

## Live - bait Resources of Lakshadweep

The vast lagoon systems and the shallow areas adjacent to the reefs of the Lakshadweep provide ideal habitat for a variety of tuna bait fishes. Till date focussed studies such as exploratory survey on these non-target species in and around these islands is wanting. CMFRI has initiated a programme to investigate the resources and biology of tuna live-baits in the Union Territory of Lakshadweep.

Pole and line fishing with live-bait is the prime method employed in the Lakshadweep islands for catching skipjack tuna, *Katsuwonus pelamis*. Pole and line fishery essentially involves a double approach, aiming at target species — tunas, and also the non-target species — bait fishes. It has recently been discussed in the FAO meeting of tuna fishery of the Indian Ocean that the major avenue for the bordering, developing nations to exploit the resources of skipjack tuna in their regions without large investments in advanced fishing equipments is through the use of pole and line fishing technique. In India, this method is in vogue in an organised manner only in the Lakshadweep group of islands, which consists of twentyseven islands and a number of sunken banks, open reefs and sand banks. Of these, Minicoy, Agatti, Bangaram, Perumul Par, Suheli Par and Bitra are at present the important islands in terms of production of tunas in the artisanal sector. Despite the fact that the pole and line fishery is still a small-scale activity in these islands, it calls for added attention and impetus since India possesses a vast resource potential of oceanic tunas especially skipjack in her EEZ and contiguous high seas and the planned rational exploitation of these resources



will provide a significant contribution to the national economy.

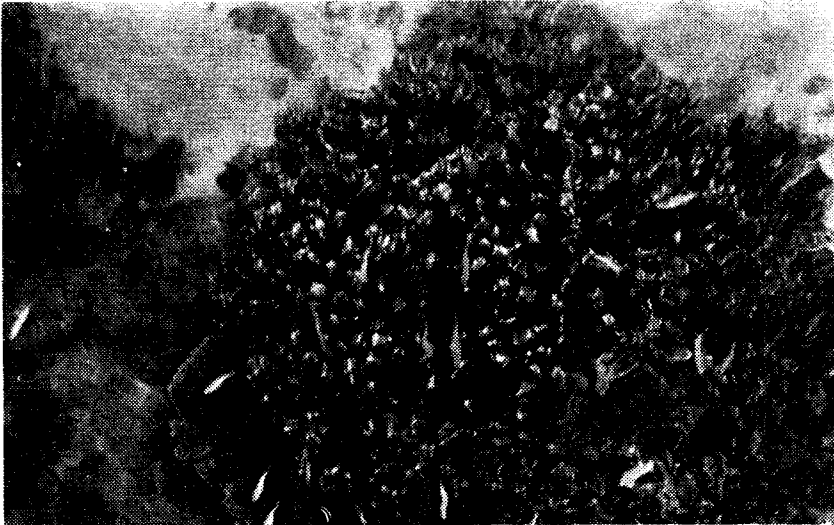
The major constraint associated with the development and expansion of pole and line fishery is the availability and supply of suitable live-bait fishes. The features which make them suitable for tuna fishing are their highly reflective lateral surface, surface-swimming with rapid erratic motion and the

tendency to return to the boat when broadcast. The elongated shape of the body and the length (below 15 cm) facilitates easy handling. They also exhibit hardiness and high survival rate in captivity.

However, none of the species used in the pole and line fishery in the world oceans could be considered as 'perfect species' since some species may be good at initially attracting tunas

but may not be suitable for holding in the tanks on board fishing vessels due to their high initial mortality at the time of capture.

