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THALASSINA ANOMALA FISHERY IN FIJI

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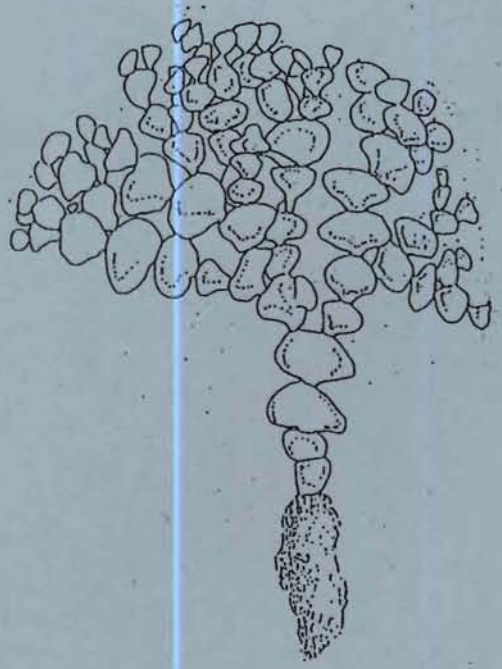

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ABSTRACT

The mangrove-lobster Thalassina anomala is one of the lesser-known human food resources of the Indo-West Pacific region although it is widely distributed throughout the region. The animal leads a cryptic burrowing mode of life within the estuarine deposits of the eulittoral and/or supralittoral zones. Its presence is usually manifested indirectly in the form of somewhat conical mounds, large numbers of which can strongly break the microrelief of such habitats. T. anomala is a moderately large animal; adult specimens measuring up to 26cm in length and 250g in weight are not uncommon. With the exception of Fiji, it is probably not exploited as a source of food by man in the region. Given the animal's size, and the fact that it can survive prolonged immersion, it lends itself to a variety of research studies. Difficulties associated with catching the animal have probably militated against the use of the mangrove-lobster as human food and/or for research. This paper discusses the importance of T. anomala as a food resource in Fiji and describes how it is caught.

INTRODUCTION

The mangrove-lobster, Thalassina anomala is widely distributed in the tropical Indo-West Pacific region, and the eastern extremity of the animal's range in this region is probably demarcated by Fiji. The animal is considered a pest in the coastal areas of the region where aquaculture and/or agriculture is prevalent because its burrowing activities are harmful to such practices (Pillai, 1972). He (Pillai, 1972) also described how the animal is caught in the Philippines with a bamboo trap.

In Fiji, however, T. anomala constitutes an important marine crustacean food resource and it has a cultural and mythological importance to many Fijians (Pillai, 1985).

The most recent (1986-1990) market statistics (Annual Report, Fisheries Division, Ministry of Primary Industries, Fiji) show that, during the five year period, on the average, about 9 metric tons of T. anomala were sold per annum (Table 1). This represents a little over 8% of the total marine crustacean sales in the country per year. Fiji may well be the only country where the mangrove-lobster is regularly used as a substantial item of food by man.

Compared with the price of prawns (Penaeus canaliculatus, P. monodon; Macrobrachium equidens, M. rosenbergii and M. lar), the spiny lobsters (represented by three species in Fiji: Panulirus versicolor, P. ornatus and P. penicillatus) and the mangrove crab Scylla paramamosain, all of which sell at a premium, T. anomala is relatively cheap ($F2.56/kg), being only marginally more expensive than the commercially less important brachyuran species, i.e. Metopograpsus messor, Sesarma erythrodactyla and Cardisoma carnifex.

Table 1
Average animal weight (metric ton), and average unit price ($F/kg) of edible crustaceans sold in Fiji between 1986 and 1990

Species	Weight		Price $F/kg
	(Mt)	%	
Prawns[1]	11.73	10.85	6.42
Panulirus spp[2]	7.76	7.18	8.07
Thalassina anomala	9.04[3]	8.36	2.56
Scylla paramamosain	47.18	43.65	6.54
Metopograpsas messor	16.80	15.54	2.11
Sesarma erythrodactyla	3.21	2.97	1.95
Cardisoma carnifex	11.6	10.73	2.46
Thalamita crenata	0.76	0.70	3.54[4]

1 Palaemon concinnus; Penaeus canaliculatus; P. monodon; Macrobrachium equidens; M. rosenbergii and M. lar (as the Fisheries Division statistics did not distinguish between the genera Penaeus and Macrobrachium, all prawns have been considered together).

