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PENAEID PRAWN SEED RESOURCE IN THE ESTUARIES AND BACKWATERS OF KARNATAKA AND KERALA*

One of the essential requirements for cultivating prawns is the procurement of seed of selected species for stocking in the grow-out ponds. This requirement could be met by two means; one way is to collect the seed from the wild and the other is to produce the seed in the hatcheries. With the increasing importance of prawn culture and demand for the seed of high-priced prawns, hatcheries for producing the seed of important species of prawns have been established at the Prawn Culture Laboratory of the Central Marine Fisheries Research Institute at Narakkal and by the Government of Kerala at Azhikode, near Cochin. While these hatcheries are producing certain quantities of seed, the quantum now produced is not at all adequate to meet the enormous quantities required (Rao, P. V. "Seed requirements for intensive culture of penaeid prawns in coastal waters, particularly in Kerala." Symposium on *Shrimp Farming* Bombay, 16–18 August, 1978). It is, therefore, imperative that for some time to come, the farmers will have to depend on the seed available in the wild. This necessitates a full understanding of the availability of seed in the nature, their distribution pattern, seasonal abundance, fluctuations and behavioural pattern. In recent years, several studies and surveys have been conducted to gather information on these aspects. The most important among the ongoing projects are the "Fish and shell-fish seed resources survey" carried out by the *CMFRI* and the "All India Co-ordinated Research Project on Brackishwater Fish Farming" at the Central Inland Fisheries Research Institute.

This communication briefly presents the results of investigations on penaeid prawn fry resource in the estuaries and backwaters of Karnataka and Kerala. The study formed a part of the Project on "Brackish water shrimp Farming" operated by the Marine Products Export Development Authority, Cochin, and it was implemented by the Central Marine Fisheries Research Institute.

The area of investigation covered all the important estuaries and backwaters from Karwar (Karnataka State) to Quilon (Kerala). The estuaries of the rivers such as Kali, Gangavali, Aghanashini, Sharavathi, Venkatapur, Gangolli, Kalyanpur, Krodasharma, Sambhavi, Nandhini and Netravathi in Karnataka, and the estuaries at Chandragiri, Neeleshwar, Mattul, Mahe, Kottakkal, Korapuzha, Beypore, Purapuzha, Ponnani, Puthuponnani, Chetwai, Azhikode, Manjanakad, Puthuvypeen, Ramanthuruth, Kumbalangi,

* Prepared by P. Vedavyasa Rao, Senior Scientist, C M F R I. Source: Project report on Assessment of fry resource of cultivable penaeid prawns at selected centres in Kerala and Karnataka, January 1979 – May 1980.