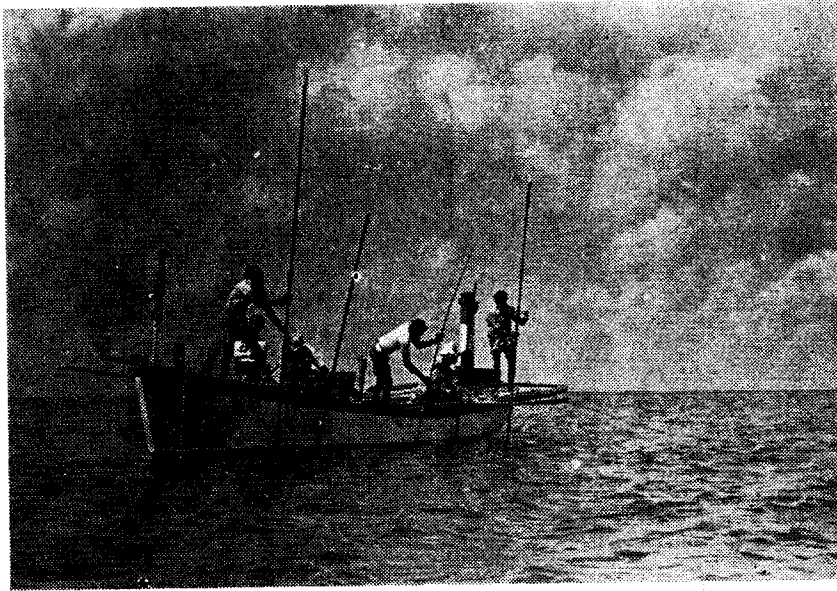
The vast lagoon systems and the shallow areas adjacent to the reefs of the Lakshadweep provide ideal habitat for a variety of tuna bait fishes. Till date focussed studies such as exploratory survey on these non-target species in and around these islands is wanting. Evaluating the principal natural bait fish resources of Lakshadweep islands with respect to their capacity to support the surface fishery for skipjack is of prime importance for recommending specifications and suggesting management implications for the development of their fishery. With this objective in view CMFRI has initiated a programme to investigate the resources and biology of tuna live-baits in the Union Territory of Lakshadweep. The programme envisages to determine the relative abundance and availability of naturally occurring stocks and their behaviour and to conduct tests on their capture, transportation and maintenance through intensive vessel-based surveys using traditional and improvised techniques inside the lagoon and outside reef flat and reef fronts of all the islands of Lakshadweep. A reconnaissance survey covering the above areas was conducted during August-December under the guidance of Dr P. S. B. R. James, Director, CMFRI. Dr P.P. Pillai, Shri G. Gopakumar and Shri K. P. Said Koya, Scientists and Field Assistants participated in the programme with the



*A view of resident bait fish colony*



*The diver locates the bait fish colony*



*The bait net is held in position at the bait fish colony by means of poles.*

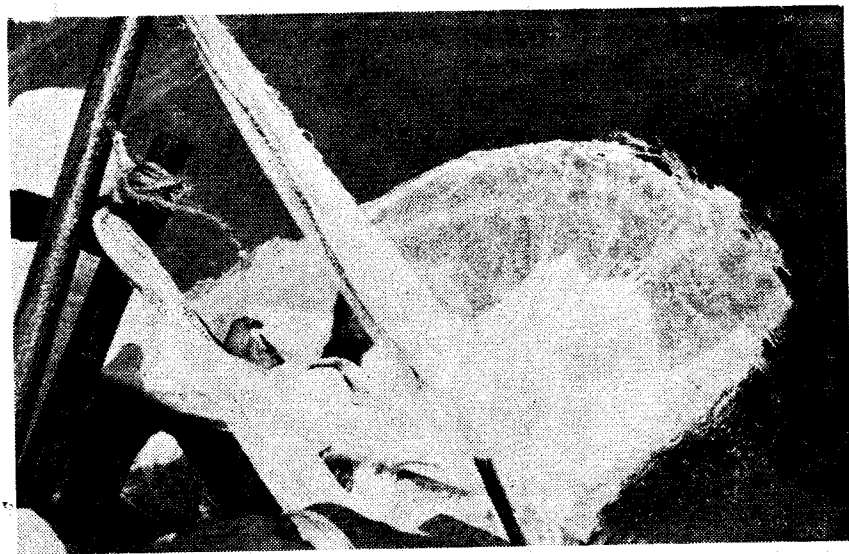
help of expert location divers and local fishermen.

