# RESOURCE POTENTIAL OF BRACKISH WATER PRAWN FORMING IN SINDHUDURG COAST, M. S., INDIA.

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**Abstract**

This study has been undertaken to investigate the resource potential of brackish water prawn farming in Sindhudurg coast. For this survey along the Sindhudurg coast for assessing the productivity of the brackish water prawn farms were carried out so as to get an idea of the exact earning potential of this sector and it is find out that. The production of brackish water prawn farming in Sindhudurg coast depends upon the area of the coast, geographical nature of the coast and physico-chemical factors such as the, temperature fluctuation, oxygen depletion and the availability of prawn seed. The increase or decrease of salinity in the water column exerts either a direct or an indirect effect on the productivity of brackish water prawn farming in Sindhudurg coast. The second effect on prawn productivity is probably due to the high cost of production and viral diseases. The indirect effect might be due to the natural disasters, flood problems, lack of quality seed and high price of seed ultimately affecting the production of brackish water prawn farming.

**Key Words.** Resource potential, brackish water prawn farming, Sustainable development, Sindhudurg coast.

## Introduction

In India, there exists about 1.2 million hectare of potential area suitable for shrimp farming, of which an area of about 1.57 lakh hectare is under actual farming. It has been estimated that about 1.45 lakh tonnes of shrimps were produced during 2010-11. The average productivity has been estimated at 660 kg/hectare per year. The cultured shrimps contribute about 50 per cent of the total shrimp exports from India. Shrimp farming provides direct employment to about 0.3 million people and ancillary units provide employments to 0.6-0.7 million people (FAO, 2010).

Maharashtra, the third largest state in the country in terms of area and population, with a coastline of 720 km and continental shelf area of over 0.11million sq. Km, offers rich resources for marine fish production. Maharashtra has about 80 thousand hectare of brackish water area suitable for shrimp farming. At present, approximately 12,445 ha land is suitable for brackish water culture in Maharashtra, out of which 1,056 ha area is developed. Estimated marine and inland fish production was 3.26 lakh MT and 0.95 lakh MT respectively by the end of December, 2010 whereas it was 4.16 lakh MT and 1.23 lakh MT respectively during 2009-10. (Economic Survey of Maharashtra 2010-11). For the past two decades or so, development of aquaculture has been one of the most outstanding features of fisheries sector in the country including Maharashtra State. It is one of the major reasons for doubling the shrimp production

not only from Maharashtra State, but also from the whole country. Studies on their resource potential and landings have been carried out by few workers. These works appear to be valuable since the demand of crustaceans in the market is increasing day by day and their availability is gradually diminishing. (Pillai *et al.*, 1991) studied the biology of *Penaeus merguiensis* along the Orissa coast during the period of 1983-1985. Ramamurthy (1994) studied the prawn fisheries in the North West coast of India.

The coastal districts of Maharashtra viz., Greater Mumbai, Thane, Raigad, Ratnagiri and Sindhudurg are the areas suitable for shrimp culture (State Fisheries Dept., 2010). Proper utilization of this available natural resource for sustainable development of the district has been anticipated by adoption of scientific and technical knowledge of ecological and resource potential studies. In the present study survey of shrimp farmers along the Sindhudurg coast for assessing the productivity of the brackish water prawn farms were carried out so as to get an idea of the exact earning potential of this sector.

**Materials and Methods**

Surveys of the present brackish water prawn farms in the district were made. The main hot target coastal places of Kudal, Devgad and Malvan were frequently visited for that at a regular time interval of 15 days. At the same time, need base studies were also made by visiting brackish water prawn farms in selected areas.

In addition to that, data from shrimp farmers along the Sindhudurg coast for assessing the productivity of the brackish water prawn farms were also carried out so as to get an idea of the exact earning potential of this sector. Besides, the study also involved the overall survey of the varieties of prawn species used for farming in the district and also that could be made available in the district from other regions.

Interviews of the available expertise in the district in the concerned field were taken for betterment of the aim. It had given a basic idea about the total investment including land and its fertilization, seed and its transportation, food, labour and other related aspects. It had also cleared the idea about the loan facilities available by different nationalized and schedule banks as well as the schemes of the State and Central Governments so as to encourage the business.

To achieve eco-friendly and sustainable development of shrimp farming, adoption of improved shrimp farming practices is necessary. An attempt has been made in this study to collect data from shrimp farmers along the coast of Sindhudurg to judge the level of adoption of improved aquaculture practices. The data was collected by personally interviewing the farmers with the help of questionnaire.

**Results and Discussions**

The State is having 720 km. coastal area, the area suitable for marine fishing is 1.12 lakh sq.km. In addition to this, the area suitable for inland and brackish water fishing in the State is 3.01 lakh ha. and 0.19 lakh ha. respectively.

The coastal marshy land in Sindhudurg is estimated to be about 1268 ha, which has been found to be suitable for shrimp farming. These are Government-owned lands and a policy has been enunciated to lease these lands for shrimp farming.

Although there has been no traditional system of farming in Sindhudurg, there have been sporadic efforts to impound tidal waters in salt pans and whatever shrimp and fish seed is trapped, is allowed to grow for 2–3 months.

The use of the fishery resources of the coastal marshy land by the local traditional fishing community is sustainable as compared to the overuse (intensive culture) by the state-sponsored/promoted and outside interest groups/agencies.

