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Contribution to the knowledge of ornamental molluscs of Parangipettai, Southeast Coast of India

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ABSTRACT

The ornamental shell industry in India in recent years is a multimillion dollar industry. India's ornamental trade is currently worth US$ 278 million. The collection of molluscan shells is a popular activity in coastal areas. Ornamental molluscs are sold in the market exclusively for aquarium and ornamental purposes. Molluscan shells are used in studs like ear-rings, bangles, table lamps, spoons cups and saucers etc., and it is also used in Aquarium. A study was carried out on ornamental molluscan resources of Tamil nadu coast to identify, quantify and assess the shell resources potential for development of a small-scale shell industry and also a suitable collection techniques and methods of shell catalogue preparation during Oct 2007 to Sep 2008. Gastropods and bivalves have been collected for ornamental purpose by the fisher folks. During the survey gastropods and bivalve species belonging to 21families such as Turritellidae, Cypraeidae, Volutidae, Muricidae, Conidae, Trochidae, Olividae, Cassidae, Marginellidae, Bursidae, Strombidae, Buccinidae, Naticidae, Tonnidae, Melongenidae, Vassidae, Harpidae, Architectonidae Arcidae, Pectinidae, Veneridae, were collected. From the total molluscan diversity 85% were exclusively ornamental molluscs. The study revealed that the occurrence of gastropods and bivalves species here are most valuable shells and naturally rare and not easily available.

Key words: ornamental molluscs, gastropods, bivalve and diversity.

INTRODUCTION

The majority of the marine molluscs of economic importance are distributed in the coastal zones. India presents very favorable conditions for the exploitation of molluscs since its coastline is 7,517 km long. The knowledge on benthic marine molluscs of India is mainly the result of studies carried out in the intertidal and shallow subtidal zones. It is man's inborn nature to collect, whether it is rocks, shells, coins, stamps, cars, or baseball cards. There are almost as

many reasons for collecting shells as there people collecting them: many people simply admire the endless beauty and variety of shells, a large collection can have up to 30,000 species!, while others collect more for scientific reasons - there is still a great deal to learn from and about the shells of the world.. Although exact figures on the value and trade of the ornamental fish industry do not exist; the value of ornamental fish and invertebrates imported into different countries worldwide is approximately $278 million US dollars (FAO 1996-2005).

The commercially important gastropods which occur in the intertidal and inshore waters are edible. These and several other gastropods received considerable attention in recent years due to greater demand for meet and as ornamental shell for shell handicrafts. The ornamental mollusk is an emerging resource in Indian seas. Molluscs in general had a tremendous impact on Indian tradition and economy and were popular among common man as ornaments and currency. This has the increasing global demand. The ornaments and cowries made out of molluscan shells are becoming highly priced objects in Indian and foreign markets (Appukuttan, 1996).

A few studies have also been conducted in the intertidal region**.** However, information on the gastropod and bivalve species of commercial (ornamental) interest from the Tamil nadu is scarce. Only a few published records of these species are mentioned in the literature, they include checklists and museum collections. Therefore, the present study is important since it provides information on the abundance of ornamental gastropods and bivalves which are considered as ornamental mollusc.

STUDY AREA

Mudasalodai is a famous landing centre, located near Parangipettai Marine biological station ($11^{o}29'N$ $79^{o}46'E$). This area lies between the mouth of the Vellar estuary and Killai backwaters. 200 mechanized boats (trawlers) have been engaged for fishing activities (Fig.1).

Fig.1. Map showing the study area

MATERIALS AND METHODS

Molluscan trash (gastropods and bivalves) were collected from the trawlers from Mudasalodai landing centre (11°29′N 79°46′E) from October 2009 to September 2010. The specimens were brought to the laboratory, cleaned with a brush and identified counted using the works of (Satyamurty, 1952, 1956; Subba Rao, 2003). Data were collected fortnightly, pooled seasonally and this was repeated throughout the period.

RESULTS

In the present study 21 ornamental gastropods and 5 bivalves were collected in the trash, landed at Parangipettai Coast. These gastropods are classified under 3 orders, 18 families and 21 genera belonging to subclass Prosobranchia and Heterobranchia. The bivalves are classified under 3 orders, 3 families and 4 genera.

