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PRAWN SEED EXPLOITATION ALONG KAKINADA COAST : A PRELIMINARY APPRAISAL WITH A NOTE ON THE BROODER EXPLOITATION OF *PENAEUS MONODON*

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Introduction

In recent times there is a steep increase in the exploitation of prawn seed in order to cater to the needs of prawn farmers along the Andhra Pradesh coast. There is demand mostly for seed *P. monodon* by the prawn farmers of this state. There are no official or reliable estimates of the total extent of prawn farms in Andhra Pradesh. However, the informaton collected from farmers and other agencies points to a figure of about 20,000 ha (i.e. East Godavari 5,000 ha, West Godavari 5,000 ha, Nellore District 5,000 ha and other districts together 5,000 ha). All these farms cultivate only *P. monodon* for two crops a year. At a conservative estimate of 40,000 seed/ha/crop, the seed requirement of the State works out to about 1600 million seed for two crops of the year. About 18 hatcheries are coming up and are at various stages of construction; however, only few are completed. About half of these hatcheries are located in the vicinity of Kakinada. Even after completion of all these hatcheries in the near future, the installed capacity works out roughly to about 700-800 million seed/year. This points out to a gap of more than 50%, which has to be collected from wild source. At present almost 80% of the seed requirement is met from wild source.

Kakinada area is the major contributor to the landings of *P. monodon* along the east coast. This area is endowed with a net work of estuarine creeks and mangroves, providing one of the most congenial nursery grounds for prawn seed. Hence this area is the leading area for prawn seed collection in Andhra Pradesh. People from different walks of life have entered this new found business resulting in unprecedented exploited seed, particularly during September 1993. Against this back ground the Kakinada Research Centre of C. M. F. R. Institute has taken up a preliminary quick survey of exploited prawn seed in this area during the month of September 1993 and the results of the study are presented here.

Methods of study

The area between Moolapeta in north and Yanam in the south, extending about 75 km along the coast was covered in this study (Fig. 1). The data was collected at the primary level of exploitation on the beach. The exploitation of

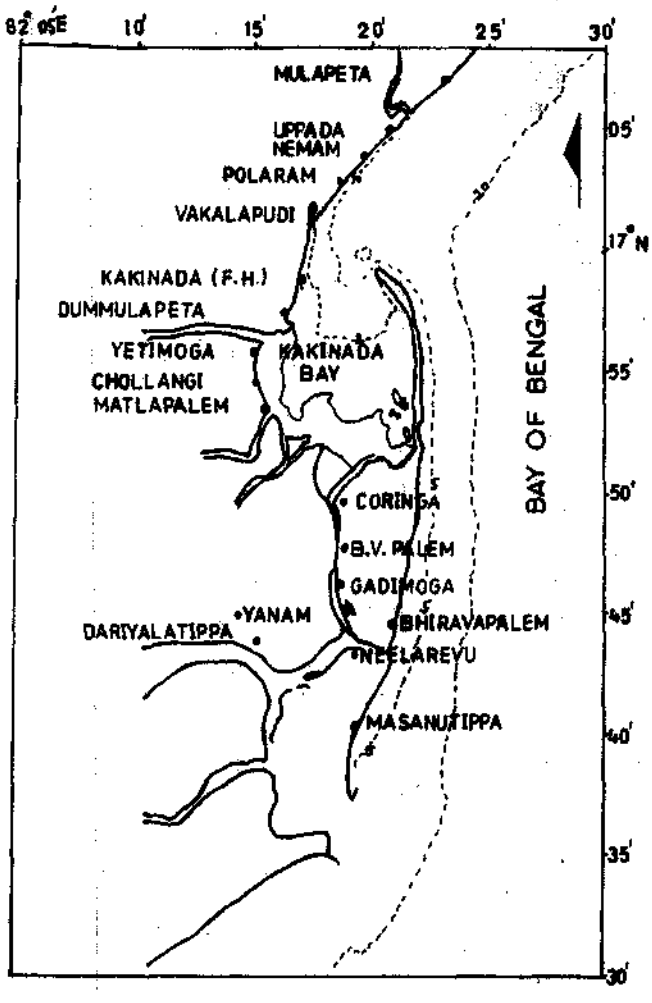

Fig. 1. Map showing the centres of prawn seed collection.

seed was personally observed and number of *P. monodon* seed collected were recorded. Samples of "discarded seed" were collected and analysed. The data on the secondary level of marketing and destinations were collected from the middle men.

Gears used

The main gear used to collect the prawn seed is a triangular "push net" locally called *Dobbuduvala* (Fig. 2). It measures about 1 meter at the base and about 1.2 m height and a net having a mesh size of 2.0 to 2.5 mm. It is held with both the hands at the upper half and pushed in the intertidal region or along the banks of estuarine creeks to collect prawn seed during high tides (Fig. 3). Each haul lasts for about 30 minutes. Thus a person can operate about 15 hauls per day. After every haul the contents are emptied into a bucket and the seed of *P.monodon* are taken out and rest of the contents containing other prawn and fish seed etc. are discarded on the beach.