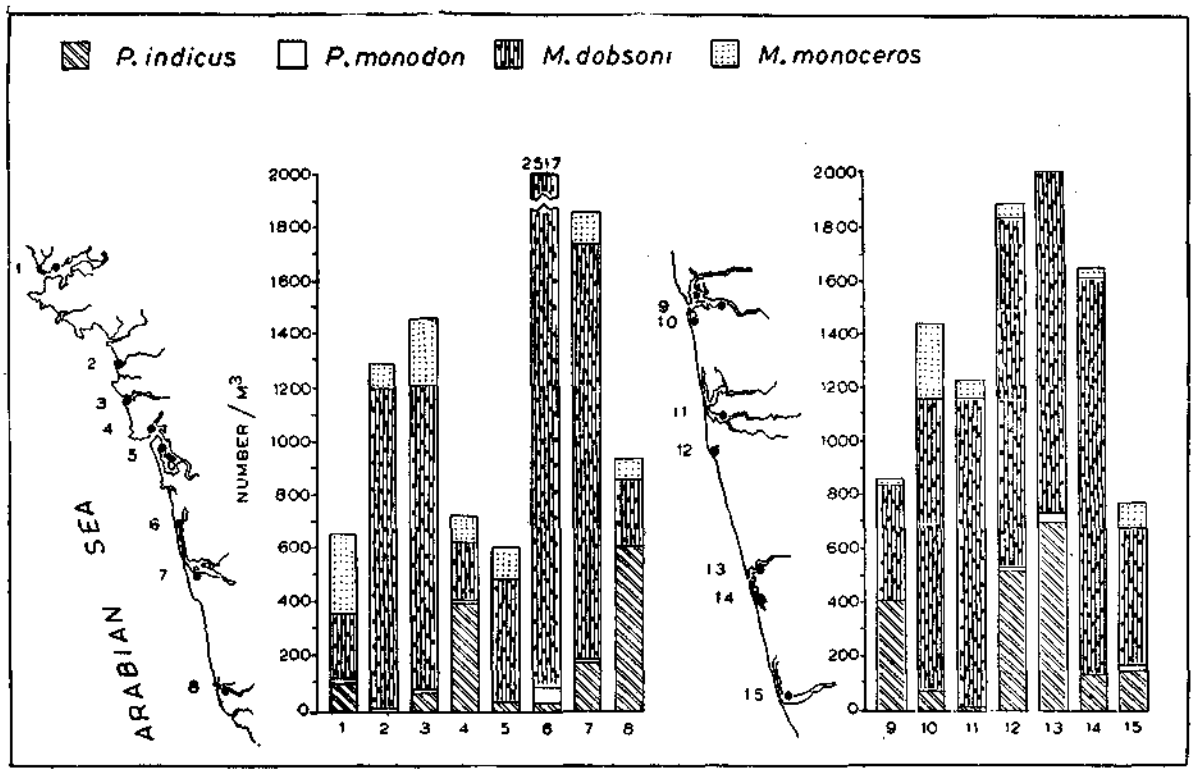

Fig. 1. Areawise and specieswise relative abundance of prawn seed during March 1979 to February 1980 at different survey centres in Karnataka 1. Kanasgiri, 2. Keni, 3. Manjuguni, 4. Sanikatta, 5. Aghanashini, 6. Horabag, 7. Kasargod, 8. Venkatapur, 9. Anaguli, 10. Coondapur (Kodi), 11. Kalyanpur, 12. Malpe, 13. Mulki, 14. Pavanji, 15. Netravati.

Perumbalam,Panavalli, Kayamkulam and Dalavapuram in Kerala were surveyed regularly from March, 1979 to February, 1980. And the data on environmental parameters relating to water temperature, salinity, dissolved oxygen, physical parameters such as topography, nature of ground, depth, vegetation, tide, lunar phase and pollution source, and on seed resource within 2-metre depth from the shore were collected. Composition, distribution pattern and seasonal variation of the seed resource were studied on the basis of samples obtained in the standard velon screen drag net and from the specially designed seed sampler. The salient findings emerged from the investigation are given below.

The seed resource in the estuaries of the project area was constituted by *Penaeus indicus* (fry of Naran Chemmeen), *P. monodon* (fry of Kara Chemmeen), *P. semisulcatus, P. merguiensis, Metapenaeus dobsoni* (Thelly), *M. monoceros* (fry of Choodan chemmeen) and *M. affinis* (fry of Kazhanthan chemmeen). But it was constituted mainly by *P. indicus, P. monodon, M. dobsoni* and *M. monoceros*. Of these, *P. indicus* and *M. dobsoni* were found to form the major portion of the seed resource. The areawise and specieswise relative abundance of prawn seeds obtained at different centres in Karnataka and Kerala during the period of survey are shown in figures 1 and 2 respectively.

In the estuaries of Karnataka, *P. indicus* dominated the catch in the Gangavali, Aghanashini, Venkatapur (Uttara Kannada District),Gangolli, Kalyanpur, Mulki and Netravathi (Dakshina Kannada District) estuaries. In the other estuarine areas of the State, the smaller species, *M. dobsoni*, predominated during 1979-80.

In Kerala, *P. indicus* was found to contribute appreciably in most of the estuaries while *M. dobsoni* was abundant at Kasargod, Madakara (Mattul), Ponnani, Puthuponnani, Chetwai, Azhikode, Ramanthuruthu, Manjanakad, Panavalli and Kumbalangi during the period of study.

