Seasonal availability of commercially important fish seeds in estuaries of Kozhikode, Kerala

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Abstract

Availability of fish seed for culture is one of the major constraints in expanding mariculture in India. Capture-based aquaculture (CBA) is the practice of rearing wild collected fish seeds from early life stages to adults in captivity to marketable size, employing different aquaculture techniques. It is estimated that about 20 percent of world aquaculture production comes from CBA. The availability of cultivable fish seeds in estuaries of Kozhikode district in Kerala has been surveyed and the potential wild seed grounds identified were in Kadalundi, Korapuzha and Karuvanthuruthi estuaries. The quantitative availability of fish seeds in these localities during different seasons was evaluated.

Keywords: *Mariculture, CBA, fish seed calendar*

Introduction

Capture-based aquaculture or CBA is popular in many parts of the world due to the lack of commercial supply of "seed" (larvae, juveniles) of many of the high valued species groups. In India, capture fishing using *Dol* nets (Gujarat and Maharashtra), shore seines (east coast of India), *Thalluvalai* (southeast coast) and chinese dip

Fig.1. Seed survey in Kadalundi estuary

nets (Kerala), land a large number of juveniles of high-value species like seerfish, pomfrets, mackerel, shrimps etc., which can form a very good source of fish seed for CBA without affecting the ecosystem and livelihood of fishermen. This study was envisaged to understand the seed resources of three important estuaries of Kozhikode district, namely, Kadalundi, Karuvanthuruthi and Korapuzha.

Findings of the fish seed surveys

The fish seed survey was carried out every month during January- December, 2016 using a cast net, in selected stations covering Kadalundi, Korapuzha and Karuvanthuruthi estuaries. The cast net having an 8 mm mesh size, covered 5 m diameter when deployed in the water body. The seeds collected using cast net from each station were identified using FAO fish identification sheets and quantified by counting species wise numbers in each cast net operation.

The major cultivable seeds available were *Liza melanoptera, Penaeus indicus, Lutjanus argentimaculatus, Etroplus suratensis, Mugil cephalus, Gerres filamentosus, Gerres longirostris, Acanthopagrus berda, Lates calcarifer, Siganus javus and Siganus vermiculatus.* The seeds of *L.melanoptera, P. indicus, L. argentimaculatus* and *E. suratensis* were available throughout the year.

Fig.2. Select fish seeds collected

(a) *Liza melanoptera,* (b) *Lutjanus argentimaculatus*
(c) *Etroplus suratensis,* (d) *Acanthopagrus berda,*
(e) *Siganus vermiculatus*

Table 1: Major cultivable fish seeds available at Kadalundi, Chaliyar and Korapuzha estuaries of Calicut:

Kadalundi estuary

Species available	Local name	Size (cm)	Seasonal availability	Peak availability
Liza melanoptera	Malan	3.2-11.5	January-December	October-April
Fenneropenaeus indicus	Naran	3.5-8.5	January-December	September-December
Lutjanus argentimaculatus	Chemballi	7.5-20.0	January-December	June-January
Etroplus suratensis	Karimeen	3.5-12.0	January-December	August-December
Gerres filamentosus *Gerres longirostris*	Prachi	2.5-8.0	May-August	June-August
Siganus javus, *Siganus vermiculatus*	Karadu	6.0-10.0	May-November	June-September
Acanthopagrus berda	Aeri	8.0-13.0	December-March	November- December
Lates calcarifer	Narimeen	8.0-15.0	November-February	November- December

Karuvanthuruthi (Chaliyar estuary)

Species available	Local name	Size (cm)	Seasonal availability	Peak availability
Liza melanoptera	Malan	5.2-15.5	January-December	June-December
Fenneropenaeus indicus	Naran	4.0-7.5	January-December	September-November
Etroplus suratensis	Karimeen	4.5-12.0	January-December	September- November
Lutjanus argentimaculatus	Chemballi	4.9-6.6	January- December	September- January
Leiognathus brevirostris	Mullan	4.5-6.1	May- December	July-October