Apart from push net other gears employed for the purpose are stake net (*Thokaovala*) and drag net (*Kontivala*).

On an average about 10 *P. monodon* seed were collected per haul by the push net, which forms about 18.8%. The "discards" include 27.7% of *P.indicus*, 48.8% of *M. monoceros*, 1% of *M. dobsoni* and 3.7% of other prawn seed such as *P. semisulcatus* and other unidentified species (Table 1).

Salinity and size range of prawn seed

It is observed that *P. monodon* and other prawn seed are available in all salinity ranges i.e., from almost fresh water condition at Yanam where it is under heavy flooding, to normal sea water conditions (35‰) at Moolapeta.

The size of exploited *P. monodon* seed ranged from 8 to 16 mm. The others had the following size ranges; *P. indicus* (10-16 mm), *M. monoceros* (11-20 mm), *M. dobsoni* (9-16 mm) and *P. semisulcatus* (15-18 mm).

Fig. 2. Triangular "push net" used to collect prawn seed.

Fig. 3. "Push net" in operation.

Manpower employed and magnitude of seed exploited

Observations on manpower were made from Moolapeta to Yanam. People belonging to communities other than fishermen were also engaged in the collection of prawn seed. Persons from other communities formed about 30%, who were otherwise engaged in different professions. As it is very easy to handle the "Push Net", even children and women were also engaged in the seed collection. Children and women form about 12% of the manpower engaged in seed collection. Fifty nine villages were clustered into 11 centres for seed collection (Table 2).

TABLE 1. *Detailed species composition of prawn seed collected in "push net" (pooled for 10 hauls)*

	P. monodon	*P. indicus*	*M. monoceros*	*M. dobsoni*	Others	Total
Actual number	102	150	265	5	20	542
Percentage	18.8%	27.7%	48.8%	1.0%	3.7%	100%

TABLE 2. *Manpower employed at different centres*

Name of the centre (cluster)	Villages (under the jurisdictions of cluster)	Number of persons involved per day (approximate)
1. Moolapeta	1. Moolapeta, 2. Amaravalli, 3. Ramannapalem, 4. Tammayyapeta, 5. Ponnada, 6. Seemavaripalem, 7. Nagulapalli	3000
2. Uppada	1. Uppada, 2. Aminabad, 3. Mayapatnam, 4. Ramisettipeta, 5. Jaggarajupeta, 6. Kothauru, 7. Subbammapeta, 8. Kothapalli, 9. Kondevaram, 10. Yendapalli Jn.	4500
3. Vakalapudi	1. Vakalapudi, 2. Polaram, 3. Suryaraopeta, 4. Nemam, 5. Valasapakala, 6. Komaragiri, 7. Thammavaram, 8. Panduru	3500
4. Fishing Harbour	1. Fishing Harbour, 2. Gorsa, 3. Achammapeta, 4. Chandrapalem, 5. Godariguntа, 6. Thimmapuram,	1000
5. Dummulapeta	1. Dummulapeta, 2. Sambamurtynagar, 3. Dairyfarm Jn., 4. Kothakakinada, 5. Indrapalem,	1000
6. Yetimoga	1. Yetimoga, 2. Jagannaickpur, 3. Thurangi, 4. Kovvuru,	2000
7. Chollangi bridge	1. Chollangi bridge, 2. Uppalanka, 3. Pagadalapeta, 4. Gurajanapalli, 5. Chollangi Jn.,	1000
8. Matlapalem	1. Matlapalem, 2. Ramannapalem,	500
9. B. V. Palem	1. B. V. Palem, 2. Korangi,	2000
10. Bhatravapalem	1. Bhatravapalem, 2. Pedagadimoga, 3. Chinagadimoga, 4. Pedavalasala, 5. Chinavalasala,	4000
11. Yanam	1. Yanam, 2. Neelapalli, 3. Kurusampeta, 4. Parampeta, 5. Dariyalatippa,	2500
11 Centres	59 Villages	25,000

The approximate manpower employed per day was about 25,000. Even at a conservative estimation of about 150 seed/head/day (15 hauls), the total exploited seed/day along this area alone works out to about 3.75 million seed i.e. about 112.5 million seed for the month of September 1993.

Marketing

After sorting out the *P. monodon* seed from the hauls they were sold to the middlemen at the collection point itself. At this point the price ranged from Rs.25 to 30/100 seed. The seed are counted with the help of white plastic saucer (Figs. 4 & 5). The middlemen after purchasing from the fishermen, will stock them in small Hapas (Fig. 6) which are erected in small ponds/ pools situated along the beach/back water area. These are the real centres of marketing. The major marketing centres are Guddivani Thumu, Dummulupeta, Vakalapudi, Chollangi and Yanam in the order of abundance. Prawn farmers/agents from different places are congregating at these places to procure the *P. monodon* seed. At this stage the price ranged from Rs.35 to 45/100 seed. The cost of oxygen, polythene bags and transportation are met by the farmers themselves (Fig. 7).

