catches.

The fishing operations for sea cucumbers in both regions were mainly carried out by FRP boats with outboard motors. Sea cucumbers were harvested through diving and hand picking. Total catch and effort in the two areas showed marked differences. In Kalpitiya area *B. marmorata* was dominant in catches while in Mannar *H. scabra* was dominant. During the period of survey, the highest catch was recorded in April 2003 in Kalpitiya area in January 2003 in Mananr area. The fishing effort was remained at a more or less steady level in Mannar area throughout the study period. However in Kalpitiya area, fishing effort varied considerably during the study period

and the maximum and minimum fishing efforts were reported in March 2003 and January 2003 respectively. Further there was no significant difference between the mean number of boats engaged in this fishery in the two areas. However, significant difference in catch per diver per day in the two areas was noted. In Kalpitiya area catch per diver was very high compared to that in Mannar area. In Kalpitiya area, the number of divers (13) engaged in this fishery was significantly smaller than that in Mannar area (80) ($P<0.05$).

The estimated figure for total number of sea cucumbers caught in Mannar and Puttalam area during the present study was 102,280. Of these 47,507 individuals were from Kalpitiya area and 54,773 were from Mannar area.

Estimated asymptotic length ($L\infty$) of *A. echinites*, *A. miliaris*, *B. marmorata*, unidentified *Bohadschia. sp* and *H. scabra*, were 32cm, 41.5cm, 56.3cm, 41.5cm, and 34.4cm respectively, while the growth coefficient were 1.9 $year^{-1}$, 2.3 $year^{-1}$, 1.35 $year^{-1}$, 1.8 $year^{-1}$, 0.8 $year^{-1}$ respectively. The highest mortality values were estimated for *A. miliaris* while the lowest value for *H. scabra* respectively. *A. echinites*, *A. miliaris*, *B. marmorata* and unidentified *Bohadschia sp* showed one recruitment peak while *H. scabra* showed two recruitment peaks.

It appears that size regulation is the most important measure for sustainable exploitation of existing sea cucumber stocks in the North western coast of Sri Lanka.