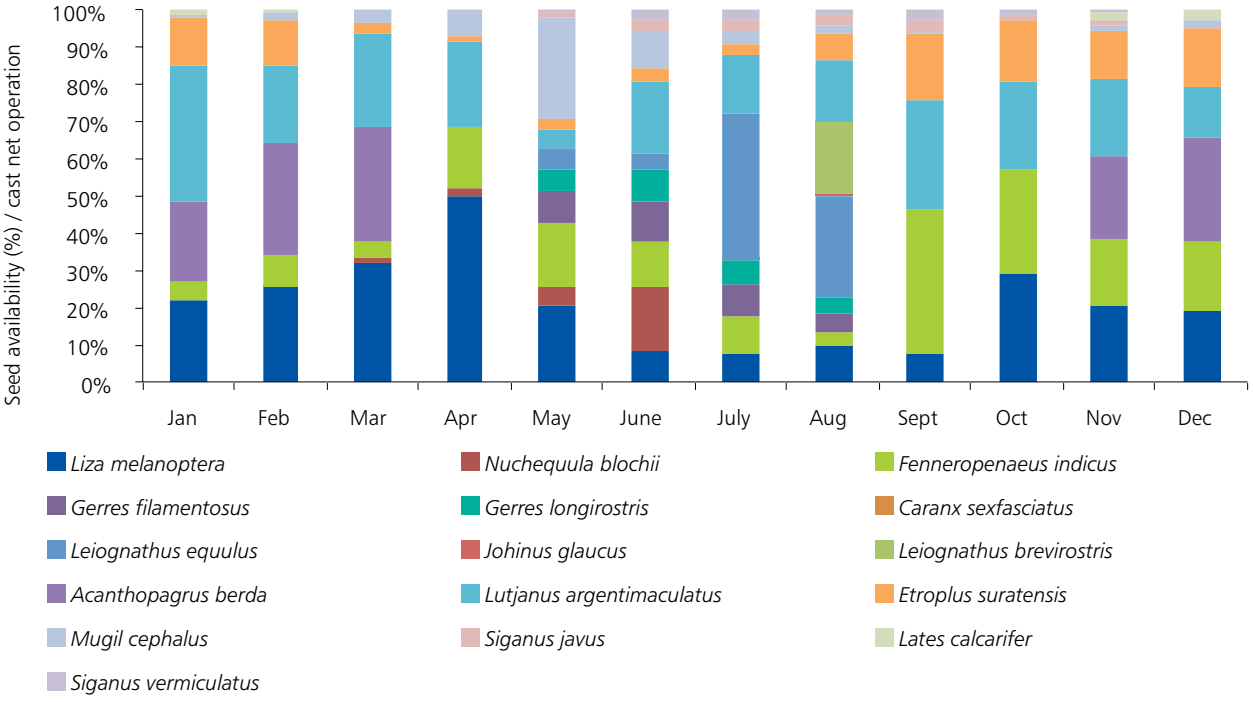
Korapuzha estuary

Species available	Local name	Size (cm)	Seasonal availability	Peak availability
Liza melanoptera	Malan	3.2-12.3	January-December	September-February
Etroplus suratensis	Karimeen	2.0-8.0	January-December	July- September
Fenneropenaeus indicus	Naran	4.0-9.5	January-December	August-November
Siganus javus	Karad	3.5-8.5	March-September	July-August
Lutjanus argentimaculatus	Chemballi	5.0-15	January- December	August- January