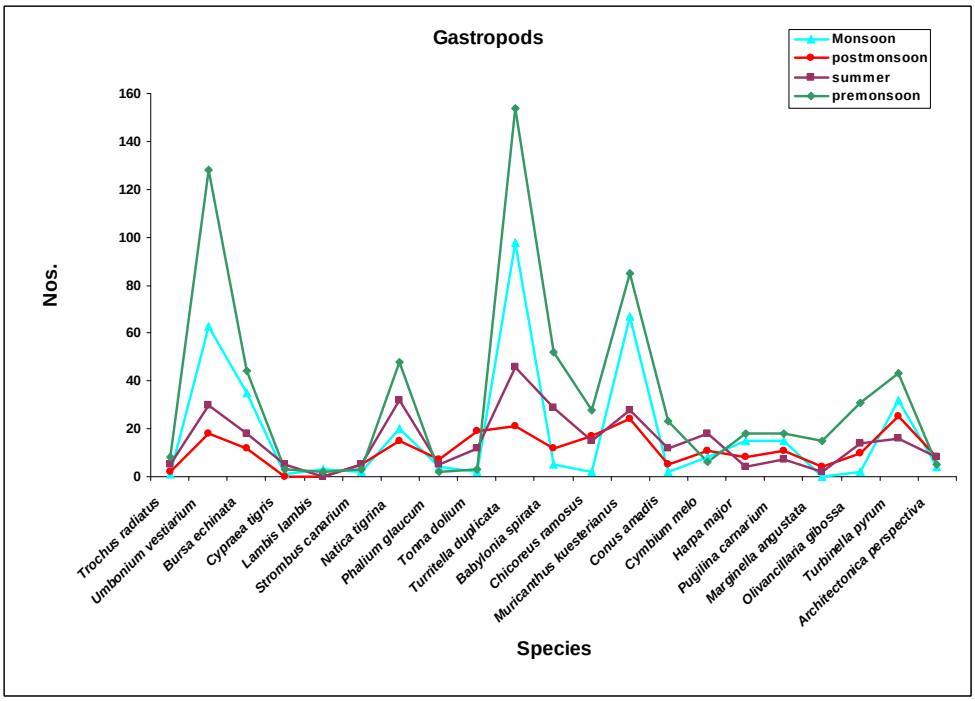

Fig.2. Gastropod species recorded

During the study period about 1465 species of gastropods and 757 species of bivalves were recorded (Fig.2, & 3). Among them *Turritella duplicata* (Linnaeus, 1758) (19.39%) were maximum observed followed by *Umbonium vestiarium* (Linnaeus, 1758) (14.52%) and *Muricanthus kuesterianus* (Tapparone- Canefri, 1875) (12.4%), *Lambis lambis* (Linnaeus, 1758) (0.304%) contributed in least numbers. In family wise landings the maximum recorded were Turritellidae (19.39%), Muricidae (16.17%) and Trochidae (15.5%) and minimum representation were from the Family Cypraeidae (0.547%). In bivalves *Anadara rhombea* (Born, 1778) (34.87%), *Pecten tranquebaricus* (Soweby, 1846) (23.92%) and *A. granosa* (Linnaeus, 1758) (21.4 %) was the most abundant and *Amusium pleutonectus* (Linnaeus 1758) (8.05%) contributed

the least numbers (Fig.4). The most abundant bivalve Families is Arcidae (56.27%), Pectenidae (31.96%) and the Family Veneridae (11.75%) contributed the least numbers (Fig.5). Seasonal contribution of gastropods was maximum in pre monsoon and the minimum were recorded in post monsoon. Seasonal contribution of bivalves was maximum in pre monsoon followed by summer. The minimum contribution of both ornamental gastropods and bivalves was observed in post monsoon.

