



---

## **Diversity of marine molluscs in selected locations along the south–west coast of Kerala**

**V G Asha<sup>1</sup>, Reshma R S<sup>2</sup>**

<sup>1</sup> Assistant Professor, Department of Zoology, Mahatma Gandhi College, Thiruvananthapuram, Kerala, India

<sup>2</sup> Mahatma Gandhi College, Thiruvananthapuram, Kerala, India

---

### **Abstract**

Phylum Mollusca, being the second largest phylum comprises a variety of animals known as decorative shells or as seafood. This phylum occupies all habitats in the marine environment and accounts for about one quarter of the total marine species described. (Molluscabase, 2016). Molluscs are considered as bio indicators of aquatic ecosystems. The present study is an attempt to investigate the diversity of molluscs present at selected sandy beaches viz, Vizhinjam and Perumathura along the coasts of Kerala. Out of 33 species identified 23 species belonging to class Gastropoda which constitute 67.4% of total class diversity observed at Vizhinjam. Among the species identified from Perumathura, 8 species belonging to class Bivalvia which constitute 80 % of total class diversity. The study revealed that there is a good diversity of molluscs.

**Keywords:** molluscs, beaches, gastropoda, bivalvia

---

### **Introduction**

Molluscs are considered as one of the highly successful invertebrates that are found in almost all habitats. According to Molluscabase, 2016<sup>[3]</sup>, Phylum mollusca accounts for about one quarter of the total marine species described. Venkataraman and Wafar (2005) recorded 3,370 marine molluscs in India, while Tripathy and Mukhopadhyay (2015) recorded 2199 species under 588 genera and 185 families. Biju and Ravineesh, 2015 documented 768 species of molluscs classified under 4 classes, 37 orders, 72 super families, 140 families and 377 genera of marine molluscs in Lakshadweep. According to MoEF, 2014, the total molluscan diversity recorded in India is 5,169 species representing around seven percent of the total global molluscan diversity. Andaman and Nicobar islands (more than 1000 species), Gulf of Mannar (around 428 species) and Lakshadweep (around 424 species) are considered as important hotspots of marine molluscan diversity. Besides using as a major source of food, their ornamental and commercial uses have brought them into an endangered status. In most cases species that are listed as endangered will become extinct in the very near future unless some positive action is taken. A large number of gastropods are listed endangered, which is a major concern for today. Thus there is a need for maintaining healthy molluscan population which in turn helps in habitat conservation. Sustainable utilization of molluscan resources and conservation practices requires a perfect understanding of molluscan diversity. They are used as bio indicators to monitor the health of aquatic environments in both fresh water and the marine environments. The present study provides a comparative account on the molluscan diversity in two selected sandy beaches, Vizhinjam and Perumathura along the coasts of Kerala.

### **Materials and Methods**

#### **Study Area**

The present study was carried out in two different beaches along the south west coast of Kerala, Vizhinjam and Perumathura, during December 2020 to March 2021.

Sampling Site I, Vizhinjam (76° 55'E; 08°20'N) is an important fishing and mariculture centre on the southwest coast of India. The highly productive waterbody with special ecological conditions acts as a favourable breeding ground for many marine organisms. Sampling site II, Perumathura, located at a Latitude 8°37'30.59"N and longitude 76°48'0.03"E of Thiruvananthapuram is a less explored coastal zone where the lake and the sea merges.

#### **Sample collection**

The samples (Shells and whole specimens) were collected by hand picking in a transect of known area. Fresh specimens were preserved in formalin and brought to the laboratory for identification. Beach sand was filtered using fine sized mesh to collect the smaller shells if any. The molluscs were identified based on the shell morphology, using taxonomic keys. The shells, which are identified, are dried and cleaned. Similar ones were grouped together after noting their external features of shells. Primary data collected from fishermen also provided some extra information of the abundance of shells. Each species were identified up to the species level using field guide and standard books (Narasimham, 2005)<sup>[6]</sup> and online resources.