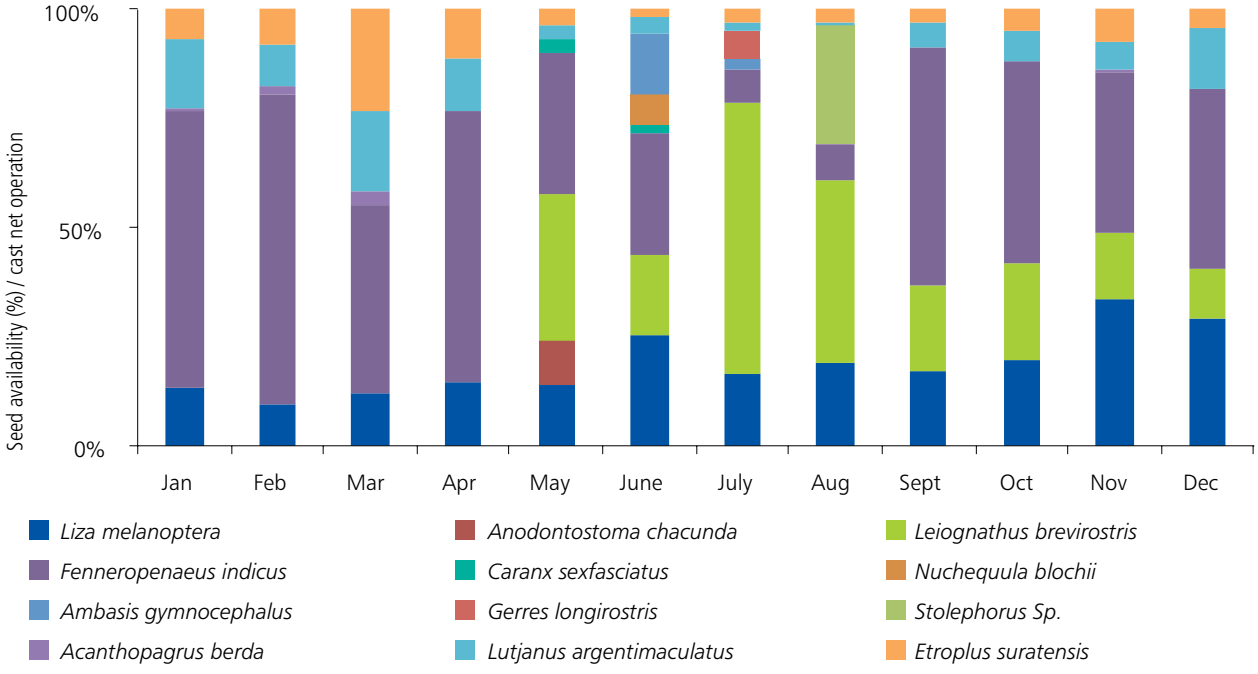
Liza melanoptera, *Lutjanus argentimaculatus*, *Etroplus suratensis,Gerres filamentous, Gerres longirostris, Acanthopagrus berda, Siganus javus, Siganus vermiculatus, Lates calcarifer* and *Penaeus indicus* were the dominant commercially important seeds available at Kadalundi. The seeds of *P.indicus, L. melanoptera, L.argentimaculatus, E. suratensis* and *M. cephalus were* available throughout the year. The seeds of *Siganus* spp. and *Gerres* spp. were dominant during the south west monsoon (June -August) season. Other seeds available were those of Silver bellies such as *Nuchequula blochii, Leiognathus brevirostris* and *L. equulus.* The major seeds available at Karuvanthuruthi were *P.indicus Leiognathus brevirostris, Liza melanoptera, Lutjanus argentimaculatus* and *Etroplus suratensis.* Other seeds available included *Anodontostoma chacunda*, *Nuchequula blochii, Acanthopagrus berda*, *Caranx sexfasciatus*, *Gerres longirostris* and *Leiognathus brevirostris.* The major cultivable seeds available at Korapuzha were *Liza melanoptera, Etroplus suratensis, P.indicus, Lutjanus argentimaculatus* and *Siganus javus*. Other fish seeds available were *Anodontostoma chacunda*, *Scomberomorus commersonii, Leiognathus equulus, Etroplus maculatus, Gerres longirostris, Mugil cephalus, Ambasis gymnocephalus* and *Leiognathus brevirostris* (Fig.3). These locally available species when used for culture reduces the risk of exotic fish diseases and their spread in native waters.

Locally available seeds can be effectively used for CBA in that particular locality (Fig.4). New employment opportunities (e.g. divers, "seed" collectors, harvesters, etc.) can arise in places with limited economic opportunities. Although it can bring high profits, CBA can also have negative impacts in the long run if harvest of seed is uncontrolled

