ISSN 0254-380 X

समुद्री मात्स्यिकी सूचना सेवा
MARINE FISHERIES INFORMATION SERVICE

No. 105 JULY, AUGUST, SEPTEMBER 1990

तकनीकी एवं विस्तार अंकावली
TECHNICAL AND EXTENSION SERIES

केन्द्रीय समुद्री मात्स्यिकी अनुसंधान संस्थान कोचिन, भारत
CENTRAL MARINE FISHERIES RESEARCH INSTITUTE COCHIN, INDIA

भारतीय कृषि अनुसंधान परिषद
INDIAN COUNCIL OF AGRICULTURAL RESEARCH

THE OCCURRENCE OF LIVE BAIT FISH IN SOUTH ANDAMAN WATERS AND ITS SIGNIFICANCE

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Introduction

It is well known that the key factor required for the initiation of a pole and line tuna fishery is the availability and abundance of suitable live bait fishes. While surveying the infestation of the crown of thorn starfish *Acanthaster planci* in the National Marine Park, Wandoor and adjacent areas of South Andamans during April - May, 1989 some preliminary observations on the availability of live bait fish in the area were recorded. Eventhough it is not possible to arrive at conclusions based on the data collected, it is felt that the present observation can be used as a background information for a detailed investigation on the availability and abundance of live bait resources of the Andaman and Nicobar Islands.

The survey

The shallow nearshore areas of the labyrynth group of islands of National Marine Park, Wandoor *viz.* Twin, Jolly Buoys, Malay, Red Skin, Alexandra and Tarmugli islands; the North Bay and Scissostris Bay at Port Blair were surveyed during April - May, 1989 for this study (Fig. 1). Initially the areas were explored for the location of sprat schools (Fig. 2). Later, random samples from various sites were collected by a drag net of 20 x 2m size (Fig. 3). The quantity of sprats and other fishes in the hauls from the different sites was recorded. The duration of each haul was ten minutes. The quantities noted were taken only as indications of availability and no statistical estimates were made.

Occurrence of live baits

The sprat, *Spratelloides delicatulus* (Front cover photo) which is recognised as one of the ideal live bait fishes for tuna by pole and line was available at the various collection sites (Fig. 1). The catch per haul of *S. delicatulus* and other fishes caught from the different sites are given in Table 1.

It could be seen that *S. delicatulus* was the most common and abundant species caught in all the collection sites. The percentage of *S. delicatulus* in the total catch ranged from 63% in Malay Island to 100%

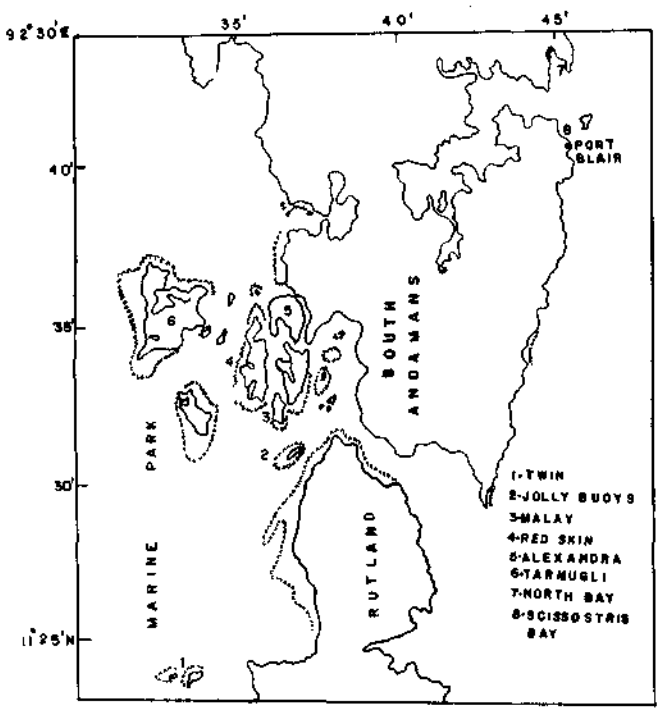

Fig. 1. Map of South Andaman showing the collection sites of *S. delicatulus*.

in Twin Island which showed that the species is dominant in the area. Atherinids were obtained in small quantities in all the areas except Twin Island. Juveniles of sardines (*Herklotsichthys punctatus*) was caught from Red Skin Island; juvenile apogonids were obtained from Malay Island.

