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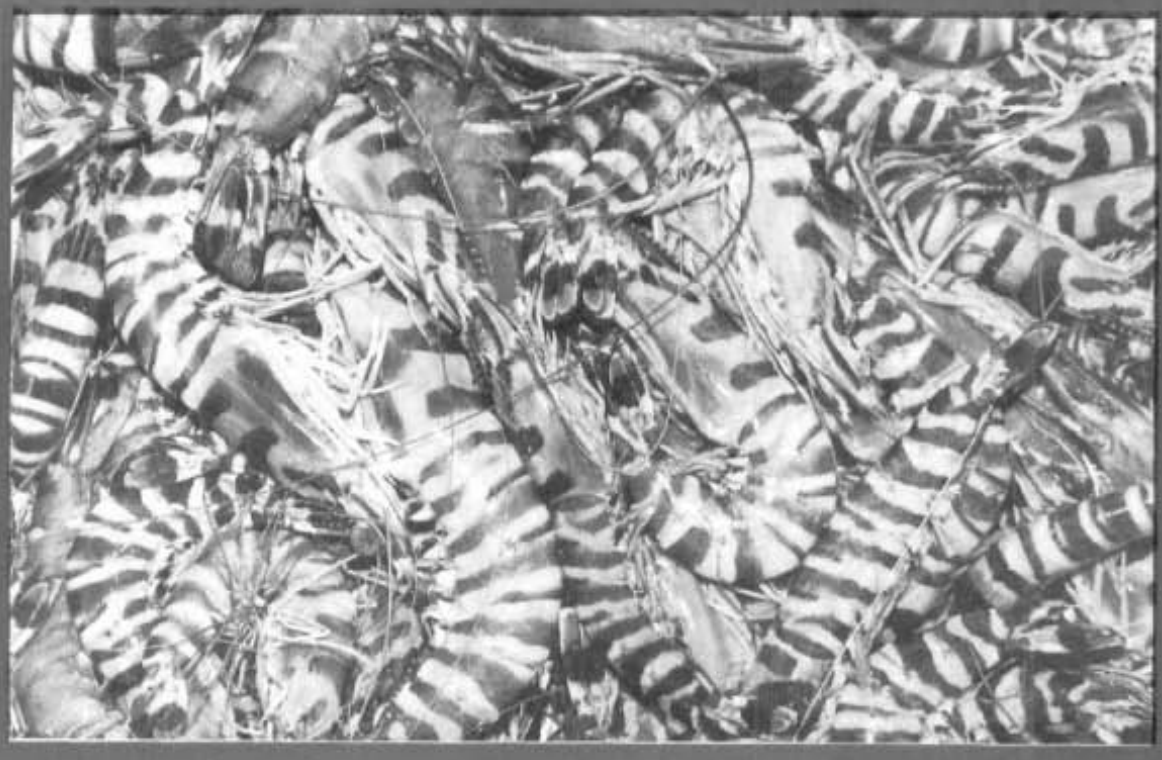

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945 LIKELY IMPACT OF SEA URCHIN REMOVAL AS BY-CATCH ON LOBSTER RESOURCES IN GULF OF MANNAR

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The Gulf of Mannar is rich in bio-diversity with regard to the variety of finfishes, shellfishes, molluscs, echinoderms and algae. Different types of fishing are being carried out along the coast, offshore and deeper waters; for which a variety of gear and crafts are used. Fishermen living in the villages along the coast of Gulf of Mannar are highly enterprising being manifested by newer innovations such as modification of crafts, gear and fishing practices.

Vellapatty and Tharuvaikulam are fish landing centres situated 9 km and 12 km respectively north of Tuticorin. Fishermen of Vellapatty carry out mainly crab and lobster fishery. In a day 28-32 vallams go for fishing. Each vallam carries 5-8 bundles of crab nets where a bundle consists of 5-10 pieces of monofilament netting of 6 feet length. The number of net pieces to be connected into a single net is decided by the fishermen mostly on the basis of their financial capacity. Though the net is named crab net it is used to catch crabs and lobsters. They leave the shore between 15-17 hrs and after reaching a depth of 10-12 fathom set their nets and return. Next day during early hours they return to the netted site and haul their nets. They mostly sort out the catch from by-catches while in the sea itself or do so as soon as reaching the shore. The by-catches are always discarded on the shore. The crabs and by -catches even after landing used to remain alive for some time. Whenever lobsters are caught they are removed carefully while being hauled, kept in a hapa placed in the sea and brought alive to shore. In the Gulf of Mannar among 6 shallow water lobster species, only three viz., *Panulirus homarus*, *P.ornatus* and *P.versicolor* are exploited in commercial quantities.