2 Panulirus versicolor P. ornatus and P. penicillatus.

3 1987 figures not available.

4 1986 prices not available.

Not surprisingly, the bulk of the mangrove-lobster is sold in the wetter, southeastern parts of the largest island, Viti Levu, where it thrives better than in the drier north and north and northwest shores.

T. anomala is considered a delicacy par excellence by the Fijians inhabiting the southeastern coast of Viti Levu, but it is seldom utilized as food by the coastal dwellers of the north and northwest, notwithstanding the fact that the mangrove-lobster occurs in the estuarine muds of the eulittoral and supralittoral zones of this region also (and indeed in similar habitats of some of the other islands as well). Given the relative homogeneity of the Fijian people, and the small geographic area occupied by them, the confinement of dietary partiality to a small section of the Fijian population is rather puzzling.

The T. anomala fishery is seasonal. The animals are normally caught between December and June, when adult females tend to be ovigerous. During this period, the eggs are usually borne within the body. The egg-carrying capacity of females is enormously increased by the distension of the ovary to almost the entire length of the animal in gravid individuals. In this condition, the egg-laden posterior extension of the ovary is visible through the arthrodial membranes of the abdominal sterna, as narrow bands of orange colouration. Those who relish the mangrove-lobster, attribute the taste primarily to the unextruded eggs, with the result that such individuals are in demand. Outside the season, they are either in a 'berried' or a 'spent' stage. Seasonality of T. anomala fishing consequently stems from culinary considerations, which put a premium on ovigerous individuals.

FISHING METHODS

Because it leads a cryptic, subterranean lifestyle, rarely venturing out of its own burrow, the mangrove-lobster is a difficult animal to catch. The Fijian, however, has devised an ingenious method of trapping it.

The trap was first described by Hornell (1940). His assertion that the trap requires a bait, however, is contrary to our knowledge of the current trapping method.

The raw materials necessary for the construction of the trap are readily available in the mangrove. The top of the T. anomala mound is removed (to a depth of about 20cm) with a large knife. A noose is passed around a length of bamboo (ca 40cm long) the diameter of which is approximately equal to that of the burrow. The bamboo serves as a mould in the artificial extension of the burrow (Fig. 1).