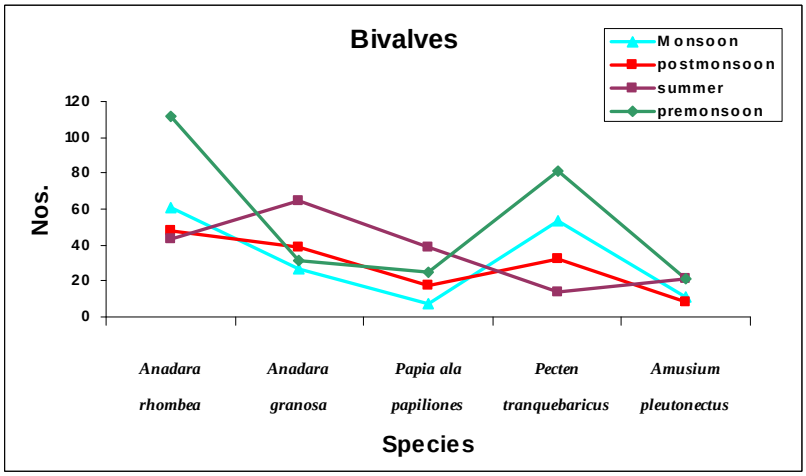

Fig.3. Bivalve species recorded

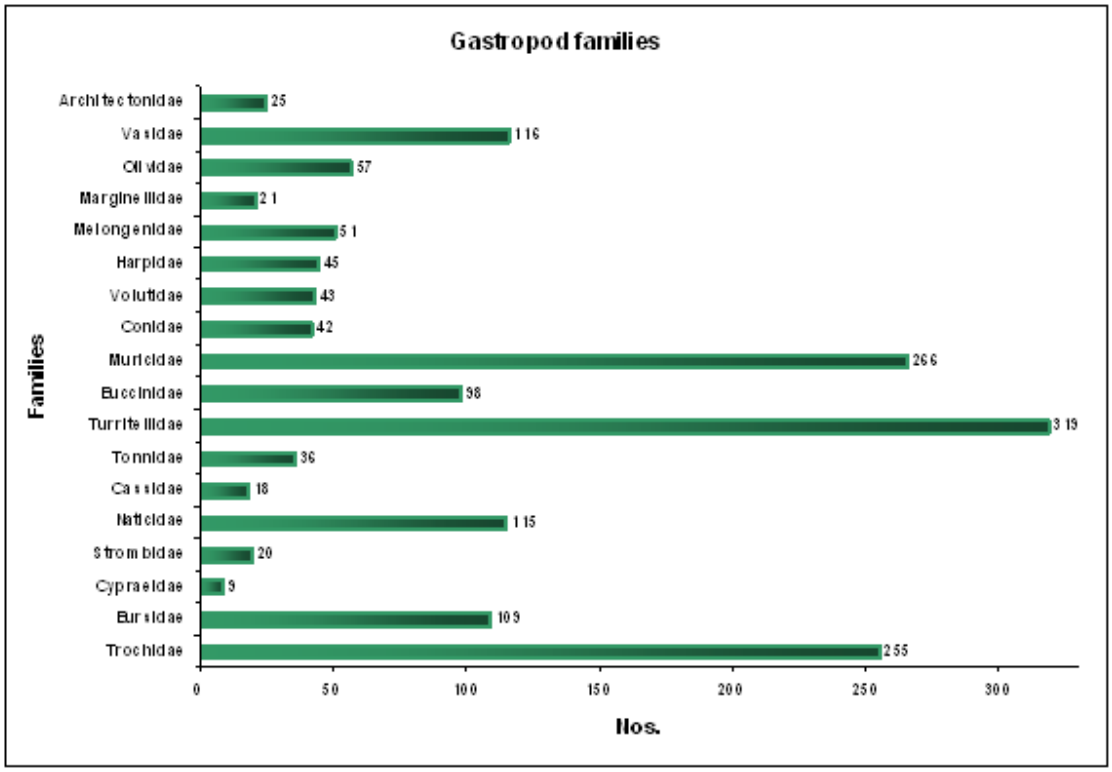

Fig.4. Gastropod families recorded

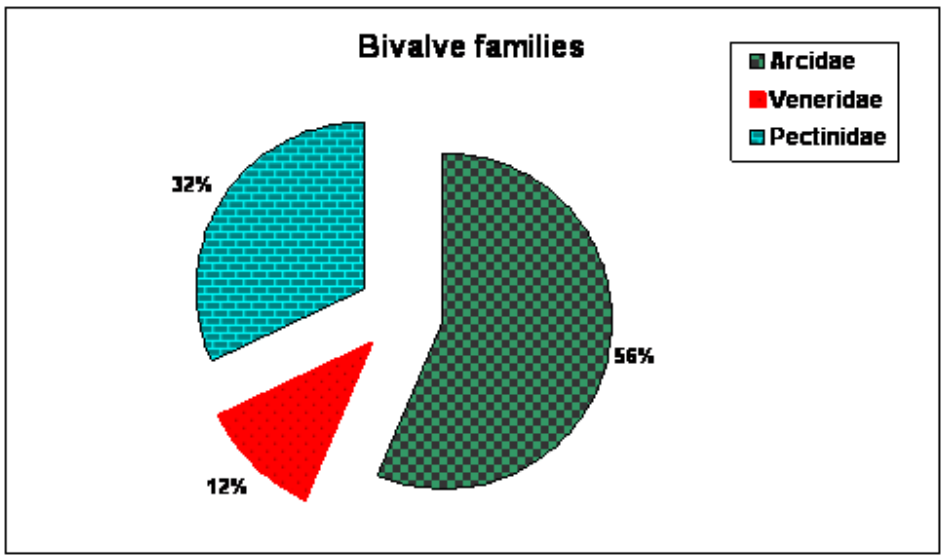

Fig.5. Bivalve families recorded

DISCUSSION

Although all recorded species have been previously reported for the Parangipettai coast (Rajagopal *et al.*1998). In contrast, the studied fauna contains species previously reported from the sandy bottoms of the Parangipettai coast (Sakthivel and Antony Fernando, 2002), although few quantitative data are available for most of them. The lack of previous quantitative data for ornamental mollusc is of particular aim.

