Bivalve fishery of Bhimili Estuary, Visakhapatnam, Andhra Pradesh

P. Laxmilatha, G. S. Rao and M. Prasada Rao
Regional Centre of CMFRI, Visakhapatnam

The Bhimili Estuary situated in Visakhapatnam District of Andhra Pradesh is a fairly large but shallow estuary and supports the livelihood of over 5000 fishers. Nearly 3000 clam/oyster pickers exploit the bivalve resources of this estuary. Finfishes like *Mugil cephalus* and *Caranx* sp., shrimps such as *Metapenaeus monoceros, Fenneropenaeus indicus*, *Penaeus monodon* and the crab *Scylla serrata* are the major species contributing to the fishery of this estuary. The Gostani River joins the sea at Bhimilipatnam carrying freshwater from Anantagiri hills, Padmanabhan, Boni, Pandrangi, Taditorru, Gudivada, Chittivalasa,Jutmill,Mulakuddu and Nagamayyapalem. Clams and oysters are distributed up to a stretch of 5-6 km from Bhimili municipality office point. The clam/oyster fishing grounds are Moolakuddu, Magamayyapalem, Thotepalem, Chinnanagarama, Asipalem and Gudivada.

The clam/oyster fishery in the Bhimili Estuary is carried out throughout the year, except during the month of January due to cold conditions. Bivalve fishery in the Bhimili Estuary is a very recent activity. During the 1980-90's, the various uses of clams and oysters were unknown to the local people. Later, they began picking clams only for the consumption of meat. Much later, the commercial value of the shells for the preparation of lime was realised and active exploitation of bivalves increased. During 2000, the demand for clams increased and traders from Payakaraopeta, Yellamanchili, Narsipatnam and Nakkapali transported truck loads of clam and oyster shells. During this period, when the demand for shells was high, fishing was carried out by boats (known locally as Katlatheppa) with 3 - 4 persons per boat. Women and children handpicked clams from the inshore waters. Traders carried shells for lime industry and fertilizer. The meat of clams and oysters are being used by hatcheries in and around Bhimilipatnam, Srikkakulam and Kakinada. The meat is priced at and Kakinada. The meat priced at ₹ 80-150 per kg. The shells are priced at ₹ 6-8 per kg. The shells of *Anadara rhombea* have greater demand due to ornamental value.

Fishery

Three species of clams and one species of oyster contribute to the fishery of the Bhimili Estuary. *Meretrix casta* is the dominant species followed by *M. meretrix* and *A. rhombea*. The edible oyster *Crassostrea madrasensis* is exploited to some extent. The salient features of the bivalve fishery during 2003-2010in the Bhimili Estuary is presented here. The total bivalve production during 2003-10 was 4.7 t with an average annual production of 0.59 t. The total clam production during the period was 2.71 t with an average annual production of 0.34 t. The total effort expended was 80983 units with an average catch per unit effort of 58.1 kg. Among the clams, the dominant species was *M. meretrix*. The total production during the period was 0.53 t with an average annual landing of 0.07 t. *A. rhombea* was landed in meagre quantities of 0.04 t. Edible oyster *C. madrasensis* landed during the period was 1.99 t with an average annual production of 0.25t (Table 1). During 2003-'10, the total bivalve production in the Bhimili Estuary showed an increasing trend up to 2005, both in catch and effort. Thereafter, there was a decline in the fishery with 83.3% decline in 2007. In 2008, the fishery improved and increased significantly over the previous year but again declined thereafter. In 2010, the fishery again declined drastically. The effort also declined over the years from 14839 in 2003 to a meagre 2405 in 2010 (Fig. 1). Bad weather, as a result of frequent cyclones affected the exploitation which resulted in decline in production. The maximum landing of bivalves occurred during November followed by the period from March to June. In the case of *M. casta*, during 2003-'10, maximum landings occured during November (40.3 t) followed by 31.9 t in March, 30.7 t in April and 30 t in May. *M. meretrix* recorded the highest average monthly landing of 12.9 t in November followed by 7.8 t in June and 7.5 t in May. *A. rhombea* recorded highest average monthly landings of 0.87 t in November followed by 0.7 t in March and 0.65 t in April.