#### **Results and Discussion**

The shells collected from the different sampling stations namely Vizhinjam and Perumathura were recorded in PLATES 1.1 and 1.2 respectively. Tables 1.1. & 1.2 shows the occurrence of percentage of molluscan families in Vizhinjam coastline and

Perumathura. The diversity of molluscan samples collected from two sites were represented graphically in Fig.1.1.a, 1.1.b, 1.1.c and 1.1.d respectively. The molluscan species collected from two sites belongs to two major classes Bivalvia and Gastropoda. Among this, Gastropoda is found to be a major class in the samples collected from Vizhinjam and Bivalvia in Perumathura region. Out of 33 species identified 23 species belonging to class Gastropoda which constitute 67.4% of total class diversity observed at Vizhinjam. (Fig.1.1.a). Class Bivalvia was found to be the second class imparting 32.35% to the total class diversity. 10 species were belonging to Class Bivalvia. Among the species identified from Perumathura, 8 species belonging to class Bivalvia which constitute 80 % of total class diversity. Only two species (20%) belongs to class Gastropoda. About five different subclasses were observed in Vizhinjam, out of which three subclasses *i.e.* Caenogastropoda, Vetigastropoda and Eogastropoda belongs to class Gastropoda and two subclasses, Autobranchia and pteriomorphia belongs to Bivalvia. Among two different subclasses were observed in Perumathura, subclass *ie*, Autobranchia belongs to Bivalvia and Caenogastropoda belongs to class Gastropoda. 17 species each belonging to subclass Caenogastropoda were observed from Vizhinjam. Among the specimens collected from Perumathura, eight species belongs to class Bivalvia. There were about 13 orders observed during the span of 4 months. 16.6 % of samples collected from Vizhinjam belongs to the family Muricidae. Samples collected from

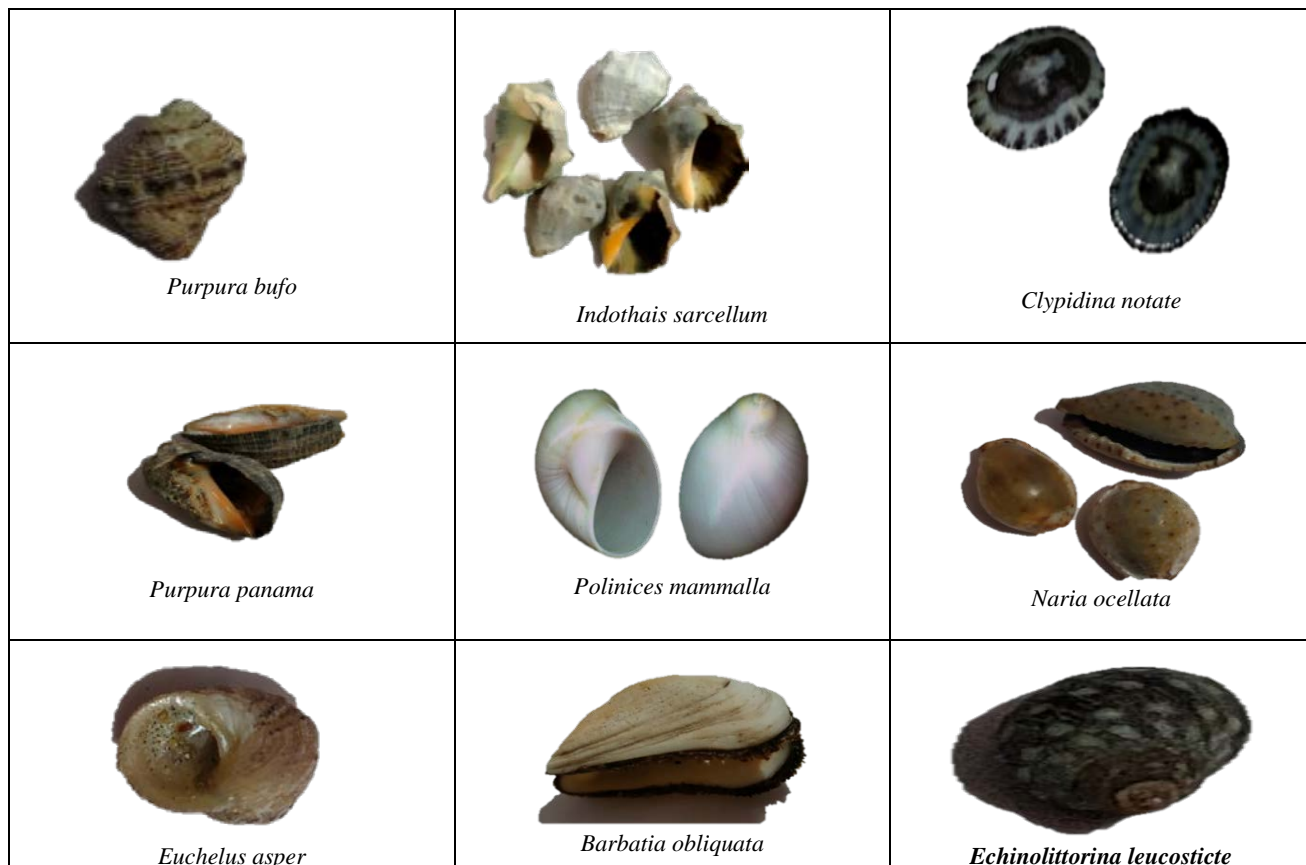
Perumathura showed a dominance of family Turritellidae (10 %). From Vizhinjam, about 8 species observed belonging to order Neogastropoda comprising about 23.5% of total % diversity. 4 species belongs to order Veneridae constitutes 40% of % diversity. The study revealed that there is a good diversity of molluscs in the study area. Most of these species were indigenous. Some of the recorded species have greater commercial value and biodiversity importance. Different environmental factors play an important role in distribution of living organisms in coastal ecosystems (Beukema and Meehan, 1985).