The most of the commercially important ornamental gastropods which occur in the intertidal and inshore waters are edible. These and several other gastropods received considerable attention in recent years due to greater demand for meet and as ornamental shell for shell handicrafts. The ornamental mollusc is an emerging resource in Indian seas. Molluscs in general had a tremendous impact on Indian tradition and economy and were popular among common man as ornaments and currency. Although molluscan meat is considerable highly nutrition thus got a limited market in the country. This has the increasing global demand. The ornaments and cowries made out of molluscan shells are becoming highly priced objects in Indian and foreign markets.

Murex shells (family Murcidae) belong to a large and very diverse family, including the *Muricanthus* and *Chicoreus* which is one of the largest members of the genus. This beautiful shell, commonly known as Murex shells always attracts the attention of collectors. Ark shells include a genera of the family Arcidae distributed from the South east coast of India. The most common are *A. granosa* (Linnaeus, 1758) and *A. rhombea* (Born, 1780). It is highly esteemed for food. The heavy shell of this organism has been used as a source of lime (Cifuentes-Lemus *et al.* 1990).

The results of the present study are in accordance with the earlier reports for Pazhayar, an adjacent landing centre, 37 species of gastropods and 14 species of bivalves were recorded (Mohanasundaram,1993). A total of 32 species of gastropods and bivalves were recorded from Pazhayar and Cuddalore by Sivakumar (2001). In Mudasalodai, Sakthivel (2000) recorded 75 species of gastropods and 33 species of bivalves. In Nagappattinam, Sakthivel (2000) 67 species of gastropod and 33 species of bivalve were recorded. Among them *Turritella attenuata, N.dorsata, A. rhombea* and *P. textile* were the most abundant molluscs. Arjunan Babu et al, (2010) has recorded 59 species of gastropods belonging to 25 families and 35 genera, 11 species of bivalves belonging to 7 families and 9 genera were recorded in Mudasalodai, whereas 57 species of gastropods belonging to 25 families and 34 genera 10 species of bivalves belonging to 7 families and 8 genera were observed from the trash landed at Cuddalore landing centre.

During the present study 21species of ornamental gastropods and 5 bivalves were collected in the trash, landed at Parangipettai Coast. Family wise maximum contributions were Turritellidae (19.39%), Muricidae (16.17%) and Trochidae (15.5%) and minimum were Cypraeidae (0.547%). In bivalves the most abundant were Arcidae (56.27%), Pectenidae (31.96%) and the Family Veneridae (11.75%) contributed the least numbers. Maximum diversity was due to more fishing activity in the pre-monsoon season and the minimum fishing activity was in summer owing to the possible ban on fishing proposed by the government because of it being the breeding season of the marine organisms.

This species is seldom used as food but the shell is commonly sold in souvenir shops. *Harpa conoidalis* the whole shell is rather polished, and is one of the most attractive of the marine shells from the South east coast of India. In this respect the gastropod shells rank first fetching good prices. The Melon shell *Melo indica* and *Turbo marmoratus* are large, beautiful shells which are treasured as mantel pieces and table decoratives. The shell of adult *Cymbium melo* (Solander) (Family Volutidae) which grows to 20 cm in height is almost globular in shape and pale reddish brown blotched with darker spots in natural condition and handsome with lustrous orange red colour when polished. The melon shells live at depths of five to six fathoms in muddy sand in Palk Bay (Hornell, 1951). The melon shells are carved and polished and table lamps made with its bright shell as lamp shade.A large *Cymbium* shell costs as much as Rs. 100 to 250. This shell which is common and fished in large numbers in Andaman Islands costs. The five fingered chank *Lambis lambis*, the scorpion shell *Lambis chiragra*, the sacred chank *Turbinella pyrum* and the tun-shell *Tonna dolium* are other important large ornamental molluscs. *L. lambis* is found on east and west coasts and is very common in shallows in Palk Bay where there is good growth of algae. The cowries are shells of good commercial value. Several species of cowries are found on our coasts. This cowry is ptirchased in dozens by people in India for dice-playing. The tiger-cowry *C. tigris* covered with large brown spots are beautiful, glossy shells that are used for interior decoration on tables and shelves. Shells like olives (*Oliva gibbosa* and *O. nebulosa), Strombus canarium, Umbonium vestiarium, Anadara* spp, *Pecten* are made into toys and dolls as figures of birds, human beings etc. by gluing the shells together. Some utility articles are also made from some gastropod shells. By boring an opening at the top of the spire of the chank *Turbinella*, baby milk feeders and blowing conches are made. Ash trays are made by mounting shells of *Turbinella, Trochus niloticus* and *Murex virgineus* on wooden bases. Rings made out of shells of *Strombus canarium* are worn on fingers by some people in Tamil Nadu and in chains in Malabar and Kanara.

CONCLUSION

There is good scope for the shell-craft industry to establish itself as a profitable industry if attempts are made to locate areas of abundance of different species, if fishing is done without causing large scale destruction of stocks and last but not the least important if attempts are made to rear and culture some of the more common species.

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