Lobsters and crabs are auctioned by the local auctioners or boat owners between 10.00-13.00 hrs in the thatched auction hall. The lob-

ster catch ranges from 3 to 12 kg per day. The current price of lobster is as follows (1999).

Range in weight(g)	Price per piece
100-200	Rs. 300
200-400	Rs. 425
400-500	Rs. 500-700
500 & above	Rs. 800 & above

After auction, the auctioners resort to extent the life of the lobster to the possible extent by spreading fresh wet sand in the bottom of the container used for transport. In the major lobster landing centre, Kayalpattinam where the processing centres are very lose by the lobsters used to be kept either in plastic container with sea water under aeration or kept alive in cement tanks constructed exclusively for this purpose with aeration and sea water exchange facility.

The capture and trade of lobster supported by good income enhance the economy of fishermen. From the marketing point of view, though it occupies low volume, its attractive higher price makes this fishery most valuable and lucrative. In the recent past, India earned an approximate US $ 15 million each year through export of lobsters mostly alive to southest Asian countries including Japan.

Lobsters are carnivorous, their main food has been reported as molluscan meat, trash fish, squid head etc., in indoor culture system. In East Canada, it has been reported that the lobster *Homarus americanus* is a well known key predator of the sea urchin *Strongylocentrotus droebachiensis* and in the laboratory too *Homarus* sp., subsists well on a diet solely of sea urchin which represent a proportion of its food in nature as well. The Checkerboard helmet, the *Phalium areola* found to live in sandy areas from low tide to a depth of about thirty feet in Australian waters, also has been reported to feed upon sea urchin after paralyzing with the venom secreted in the snout gland. The venom too causes the sea urchins to drop of their spines.

The violet sea urchin (*Temnopleurus alexandri*) ranging approximately between 5 and 35 nos./bundle has been observed at Vellapatty in the by-catch of crab/lobster nets. The average size (basal breadth) of sea urchin ranged between 2.9 and 5.1cm and weighed 50-150g (wet weight) per number. Each bundle brought an average of 2kg of sea urchin/day (1 vallam= 10kg/day). Similar situation exists at Tharuvaikulam also. Presently all the sea urchins removed from the nets are dumped along the shore line as garbage. (Fig.1).

Fig.1. A part of a garbage dump showing the dis carded sea urchins at Tharuvaikulam.

It is observed that the set net fishing for crabs and lobsters is different from set gill netting in fishes. In the latter the fast moving fishes get hit on the net being invisible and get entangled by the gill. In the former the crab/ lobster/by-catch net net the animals on sensing the net as an additional livelihood surface area climb on to the net and while being hauled they tighten their grip and get fished. From enquiry with the fishermen it is learnt that when the set net is new, it is better visible to the fished organisms and yielded higher catch. The crabs, lobsters and by-catches get caught in the set net, clearly indicate that these organisams cohabitat the same niche. The lobsters are there

not only due to the suitability of the niche but also due to the presence of their preferred feed organisms ie. the sea urchins.

From the bio-diversity and the conservation point of view, though the fishing causes disturbance to the balance in animal community, the animals being food to men the energy can be considered to have gone to a higher trophic level. But the loss of bye-catches are not so. The loss of sea urchin causing food deficit to lobster, in turn result in reduction of lobster populations thus furthering the ecological imbalance.

In 1995, Radhakrishnan reported that the annual landing of lobsters in the country is already on the decline. In 1997, lobster landing in India was 2,787 tonnes, whereas in 1998, it declined to 2,611 tonnes. One of the reason might be the reduction of their prime food due to the unscrupulous act of fishermen ie., removal of the sea urchin from the lobster ground. Not only they distrub the food chain, but also indirectly hinder their lobster fishery income.

To enhance the lobster production, an immediate measure need be taken to conserve sea urchin resources by timely returning the sea urchins caught to the sea. Knowledge about lobster - urchin relationship should be passed on to fisherfolk. They need to have a keen awareness and the knowledge of the totality of the aquatic system (Mother sea) as an asset and a life-giving system rather than a hunting ground. They should be advised properly through governmental and non-governmental agencies that entangled sea urchin should be thrown back into the sea instead of keeping / dumping them on the shore as a waste, so that regular food chain of lobster will be left undisturbed or unaltered.

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