### Conclusion

Molluscan species are good indicators of localized conditions. Gastropods and bivalves are generally benthos organisms and they are regularly used as bio indicators of aquatic health. Some of the species observed were also edible. There is urgent need of conservation and utilization of marine molluscs.

### Acknowledgment

The authors are grateful to the support of Sri. Ravineesh, R., Department of Aquatic Biology & Fisheries, University of Kerala, kariatattom for helping in confirming the identification of specimens. We are also thankful to Principal, Mahatma Gandhi College, Thiruvananthapuram-695004 for providing the necessary facilities for carrying out this work.



 <p><i>Perna viridis</i></p>	 <p><i>Trochus radiatus</i></p>	 <p><i>Gafarrarium divaricatum</i></p>
 <p><i>Ostrea sp.</i></p>	 <p><i>Ruditapes bruguieri</i></p>	 <p><i>Rhinoclavis sinensis</i></p>
 <p><i>Mauritia arabica</i></p>	 <p><i>Mancinella alouina</i></p>	 <p><i>Gyrineum natator</i></p>
 <p><i>Babylonia zeylanica</i></p>	 <p><i>Babylonia spirata</i></p>	 <p><i>Conus coronatus</i></p>
 <p><i>Anachis terpsichore</i></p>	 <p><i>Pinna bicolor</i></p>	 <p><i>Pinctada margaritifera</i></p>
 <p><i>Maoricardium pseudolatum</i></p>	 <p><i>Turbo bruneus</i></p>	 <p><i>Cellana testudinaria</i></p>
 <p><i>Monetaria caputserpentis</i></p>	 <p><i>Perna perna</i></p>	 <p><i>Cellana radiata</i></p>