Some enterprising middlemen keep the seed in the nearby pools (Nursery ponds) for about a month by which time, the seed attain a size of about 25 mm, which fetches a price of Rs.100 to 130/100 seed.

Fig. 4. Counting of *P. monodon* seed with the help of a white plastic saucer.

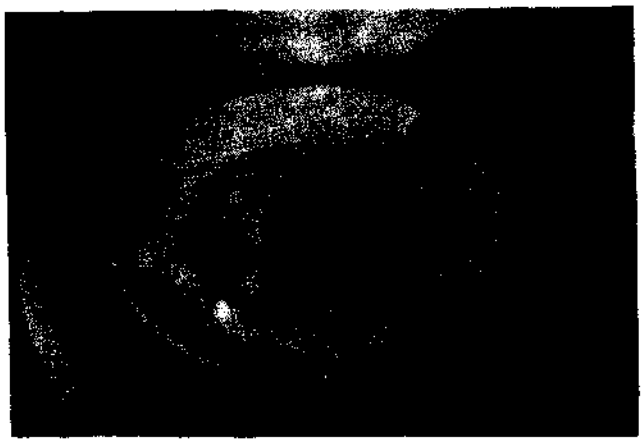

Fig. 5. A close-up view of the *P. monodon* seed in the counting saucer.

Fig. 6. View of hapas where *P. monodon* seed are stocked.

Due to intense collection of seed, the prices crashed to Rs.10 to 15/100 seed towards the end of September 1993.

Apart from local farmers, people from West Godavari, Krishna and Nellore districts were also seen procuring *P. monodon* seed.

Brooder exploitation

Kakinada, being one of the most active landing centres for *P. monodon* in India, has attracted lots of attention for brooder collection. The mechanised small trawlers, mostly engaged in daily fishing bring these brooders by keeping them in sea water tanks. The daily landings of live brooders ranged from 25 to 350 numbers. with an average of about 100/day. It is roughly estimated that about 20,000 *P. mondon* brooders have been landed in the year 1993 to cater to the

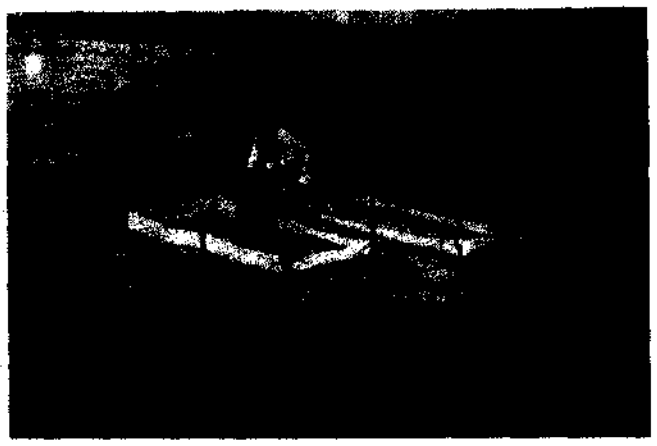

Fig. 7. A view of polythene bag containing *P. monodon* seed in oxygenated sea water (ready for transportation to the farm).

needs of hatcheries. They were transported to hatcheries at Gopalapur (in Orissa), Visakhapatnam, Nellore and Kumta (on west coast) etc.

The brooders fetch a price of Rs. 550/kg. Apart from this Rs.10 is collected for each brooder as "handling charges".

Remarks

It is clear from the foregoing account that even after the full utilisation of the installed capacities of the hatcheries (constructed/ under construction) the dependence on the wild *P. monodon* seed will be heavy.

Collection of tiger prawn seed has become a lucrative business for the rural people residing in the coastal villages around Kakinada. This newly found avocation is helpful in income generation and is definitely contributing towards raising the living standard of seed collectors. The indiscriminate collection and destruction of other commercially valuable prawn seed which account for substantial quantity of 80% of the total seed collected is likely to have adverse impact on the recruitment to the back water and coastal prawn fishery. Even if the hatcheries come up and meet the seed requirements of farmers, collection of seed from wild is always cheaper as long as they occur in desired quantities and the practice would continue. The adverse impact of these practices on the recruitment of stocks has so far remained a conjection. A firm data base for quantifying the extent of such impact is not available for any water body in the country. However, there is an immediate need to see that

the presently "discarded" seed are put back into the sea in live condition to avoid wastage. It is pointed out by this study that prawn seed collection for aquaculture is a part of this problem and a well co-ordinated programme is to be taken up to generate the requisite data for evolving suitable management policies in the long run.