Studies on seasonal abundance of constituent species of the seed resource showed that *P. indicus* were encountered in large numbers during March-May in the estuaries of Karnataka and northern Kerala; during April-June and September in those of Central and Southern Kerala. In the backwaters between Cochin and Quilon, *P. indicus* seed continued to occur in good quantities beyond September up to about December. *M. dobsoni* occurred throughout the year in all the

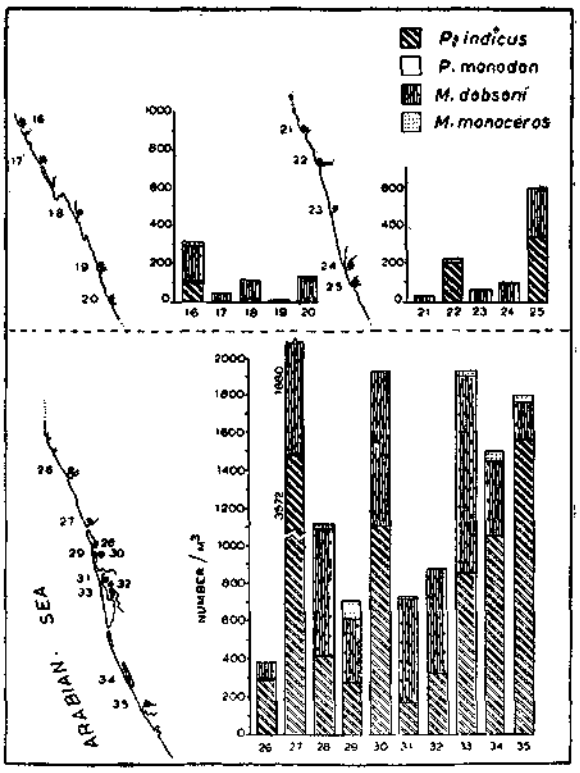

Fig. 2. Areawise and specieswise relative abundance of prawn seed during March 1979 to February 1980 at different survey centres in Kerala. 16. Kasargod, 17. Neeleswar, 18. Madakara, 19. Mahe, 20. Murat, 21. Korapuzha, 22. Beypore, 23. Purapuzha, 24. Ponnani, 25. Puthuponnani, 26. Chetwai, 27. Azhikode, 28. Manjanakad, 29. Puthuvypeen, 30. Ramanthuruth, 31. Kumbalangi, 32. Perumbalam, 33. Panavalli, 34. Kayamkulam, 35. Dalavapuram.

estuaries. However, its peak season of occurrence during 1979–80 was in September.

On the basis of the total number of seed encountered during the period of investigation, the estuaries of Venkatapur, Aghanashini, Gangolli, Malpe and Mulki were found to be relatively richer in *P. indicus* seed, while Keni, Gangavali, Horabag and Sharavati estuaries in *M. dobsoni*. In Kerala, the estuaries at Kasargod, Neeleshwar, Mahe, Murat, Beypore, Puthuponnani, Chetwai, Azhikode, Ramanthuruthu, Panavalli, Perumbalam, Kayamkulam and Dalavapuram showed increased abundance of *P. indicus* seed. *M. dobsoni* was caught in fairly good quantities from all the estuaries.

Analysis of samples for diurnal distribution of the seed indicated that relatively more numbers were caught in the morning hours or in the late evening hours when the water temperature was comparatively lesser than during the other time of the day. However, this observation needs further confirmation.

The size of seed encountered in this ecosystem was found to be less than 30 mm for both *P. indicus* and *M. dobsoni* facilitating direct stocking in the grow-out fields.

The penaeid prawn resource in the various estuaries of Karnataka and Kerala is thus composed of multiple species that co-exist in the ground and exhibit wide seasonal and annual fluctuations. While the provisional assessment of the magnitude of the seed resource available in these estuaries indicate that large quantities could be collected, the availability of the seed as and when required by the farmers could not be predicted. Further, since the seed of all species are encountered in nature and in the absence of any gear or method or practice in our waters to selectively collect the seed of the desired species, there is likely to be considerable wastage of seed of less important species in the process of collection, sorting and stocking. If such a wastage goes unrestricted, it would result in the imbalance of the natural population and would also adversely affect the capture fisheries. It is, therefore, essential that judicious exploitation of this valuable resource is ensured and necessary measures are taken for its conservation.