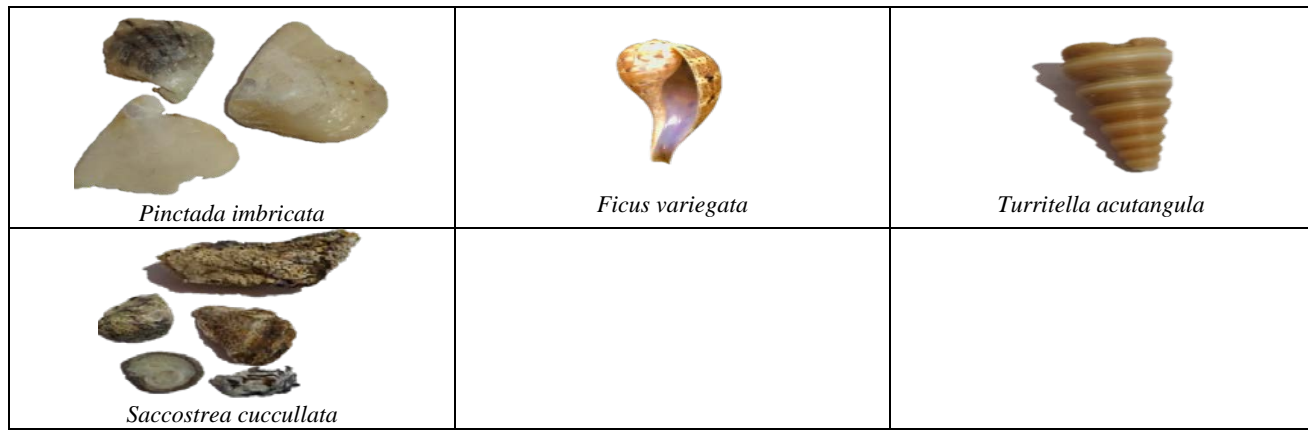


Fig 1: Diversity of molluscs from sampling site 1. Vizhinjam

Table 1: Showing the diversity of molluscs from Sampling site 1. Vizhinjam

Sl. No	Class	Subclass	Order	Family	Genus	Species
1.	Gastropoda	Caenogastropoda	Neogastropoda	Muricidae	Purpura	P. bufo
2.	Gastropoda	Caenogastropoda	Neogastropoda	Muricidae	Indothais	I. sacellm
3.	Gastropoda	Caenogastropoda	Neogastropoda	Muricidae	Purpura	Q. panama
4.	Gastropoda	Caenogastropoda	Littorinimorpha	Naticidae	Polinices	P.mammalla
5.	Gastropoda	Vetigastropoda	Seguenziida	Chilodontaidae	Euchelus	E.asper
6.	Gastropoda	Vetigastropoda	Trochida	Trochidae	Trochus	T.radiatus
7.	Gastropoda	Caenogastropoda	Neogastropoda	Babyloniidae	Babylonia	B.spirata
8.	Gastropoda	Caenogastropoda	Neogastropoda	Muricidae	Mancinella	M.alouina
9.	Gastropoda	Caenogastropoda	Neogastropoda	Columbellidae	Anachis	A.terpsichore
10.	Gastropoda	Vetigastropoda	Lepetellida	Fissurellidae	Clypidina	C.notate
11.	Gastropoda	Caenogastropoda	Littorinimorpha	Littorinidae	Echinolittorina	E.leucosticte
12.	Gastropoda	Caenogastropoda	Littorinimorpha	Cypraeidae	Naria	N.ocellata
13.	Gastropoda	Caenogastropoda	Sorbeoconcha	Cerithiidae	Rhioclavis	R.sinensis
14.	Gastropoda	Caenogastropoda	Littorinimorpha	Cypraeidae	Mauritia	M.arabica
15.	Gastropoda	Caenogastropoda	Littorinimorpha	Cymatiidae	Gyrineum	G.nator
16.	Gastropoda	Caenogastropoda	Neogastropoda	Babyloniidae	Babylonia	B.zeylanica
17.	Gastropoda	Caenogastropoda	Neogastropoda	Conidae	Conus	C.coronatus
18.	Gastropoda	Eogastropoda	Patellogastropoda	Nacellidae	Cellana	C.testudinaria
19.	Gastropoda	Caenogastropoda	Sorbeoconcha	Turritellidae	Turritella	T.acutangula
20.	Gastropoda	Caenogastropoda	Littorinimorpha	Cypraeidae	Monetaria	M.caputserpentis
21.	Gastropoda	Eogastropoda	Patellogastropoda	Nacellidae	Cellana	C.radiata
22.	Gastropoda	Caenogastropoda	Littorinimorpha	Ficidae	Ficus	F.variegata
23.	Gastropoda	Vetigastropoda	Trochida	Turbinidae	Turbo	T.brunneus
24.	Bivalvia	Pteriomorpha	Pteriida	Pteriidae	Pinctada	P.margaritifera
25.	Bivalvia	Autobranchia	Mytilida	Mytilidae	Perna	P.perna
26.	Bivalvia	Autobranchia	Cardiida	Cardiidae	Maoricardium	M.pseudolatum
27.	Bivalvia	Autobranchia	Venerida	Veneridae	Ruditapes	R.bruguieri
28.	Bivalvia	Autobranchia	Ostreida	Ostreidae	Saccostrea	S.cuccullata
29.	Bivalvia	Autobranchia	Ostreida	Pinnidae	Pinna	P.bicolor
30.	Bivalvia	Autobranchia	Arcida	Arcidae	Barbatia	B.Obliquata
31.	Bivalvia	Pteriomorpha	Mytilida	Mytilidae	Perna	P.viridis
32.	Bivalvia	Autobranchia	Venerida	Veneridae	Gafrarium	G.divaricatum
33.	Bivalvia	Pteriomorpha	Ostreoida	Ostreidae	Ostrea	Ostrea
34.	Bivalvia	Autobranchia	Ostreida	Margaritidae	Pinctada	P.imbricate



