

Clam Fishery at Visakhapatnam, Bheemili : A Case of Livelihood and Sustainability

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The coastal town of Bheemunipatnam (Bheemili), located north of Visakhapatnam, Andhra Pradesh, supports a significant estuarine molluscan fishery. This fishery revolves around the exploitation of clams and oysters in the Gosthani Estuary, especially near Moolakudhu, a hamlet that has evolved into a hub for clam harvesting. Once known for its thriving blood clam (*Anadara rhombea*) populations, the estuary now primarily supports *Meretrix meretrix*, with declining traces of *Anadara* spp.

Evolution and Present Status of the Clam Fishery

Historically, the bivalve fishery in Bhimili emerged relatively recently. In the 1980s and 1990s, clams were harvested only for local consumption. By the early 2000s, increased awareness of the economic value of clam meat and shells (used in lime and fertilizer industries) triggered greater exploitation. At its peak, clams and oysters were collected using small boats (locally known as *katlatheppa*) with 3–4 people onboard, while women handpicked clams in inshore zones.



Oysters



Clams



Blood clams

Today, the fishery is practiced seasonally, primarily from November to February (about 120 days), with around 40 women working daily during low tide for 6–7 hours. This results in a total effort of ~28,800 man-hours per season. Clam beds extend over 3.5–4 acres, yielding a daily harvest of 6 tons, packed in 100 gunny bags (60 kg each), culminating in 700–750 tons per season. This transition from subsistence to semi-commercial scale has been accelerated over the past 4–

5 years due to improved earnings (Rs. 600/day), luring fishers away from construction and other wage labor.



Hand-picked clams packed in gunny bags, ready for transport

Species Composition and Fishery Trends

The dominant species currently harvested is *Meretrix meretrix*. Historical data (2003–2010) from CMFRI also identifies *Meretrix casta* and *Anadara rhombea* (a form of blood clam) as contributors to the fishery, along with the edible oyster *Crassostrea madrasensis*.



***Crassostrea madrasensis* harvest from the estuary**

Between 2003 and 2010, total bivalve production in the Bhimili Estuary was 4.7 tons, with an average annual production of 0.59 tons. The highest production occurred in 2005, after which there was a marked 83% decline in 2007, largely due to cyclonic weather events, and pollution from domestic sewage. A brief recovery in 2008 was followed by another drop in 2010, with total effort falling from 14,839 units in 2003 to just 2,405 units in 2010.

The *Anadara* (blood clam) fishery, once minor in volume but ecologically and culturally significant, appears to have collapsed locally, as evident from dead shell remains and lack of landings since the early 2010s.

Market Network and Utilization

The harvested clams, though claimed by fishers to be routed to Kerala, are reportedly distributed through trade channels to Mangalore and Goa, indicating a multi-state commercial network. Clam meat is also used by hatcheries in Bhimili, Srikakulam, and Kakinada, and is priced between Rs. 80–150/kg, while shells sell at Rs. 6–8/kg. Notably, shells of *Anadara rhombea* once fetched higher prices due to their ornamental value.

The growth of this fishery has brought significant economic benefits to coastal communities, particularly women. However, it also emphasizes the importance of equitable marketing access and better post-harvest handling (e.g., depuration, cold chain) to maximize income.

Sustainability and Emerging Concerns

The current high-intensity, unregulated harvesting poses a serious threat to the long-term sustainability of the clam fishery in Bheemili. The local extinction of *Anadara rhombea* serves as a stark warning of what unchecked exploitation can lead to. Over the years, the sharp decline in both catches and effort has already driven many clam pickers to shift to alternative livelihoods such as crab fishing, wage labor, or migration to urban centers.

At present, the 120-day seasonal harvest of *Meretrix meretrix* is predominantly market-driven, with clams being collected on demand to fulfill trader orders. This practice, which has intensified over the past decade (2014–2024), has significantly reduced clam yields in the estuary. A major contributing factor is the indiscriminate and uncontrolled harvesting by hired collectors who often overlook crucial sustainability measures such as size and quantity limits. This trend not only threatens the ecological integrity of the estuarine clam beds but also jeopardizes the livelihoods of traditional fishers who have long depended on this resource. Immediate attention to regulated harvesting and community-based management is essential to safeguard both the environment and the economic security of local communities.

Recommended Management Measures

Based on observed trends and CMFRI's experience in managing similar fisheries across India, the following interventions are essential for Bheemili:

- ▶ **Seasonal closures** during spawning periods to enable stock regeneration.
- ▶ **Rotational harvesting zones** to avoid local overexploitation.
- ▶ **Minimum size regulations** to allow clams to breed at least once before being harvested.
- ▶ **Hatchery-based reseedling or relaying of clam seed** in depleted beds.

- ▶ **Water quality monitoring and pollution control**, especially from domestic sewage.
- ▶ **Community-led co-management frameworks**, involving fishers and local governance bodies.

Such approaches have proven successful in clam fisheries of **Ashtamudi Lake (Kerala)** and **Kali Estuary (Karnataka)** under CMFRI's guidance.

The Bheemili clam fishery exemplifies both the potential and vulnerability of small-scale estuarine fisheries. What began as a subsistence activity is now a female-led economic mainstay, supporting many a families. However, ecological signals such as the disappearance of blood clams and declining effort trends indicate the need for urgent and scientifically informed intervention.

By aligning traditional knowledge with modern fisheries management practices, and empowering local communities through co-management, the Bheemili clam fishery can transition into a model of sustainable, inclusive, and resilient coastal livelihoods.

Mariculture offers immense potential for seed production and ranching of blood clams and edible clams, ensuring stock replenishment in estuarine habitats. Establishing hatchery-based seed supply and reseedling programs can reduce dependence on wild harvests, while integrated culture of these species diversifies production, enhances sustainability, and eases fishing pressure on natural clam beds.