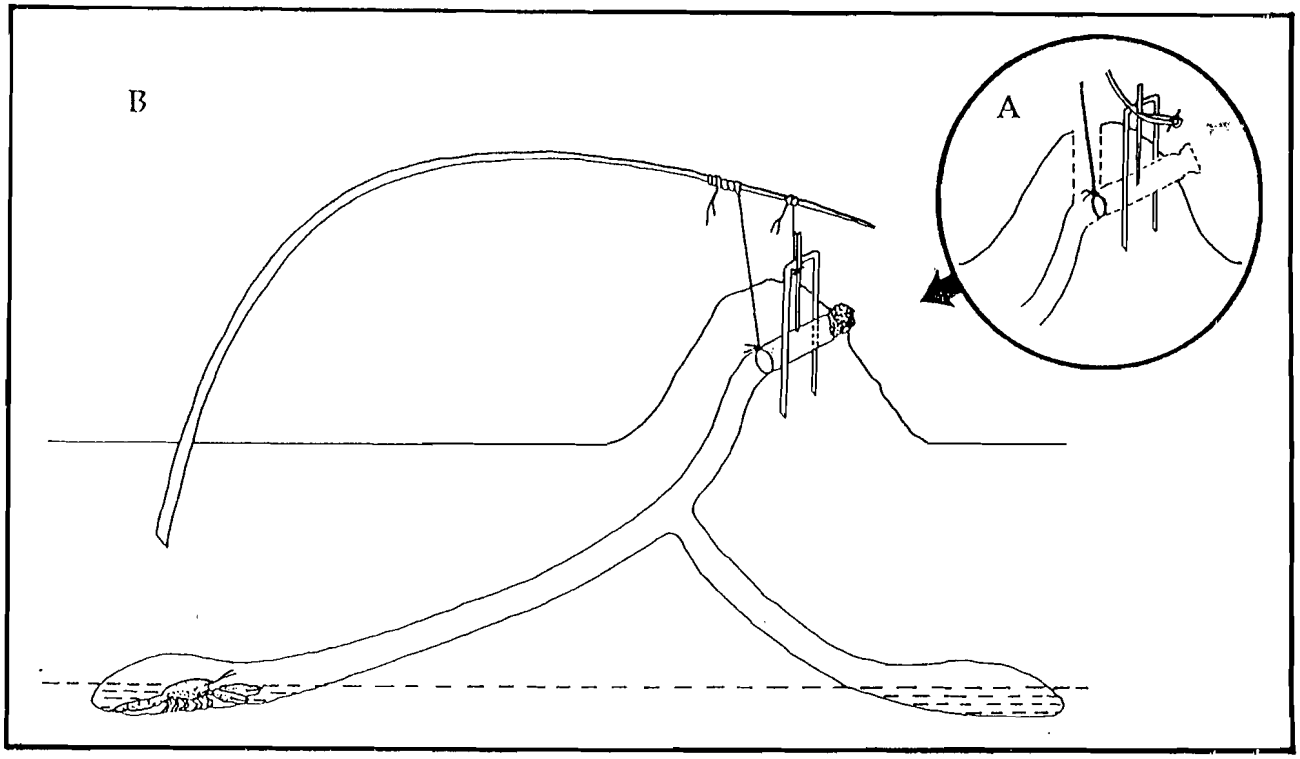

Figure 1. The mangrovelobster trap. A, illustrates how a trap is set. B, shows a trap in situ.

The open end of the bamboo is placed just covering the freshly truncated end of the burrow, and the mould is made to rest at an obtuse angle to the axis of the shaft of the upper part of the burrow. Mud is placed over and around the bamboo, and rammed down with the hands. After making an appropriate prop root framework to support the tension/trigger mechanism, the bamboo is gently withdrawn in a single, gently rotating motion. The vertical stick which was made to rest on.the bamboo (Fig. 1A) is then pushed into the burrow (Fig. 1B).

The tension of the bent pole is coupled to the trigger device. The free end of the noose is wound around the pole and loosely knotted. Finally, the burrow opening is plugged with mud. The trap is now ready. It is usually set on the rising tide.

When an adult mangrove-lobster comes to the entrance to unload mud (or for any other reason), it sets off the trigger. As the pole springs up, the noose tightens violently around the mid section of the animal's body. The action may result in the animal being dragged out of the ground, otherwise it remains trapped underground. If the trapped animals are not recovered soon enough, they may fall prey to the mongoose Herpestes auropunctatus which was introduced into Fiji towards the end of the last century as an instrument of biological control of rats in sugar-cane fields.

Another method of catching T. anomala is known as 'kucokuco' in Fijian, and is possible only at high tides. It involves locating one of the several lower accesses to the burrow. Catchers can recognise these as shallow depressions in the proximity of the base of the mound. Pressing vigorously into one of these depressions with the foot, or less commonly with the hand, sets in motion the water column inside the burrow. The reciprocating movement of water and/or the trapper-induced disturbance in the neighbourhood of the base of the mound, drives the animal up the burrow to the surface where it is caught in the hands.

Of the two fishing methods, it would seem that trapping is the domain of men, whereas 'kucokuco' may be resorted to by either men or women.

Skilled trappers can set up about 10 snares an hour, and a success rate of 80-90% is not uncommon. The mangrove-lobster is sold in bundles of 5-6 individuals tied together, at $3 a bundle. T. anomala, like most other non-fish aquatic food resources, is normally sold by women rather than men. T. anomala harvest forms the basis of subsistence fishery.

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