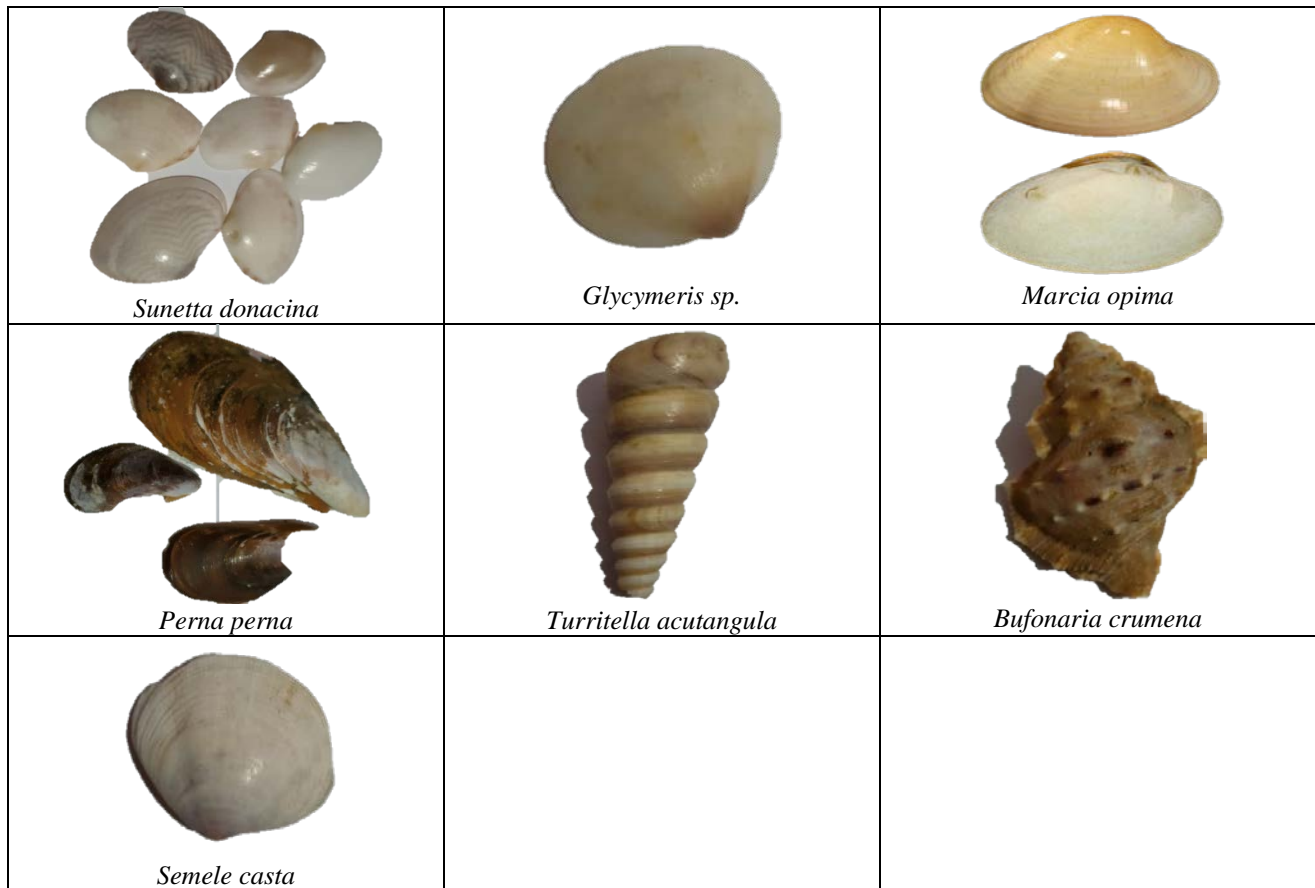


Fig 1: Diversity of molluscs from Sampling site 2- Perumathura

Table 2: Showing the diversity of molluscs from Sampling site Perumathura

Sl. No	Class	Subclass	Order	Family	Genus	Species
1.	Bivalvia	Autobranchia	Venerida	Veneridae	Meretrix	M.aurora
2.	Bivalvia	Autobranchia	Arcida	Arcidae	Anadara	A.indica
3.	Bivalvia	Autobranchia	Venerida	Veneridae	Sunetta	S.scripta
4.	Bivalvia	Autobranchia	Venerida	Veneridae	Sunetta	S.donacina
5.	Bivalvia	Autobranchia	Arcida	Glycymerididae	Glycymeris	
6.	Bivalvia	Autobranchia	Venerida	Veneridae	Marcia	M.opima
7.	Bivalvia	Autobranchia	Mytilida	Mytilidae	Perna	P.perna
8.	Bivalvia	Autobranchia	Cardiida	Semelidae	Semele	S.casta
9.	Gastropoda	Caenogastropoda	Sorbeoconcha	Turritellidae	Turritella	T.acutangula
10.	Gastropoda	Caenogastropoda	Littorinimorpha	Bursidae	Bufonaria	B.crumena

