

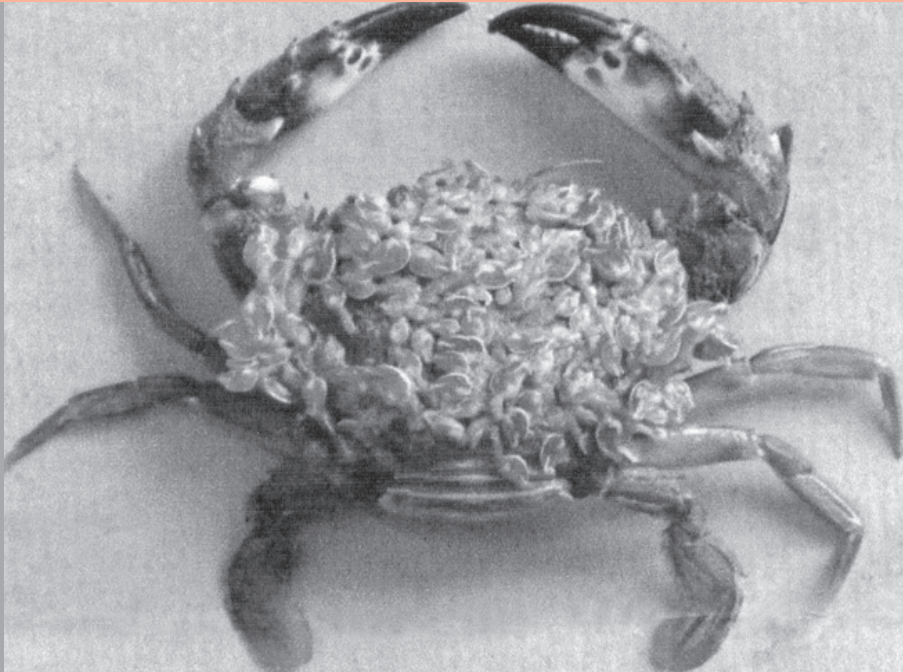
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Clams of the species *Meretrix casta* and *Paphia malabarica* are popular in Mulki estuary mainly for edible purpose, targeting domestic markets of Mulki and Mangalore. Exploitation of clams in the estuary is an year round activity with peak production from January to May. Generally clams are handpicked during the low tide from shallow areas and transported to different areas for marketing. However, when there is low domestic demand, the clams are heaped in some localities, where they are allowed to decompose for the separation of meat from shells. These shells are collected after drying for 15-20 days. When sizable quantities of

shells are accumulated in 8-12 months the shell heaps are sold for making lime. However, this method is not practiced extensively because of the objectionable odour it generates in the neighbourhood.

In March 2005, dense settlement of small sized live clams (*M. casta* and *P. malabarica*) in Bappanadu and Chitrapu beds of Mulki estuary has been observed. Due to high natural mortality, the resource formed a layer of dead and live clams near the bar mouth. Large-scale exploitation of these clam shells was observed from the estuary mainly for lime industry. This has generated income for fishers engaged in estuarine fishing activities and they have

resorted to organized shell collection.

Clam shell bed: In Mulki estuary, the clam shell deposits extend up to a depth varying between 0.5 and 1 foot below the live clam bed level. The shell deposits are of recent formation and are not fossilized. The clam beds occur in areas at a water depth of 0.5-1.5 m during low tide where live clams formed 57% of the shell layer covering an area of 0.27 sq.km. The major exploitation areas are near the bar mouth. The Chitrapu bed has more *Paphia*, and is generally used for edible purpose.

Clam net: The method of shell exploitation is by using scoop nets. The scoop net used for the collection of clams is locally known as 'gorubale' (Fig. 1). It consists of a circular iron frame or a semicircular wooden frame to which a nylon net bag of 20-22 mm mesh size is attached. The circular *gorubalae* of 32-40 mm diameter is attached with net bag



Fig. 1 Scoop net used in clam fishery

of 50 cm length, whereas, the semicircular frame is attached with a longer net piece of 70-80 cm. The cod end of the semicircular net is tied with a rope to form a net bag.

Fishing operation: Fishing is practiced during the low tide, preceding and following the new moon and full moon phases. Generally about 25-28 traditional non-motorized boats are engaged in the operation. Each unit consists of a canoe of 3.5-6 m (OAL) with a crew of 1 or 2 men. These units operate for 20 to 25 days in a month. On an average 35 men are engaged in the activity in a day. The loosely occurring clams and shells are removed by thrusting the shell layer and the substratum with foot into the net. The shells are separated from the sand by repeatedly washing the net content in water. Subsequently the net is lifted and the shells are emptied into the canoe periodically. Each unit generally returns with 200-600 kg of clams.

The clam shell collectors are mostly from various parts of Mulki and some of them hire canoes from local fishermen by paying Rs. 30-50/- for two-three hours. The clams thus collected are piled up in a nearby uninhabited area near the estuary and sun dried (Fig 2). The flesh decays in 7-8 days and the shells are dried for a week. The dried shells are transported to the landing centre for marke-



Fig. 2 Clams heaped for sun drying

ting. The shells are sold to agents who procure the shells for lime industry. During the post-monsoon months on an average, one truck load (about 10 t) of clam shells are taken from Mulki on alternate days.

Production: The shells exploited from March 2005 to February 2006 at Mulki were estimated at 2,629 t with maximum landings during November-January. The catch per unit effort (CPUE) varied from 175 to 613 kg/unit (Table 1). The fishers engaged in the lime shell activity spend 2-3 hours per day and the CPUE is estimated as 387 kg/unit. They are sold at Rs. 30/- per bag. About 84% of the clams exploited for shells consisted of *M. casta* and the rest by *P. malabarica*. The size range of the shells was 13-41 mm, with an average length of 24 mm. Economically, *M. casta* with thicker shell is more important as a raw material for lime than *P. malabarica*.

Utilization: Clam shell form as a raw material

Table 1. Estimated clam production from Mulki estuary for shells.

Month	Catch (t)	Effort (units)	CPUE (kg/unit)
Mar 2005	72	351	204
Apr	106	504	210
May	111	594	187
Jun	39	203	192
Jul	21	120	175
Aug	147	450	327
Sep	227	540	421
Oct	354	616	574
Nov	392	702	558
Dec	397	648	613
Jan 2006	392	675	580
Feb	372	621	599
Total	2629	6024	4640
Mean	219	502	387

in the manufacture of many industrial products. Traditional lime making practices are popular in the villages for domestic uses. However, with the ever-increasing requirement of cement manufacturing units in nearby areas the demand for lime shell has considerably increased in recent years. The clam fishery supports the lime industries in Coondapura, Udyavara, Karnad, Puthur etc. Average revenue from shell is estimated at Rs. 1,20,000/- per month. As with other forms of harvesting, the environmental effects of shell extraction largely result from the physical disturbance of the clam bed. The effects of such physical disturbance can include

suspension of any fine sediment associated with the substratum, destruction of clam bed habitat and/or associated fauna in or on the bottom etc. Hence close monitoring of such activities for the exploitation of shell is required

for long-term benefit.

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