Kadalundy



Karuvanthuruthi



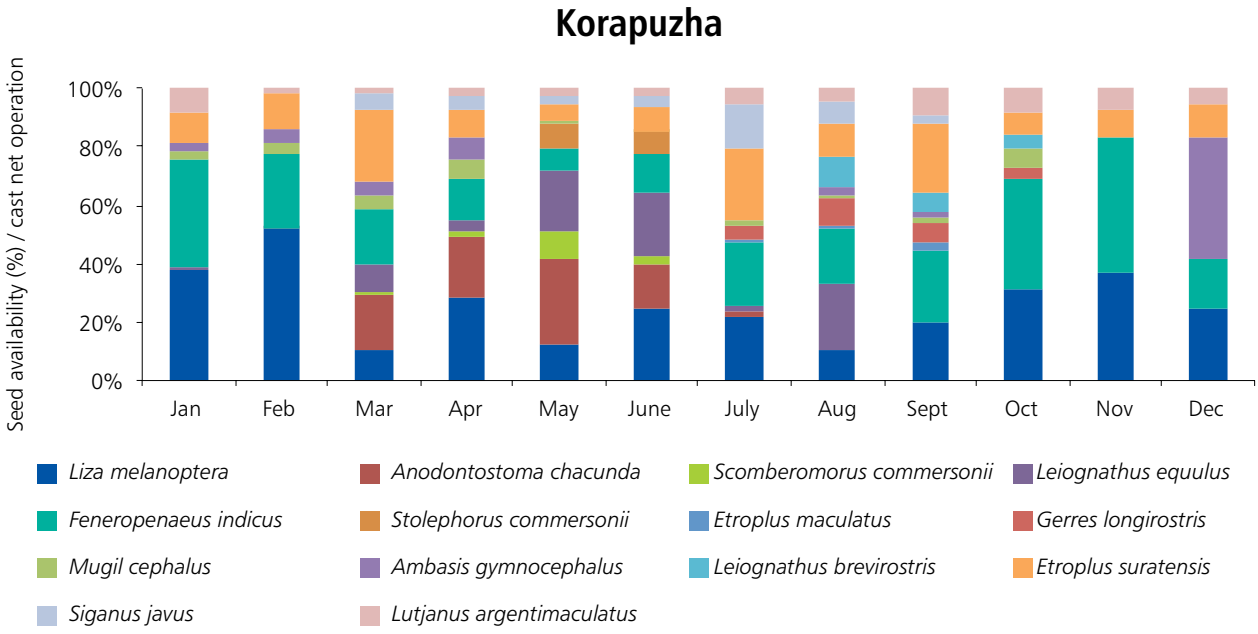


Fig. 3. Seasonal availability of fish seed in various sites surveyed

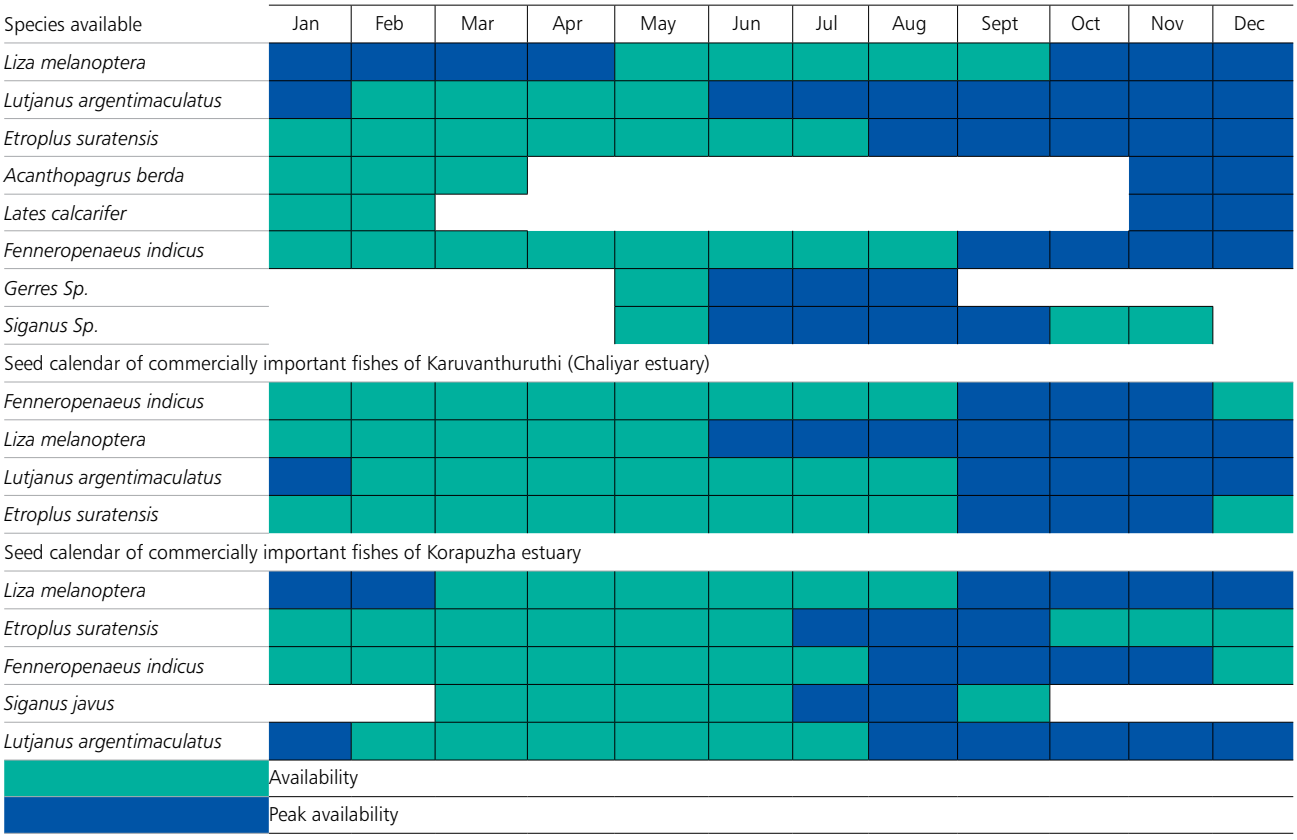


Fig.4. Seed calendar indicating seasonal availability of various species wise

and sustainability issues are not addressed. Therefore sustainable development of CBA should be based on careful site selection, pre-assessment of the carrying capacity of sites, good health and feed management practices, stocking density control, and periodic assessments of their impact on the local ecosystem.