The natural live-bait resources of the Lakshadweep islands are mainly coastal inhabitants with localised distribution and are observed to comprise adults and juveniles of dussumierids (sprats), pomacentrids, apogonids, atherinids and juveniles of caesionids. The sprat, *Spratelloides delicatulus* ('Hondeli') is found to be the extensively exploited live bait fish of the Lakshadweep islands. The survey revealed extensive areas of concentration of this species in dense schools in the clear coastal waters at Minicoy, Agatti, Bangaram, Perumul Par, Suheli Par and Bitra islands. This being a shallow water species is easy to be fished in desired numbers employing encircling type of nets. This species also exhibit a good chumming quality. However, the major constraint in the utilisation of this species is the large mortality at the time of capture, storing in the live-bait tanks and trans-

portation, due mainly to the osmoregulatory stress. It was observed during the survey that *S. delicatulus* is the only bait species currently exploited for tuna fishing by pole and line method in the various islands except Minicoy. Since the fishery is dependent on the availability of this single species, scarcity of the same often acts as a deter-

rant causing abrupt suspension of tuna fishing activities even during peak tuna fishing periods. At Minicoy, even though *S. delicatulus* is the most abundant single species of live-bait exploited for the tuna fishery it constitutes only about 40% of the total bait fish catch. Some of the species other than *S. delicatulus* hold good potential for exploitation.

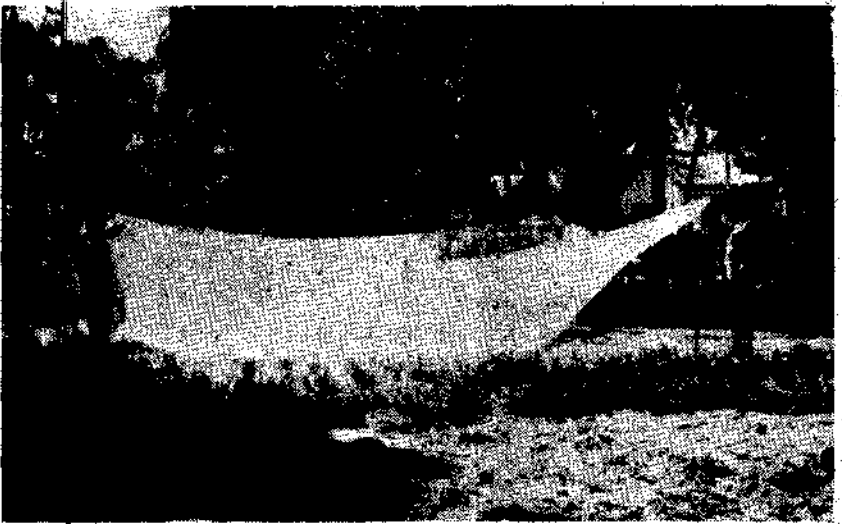
The survey also indicated that the naturally occurring live-bait resources can be classified into two major groups based on their habitat distribution patterns — (a) resident forms, which are observed in specific habitats mostly associated with live corals, coral sand etc. and complete their life cycles in the same habitats; (b) migrants, which are occasionally recruited into the lagoonal habitat for brief or extended periods, and which may emigrate from the habitat depending on the environmental changes. The chief resident forms are found to be *Chromis caeruleus*, *C. nigrurus*, *Spratelloides delicatulus*,



*Net is being hauled*



*Surrounding net (sprats)*



*Lift net fabricated at Minicoy*

*S. gracilis* and representatives of apogonids. The major migrants are *Lepidozygus tapinosoma* and representatives of caesionidae.

Another aspect that emanated from the survey is the total absence of pole and line fishing activity at certain islands such as Kadamat and Kalpeni where exploitable tuna live-bait resources belonging to sprats, spogonids,

caesionids and pomacentrids are located. Initiation and expansion of pole and line fishery in these islands and training fishermen in different islands for utilising unexploited resources of live-baits are suitable propositions to the policy planners and administrators involved in the development of tuna fishing industry in the Lakshadweep islands.