Biological characteristics of *S. delicatulus*

S. delicatulus was chiefly distributed in the nearshore shallow coral sand areas adjacent to the littoral mangrove vegetation. The size composition of the species is given in Fig. 4. The total length ranged from 15 to 65 mm with a mode at 37 mm. The species is a zooplankton feeder. The major groups noted in the stomach contents were copepods, amphipods, ostracodes, decapod larvae and *Lucifer*. The sex ratio based on 60 specimens studied was Male : Female = 1.2 : 1. The length at first maturity was estimated as 53 mm (Fig. 5). Eventhough the population comprised of juveniles, immature and mature fish, the bulk of the collection comprised of juveniles and immature fish. The size composition studies indicated that a wide range of size groups is available in the population. The abundance of juveniles and the availability of mature fish in the habitat showed that the area is a spawning and nursery ground of the species. The presence of juveniles, spawners and fish at different stages of maturity in the habitat at the same period can be taken as an indication of the prolonged spawning season of the fish.

Significance

The chief requirement of tuna fishery development programme in India is identified as the development of small-scale fishery sector. In this context, it is felt that efforts should be made to develop the operational facility to increase the surface tuna fishery and intensified effort should be concentrated in Lakshadweep and Andaman Sea, which hold high potential for surface species of tunas. Hence the development of small-scale pole and line tuna fishery for surface tunas, especially the skipjack tuna *Katsuwonus pelamis* is of prime importance. The existing surface tuna fishery in Lakshadweep exploits about 3,000 tonnes of tunas annually and contributes a major share to the economy of the islands. The introduction of pole and line fishery for tunas in the pattern of the existing skipjack tuna fishery of Lakshadweep to the bay islands is one of the fisheries development programmes for Andaman and Nicobar Islands. This is linked up with the finding of adequate resources of the right species of bait fish.

The results of the present study showed that *S. delicatulus* which is one of the ideal live bait species is abundant in the nearshore shallow areas adjacent to littoral mangrove vegetation at the areas surveyed. Eventhough the survey conducted was confined to certain areas of South Andaman only, it can be taken as an indication of the availability of the species in similar habitats in the other parts of the islands. However, a detailed exploratory survey to locate the areas of baitfish availability in the Andaman and Nicobar group is a basic requirement. Based on the information collected from the exploratory survey, continuous monitoring of bait fish resources for one year to assess the catch rate, species composition and seasonal fluctuation is also an essential prerequisite.

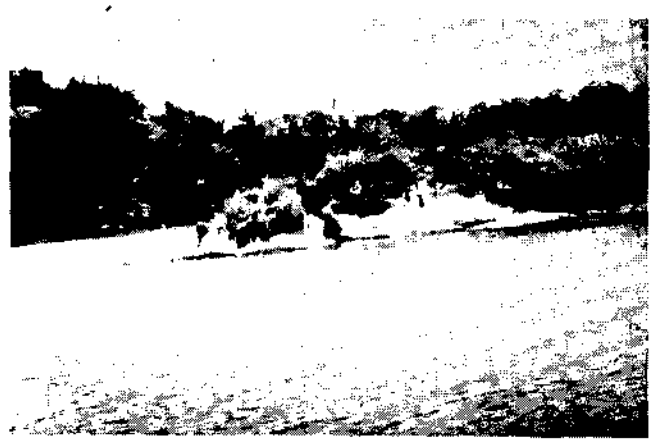

Fig. 2. The habitat of Sprats at Andamans.

