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ORIGINAL RESEARCH ARTICLE

Studies on Peculiar Observations of the Food and Feeding Habits of Painted Pebble Crab *Leucosia anatum*, South East Coast of India

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ABSTRACT

The food is significantly required for growth, survival and existence. The painted pebble crab *L. anatum* has a new in environment because of its recently reported along Indian coast species. The study of food and feeding habits of crab has manifold importance in fishery sciences. For successful farming a detailed knowledge about the food and feeding habit is essential. As the nature of food depends to a great extent upon the nature of environment, the problem is interesting. The food and feeding habit of crab vary from season to season. The studies of interactions between the links in complex food chains can lead to an understanding of crab gain their food sources. The analysis of stomach contents of crab provides information about particular crab in the ecosystem.

Key words: Pebble crab, complex food chains, ecosystem.

INTRODUCTION

The food is most important for any living organisms and the body also requires a range of nutrition to keep certain organs alive and to keep the correct balance in the body. This nutrition is taken from the food. The distribution, growth, reproduction, behaviour and migration rate of crabs are largely dependent on the availability of preferred prey organisms [1, 2, 3]. The feeding habits of crabs, such as the predatory prey relationships are useful in order to assess the role of marine crab in the ecosystem [4, 5]. Crabs consume a great variety of food and there are many modes of feeding. Crab aquaculture has appeared in the last two decades primarily as a live holding and marketing strategy, to bring certainty to supply of high value marine crabs [6]. Since a number of species of marine crabs are edible [7], the biggest and most highly esteemed species suitable for coastal aquaculture. The crab farmers also need to know how much feed their livestock have actually consumed but this can be difficult to judge. On the basis of the nature of the food taken, this is often overlapping different feeding categories in decapods. The knowledge of the food and feeding of crab is essential either to start hatchery or farming. In the present study useful to improve the growth and survival as per farmers point of view. Similar information is very well available for lots of marine animals but less in crabs. So in the present study was designed to know the gut contents in the crab of *L. anatum.*

MATERIALS AND METHODS

The crabs for the present study were collected from south east coast of India. After collection, the crabs were stored in ice boxes and the stomachs were removed and fixed in 10% buffered formalin and were analysed to study the food and feeding habits of this species. It is very difficult to identify the food items species wise due to the nibbling action of mandibles on the food and mastigation of food inside the stomach by the action of gastric mill. The stomach contents were later analyzed in the laboratory after dissecting the alimentary system and different components of the guts were recorded. They were split open by a pair of scissors and emptied in a petri dish. The content was examined with the help of zoom dissection binocular microscope. The food items were identified up to the family level wherever possible, the assumed prey material was sorted and preserved in 70% alcohol for further identification. In order to help the interpretation of the stomach contents analysis, the feeding behavior of the crab under study were

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occasionally observed and recorded in their natural environment during the field missions [8]. For identification of phytoplankton, identification manual of [9] was used. To identify the zooplankton by using the references of [10, 11]. The polychaetes were identified by using the handbooks of [12] and other preys were identified by using standard manuals.

After identification of each food category was expressed as percentage of all the stomachs examined according to the formula of Percentage occurrence = (*b/n*) x 100

Where *b* is the number of crab stomachs that had a food item and *n* is the number of crab stomachs dissected, excluding those that were empty. The food item with the highest value was taken as the most important one.

RESULTS AND DISCUSSION

Fig 1: Different food items and percentage of dietary composition of male *L. anatum*

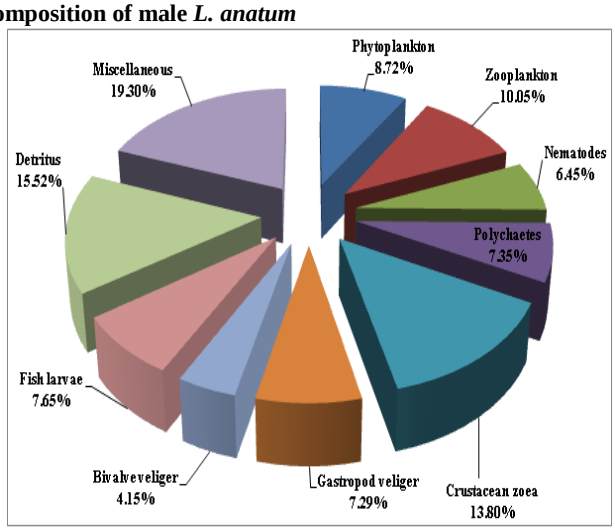
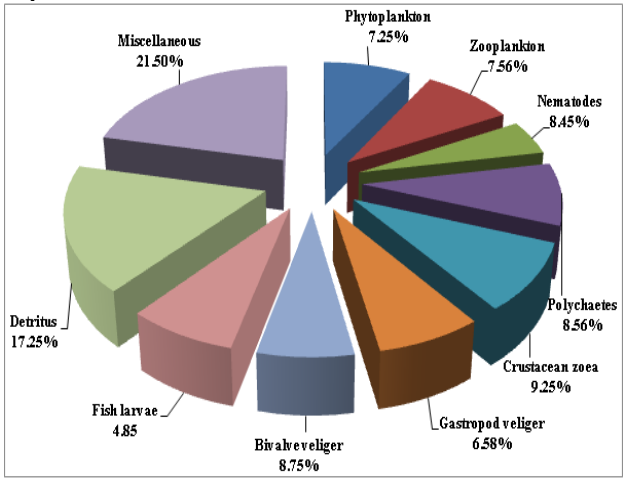