C. madrasensis recorded highest average monthly landing of 36.2 t in April followed by 35.2 t in March and 30.7 t in May (Fig. 2).

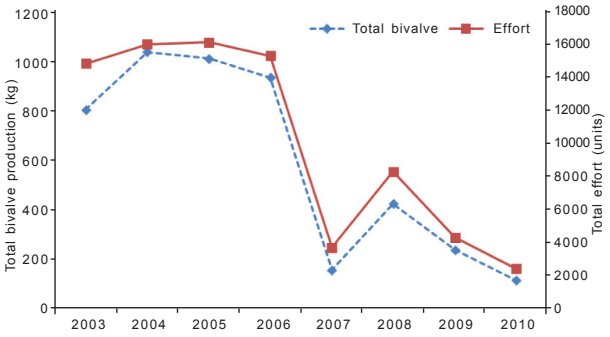

Fig.1. Bivalve catch and effort in Bhimili Estuary, 2003-2010

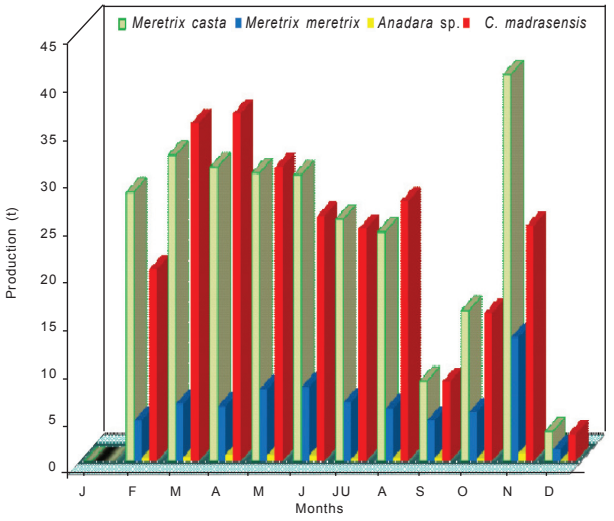

Fig. 2. Average monthly landings of bivalve species in Bhimili Estuary in 2003-2010

Table 1. Catch and effort of bivalve fishery in Bhimili Estuary, Visakhapatnam

Year	*M. casta* (kg)	*M. meretrix* (kg)	*Anadara* sp. (kg)	*C. madrasensis* (kg)	Total clams (kg)	Total bivalves (kg)	Effort (no. of units)	C/E (kg)
2003	541.5	62.4	7.5	190.7	611.3	802.1	14839	54.1
2004	559.1	113.5	8.9	353.8	681.6	1035.4	16002	64.7
2005	410.1	107.6	6.8	483.7	524.5	1008.2	16129	62.5
2006	347.8	86.7	5.5	492.2	440.0	932.3	15307	60.9
2007	73.5	15.1	0.7	66.1	89.3	155.4	3705	41.9
2008	106.8	76.7	4.1	235.4	187.6	423.0	8229	51.0
2009	57.6	45.1	4.0	130.0	106.7	236.7	4297	55.1
2010	40.0	23.9	2.0	47.8	65.8	113.6	2405	7.2
Total	2136.4	531.0	39.5	1999.6	2706.9	4706.5	80983	58.1
Average	267.1	66.4	4.9	250.0	338.4	588.3	10122.9	

The clam/oyster fishery has been declining over the past two years. The clam pickers are now switching over to crab fishing or prefer to go for daily wages activity in the bank colony, Tagapuvalasa and Timmapalem areas. Migration of the fishers to neighbouring states is another major social issue. The migrants earn nearly q 3500 in Chennai, Calcutta and Bangalore excluding food and accommodation. They return to their native villages once in six months. Many others are compelled to take up other income generating activities such as making and repair of boats and catamarans.

There are several issues affecting the sustainability of the bivalve fishery and the livelihood of the fishers dependent on the Bhimili Estuary. The exploitation of bivalves has been affected largely due to the inclement weather conditions such as cyclones and thunderstorms. The decline in production has led to socio-economic issues including migration. Pollution, mainly from domestic sewage has also been a major issue in the decline in production. Alternative income generating activities such as oyster/mussel/clam relaying should be introduced to solve the socio-economic problemsof the local fishers of this area.