TABLE 1. *Catch rate (in kg) of live bait of different species at various islands*

Area of collection	Total catch per haul	*S. delicatulus*	Atherinids	Juveniles of sardines	Apogonids
Twin	1.0	1.0	-	-	-
Jolly Buoys	0.6	0.5	0.1	-	-
Malay	1.9	1.2	0.4	0.1	0.2
Red Skin	1.0	0.8	0.2	-	-
Alexandra	0.8	0.5	0.2	0.1	-
Tarmugli	0.8	0.7	0.1	-	-
North Bay	0.6	0.5	0.1	-	-
Scissostris Bay	0.7	0.6	0.1	-	-

The gear employed for the present collections (drag net) was suitable only for *S. delicatulus* and atherinids. The habitats of other bait fish groups were not explored in the present survey. Hence the present study did not give a clear picture about the other groups of live bait fishes belonging to pomacentridae, apogonidae and caesionidae, eventhough a few juvenile apogonids were obtained in the collections. From the experience of the authors on the reef habit it is felt that there is a possibility of the availability of the above mentioned groups in the Andaman and Nicobar group. The live bait survey mentioned earlier should also survey the habitats of these groups and if available, lift nets of the type used at Minicoy Island should be employed for capturing them.

Fig. 3. The drag net being made ready for operation.

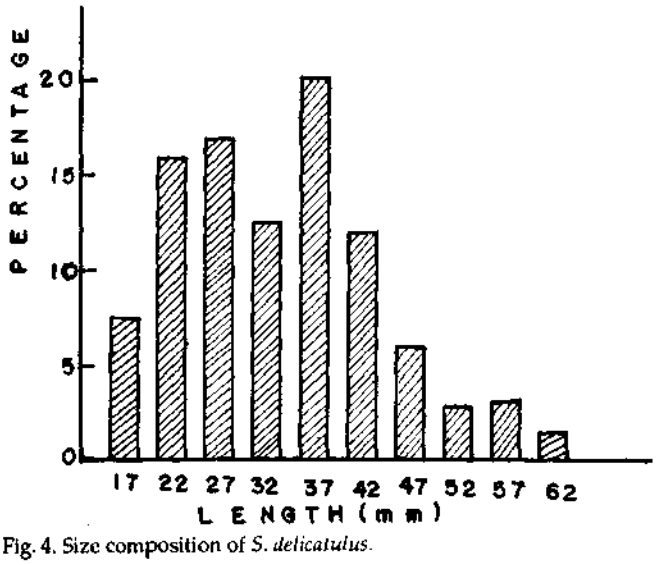

Fig. 4. Size composition of *S. delicatulus*.

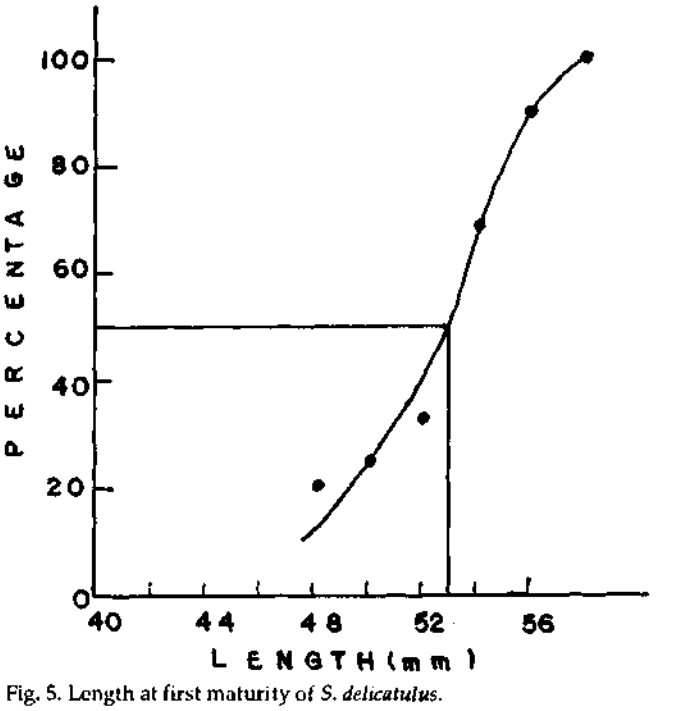

Fig. 5. Length at first maturity of *S. delicatulus*.

In general, it can be said that the present study is only an indication of the availability of *S. delicatulus* in the Bay Islands. The exploratory and monitoring survey of the different habitats of the islands mentioned above is the main requirement before venturing into any pole and line fishing programme. Only when reasonable resources of *S. delicatulus* and other baitfish groups are found to be available in space and time, it is worth examining the possibility of initiating the pole and line tuna fishery.