Fig 2: Different food items and percentage of dietary composition of female *L. anatum*



The food items found in the examined stomachs were grouped into ten categories namely Crustacean, Polychaetes, Fish larvae, Nematodes, Bivalve veliger, Gastropod veliger, Zooplankton, Phytoplankton, Detritus and Miscellaneous. In male *L. anatum* miscellaneous contributions were maximum and bivalve veligers were minimum. The percentage contributions of different feeds were in the following order; Miscellaneous (19.30%) > Detritus (15.52%) > Crustaceans zoea (13.80%) >Zooplankton (10.05%) > Phytoplankton (8.72%) > Fish larvae (7.65%) > Polychaetes (7.35%) > Gastropod veliger (7.29%) > Nematodes (6.45%) > Bivalve veliger (4.15%) (**Fig 1**). In female *L. anatum* miscellaneous contributions were maximum and fish larvae were minimum. The percentage contributions of different feeds were in the following order; Miscellaneous (21.50%) > Detritus (17.25%) > Crustaceans zoea (9.25%) > Bivalve veliger (8.75%) > Polychaetes (8.56%) > Nematodes (8.45%) > Zooplankton (7.56%) > Phytoplankton (7.25%)> Gastropod veliger (6.58%) > Fish larvae (4.85%) (**Fig 2**).

In the present study clearly indicate that the painted pebble crab *L. anatum*[13] is primarily considered as opportunistic omnivorous like other decapods [14]. They feed mainly on muds, algae and collecting a wide variety of sessile species, slow moving and free living in inhabitants regions [15]. The stomach content analysis shows that they primarily consume plant matter includes diatom, algae, bits of seaweed, mangrove parts and the animal is comprised of copepods other smaller crustaceans [16]. Miscellaneous and detritus were the predominant food items and their presence in the diet was relatively uniform. The polychaetes and nematodes were found in the gut contents being most abundant and hence it can be considered as one of the regular items of food of these ones. The pattern of consumption of the crustaceans zoea, bivalve veliger and gastropod veliger was almost similar. The presence of all other food items showed irregular fluctuations. The analysis of food with respect to size revealed that detritus, miscellaneous, crustaceans and plankton were the main items of food. While, strength of feeding in decapod crab has been reported to vary with maturity and spawning conditions, being minimal during spawning, high in the maturing group and maximum during post spawning period no such decline in feeding activity of berried crabs was observed in the present study. Even though, in the present study clearly indicate that the nature food of the species is size dependent and it is obvious that mixed and preference of food is the same in both sexes. But observations on average amount of feeding in both sexes show that males exhibit a little higher feeding intensity than females.

Similar study were made by previous studies, the mud crab, *S. serrata* [17]; king crab *P. camtschaticus* [18]; blue crab *Callinectes* spp., [19], *C. bairdi* [20] and *C. opilio*[21] .

Here it would be concluded that an aquaculture has developed fast over the last three decades to become a vital economic activity worldwide. It has confronted several of the developmental problems in this relatively short period and concerns over environmental impacts. Feed management is an important factor in aquaculture. Undigested food generates several problems in aquaculture systems, growth of pathogenic microorganisms and reduces productivity [22]. In the present study the crustacean aquaculture industry is presently in its infancy in India and therefore it would benefit from fundamental research that seeks to examine how the growth and food conversion efficiency of candidate species can be maximized. It is dependent on knowledge of nutritional requirements of the species in order to develop and deliver suitable diets to the growing animals to minimise food wastage, to promote efficient corresponding of their body weight. In the present study on the food and feeding of decapod crabs will be of huge help for choosing acceptable feed for the suitable stages during mass scale culture. Therefore this study provides information one important aspect of the biology of any species which relevant to the success of any aquaculture operation is knowledge of its food and feeding habit very important ones.

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