From the surveys made by visiting hot target place, Malvan, Kudal and Devgad to assess productivity and species of prawns used for farming it is find out that instead of *Penaeus monodon* the farmer used to select *Penaeus vannamei* for better result in respect of high density (5 times more), fast growth rate, productivity, high tolerance to disease and fluctuation in physico-chemical parameter and high demand.

It has also been found that the brackish water prawn farmers are facing problems such as white spot disease, other viral diseases, high cost of production, natural disasters, flood problems, poaching of shrimps and other accessories, lack of quality seed and high price of seed, etc.

Further there is huge capital investment for construction of bunds, sluice gates and equipment. In this context the paper examines resource potential for brackish water prawn forming in Sindhudurg coast, M. S., India, in following way-

**Brackish water prawn farming development**: **Potential positive impacts**

The most marginal of the coastal saline soils will be brought into productive use.

The most economically distressed portion of the coastal population (*i.e.* fishermen) will be offered an alternative economic activity.

There will be reduced pressure on the coastal fisheries, forests and other natural resources.

Additional employment opportunities will be created.

Ancillary activities (*e.g.* processing, marketing, production and sale of feed *etc.*) will create additional employment opportunities.

An activity will be developed that will serve as an "indicator industry" for the general health of coastal waters.

**Potential negative impacts**

If migrant labor were to be prohibited, there is a conceivable future labour constraint.

If brokers and exporters gain a significant portion of the profit potential, most of the economic benefit may be lost to the local economy.

**The need for planning and management of the brackish water prawn farming:**

Experience has shown repeatedly that without some form of intervention, short term financial perspectives will tend to dominate development decisions to the detriment of environmental and social objectives. In the case of coastal aquaculture, and indeed many activities in the coastal zone, there is a strong case for such interventions to be planned and strategic, rather than reactive and uncoordinated.

The problems associated with coastal aquaculture development may be grouped into three broad categories as follows:

Unsuccessful development, where the potential for development is not realized, especially among the poorer sectors of society;

The vulnerability of aquaculture to poor water quality and aquaculture (i.e. its own) wastes;

Over-rapid development, where the undoubted successes of the sector have been tarnished by environmental and social problems, disease, and in some cases, marketing problems.

Investors have responded to these problems with more rigorous project appraisal: financial and economic analysis, and in some cases cost benefit analysis. Governments have responded with specific regulations relating to farm operation (such as effluent limits or design standards), and/or with more rigorous requirements for social and environmental impact assessment (EIA). The market itself is increasingly demanding sustainably produced goods, at least in western countries.

These responses have significant weaknesses. They arise mainly from the small scale and incremental nature of most aquaculture (and agriculture) development. While individual developments may have no significant impact on the environment or society, a large number of developments, however small, may have significant impacts on the wider social and economic environment, and on each other. Farm drainage in western countries, and shrimp farming in some regions of Sindhudurg coast are classic examples of this problem. Project or enterprise level approaches cannot deal with this problem, and the market is likely to respond only once damage is done. Furthermore, EIA and economic/financial studies tend to be undertaken by different specialists, ignoring the close links between the two, and commonly presenting contradictory conclusions.

Nor can these approaches facilitate or promote aquaculture development in those areas to which it is most suited. This is a particular problem with aquaculture, because site requirements are frequently much more demanding than those for other activities. Inadequate attention on the part of new entrants to site selection is a major cause of failure in brackish water prawn farming development, and commonly exacerbates environmental impacts.

In practice, the problems and opportunities associated with coastal brackish water prawn farming development can only be addressed or realized through:

Improvements in siting, design, technology, and management at the farm level (requiring a set of incentives and constraints to promote these changes at the sector level);

Better location and spatial distribution of the sector as a whole (implying some form of zoning);

Better water supply for the sector as a whole;

Better shrimp health management, including disease and stock control at individual farm and sector levels;

Improved communication and information exchange;

Improved access to markets and trade opportunities; and

More equitable distribution of the benefits derived from coastal brackish water prawn farming development.

This implies strategic intervention by government and producer associations or industry organizations to allocate and use resources more equitably and efficiently in both time and space - in other words, more effective and integrated planning and management of the sector.

The Government has a pilot farm of 4.02 ha area at Ratnagiri where *P. merguiensis* culture is demonstrated to local farmers. A semi-intensive culture farm of 8 ha area exists at Asangaon in Thane District. A number of semi-intensive shrimp farms have been developed north of Bombay, adjoining Valsad District of Gujarat.

Key issues for improved management of coastal aquaculture may be social, environmental, technical, or economic. Identifying these issues implies a thorough understanding of both the development context (natural resources and ecology; human resources and economy), and the nature of actual and potential activities or developments (technical, economic, social and environmental characteristics). This can only be done effectively using an iterative and adaptive approach:

**Conclusion**

In the present investigation, the increase or decrease of salinity in the water column exerts either a direct or an indirect effect on the productivity of brackish water prawn farming in Sindhudurg coast. The second effect on prawn productivity is probably due to the high cost of production and viral diseases. The indirect effect might be due to the natural disasters, flood problems, lack of quality seed and high price of seed ultimately affecting the production of brackish water prawn farming. The production of brackish water prawn farming in Sindhudurg coast depends upon the area of the coast, geographical nature of the coast and physico-chemical factors such as the, temperature fluctuation, oxygen depletion and the availability of prawn seed.

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