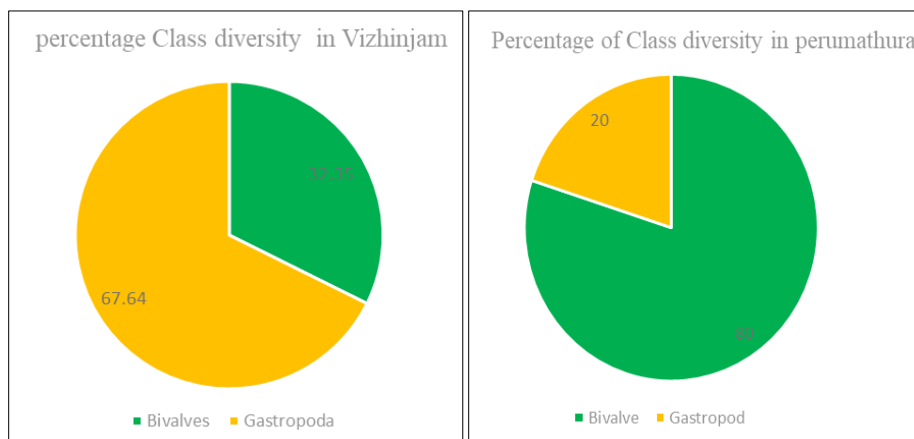


Fig 1: Showing % class diversity in Vizhinjam and Perumathura

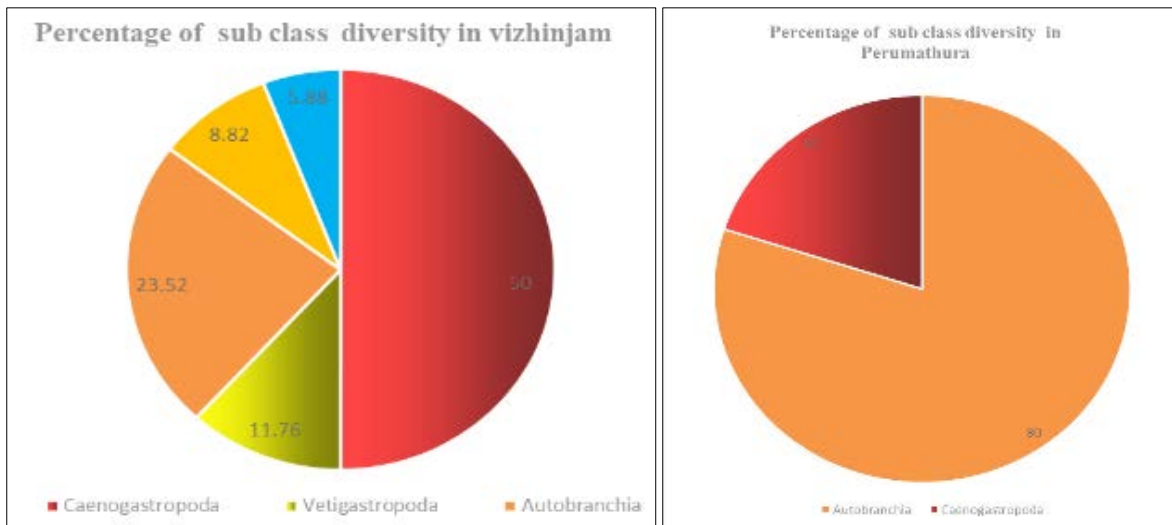


Fig 2: Showing % Sub- class diversity in Vizhinjam and Perumathura

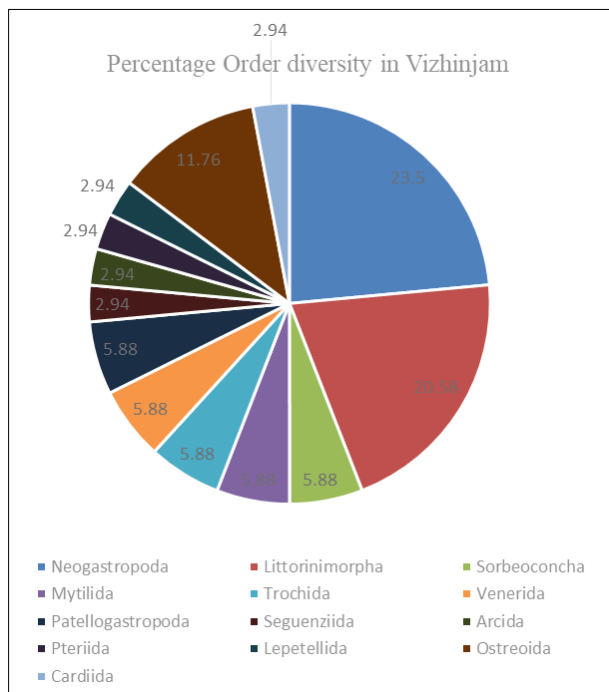


Fig 3: showing % Order diversity in Vizhinjam and Perumathura

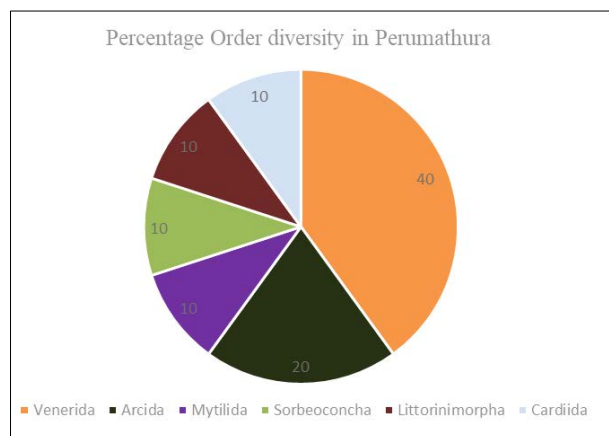


Fig 4: Showing % order diversity in Perumathura

References

1. Bijukumar, A and Ravinesh, R. A checklist of marine molluscs of Lakshadweep, India. Jnl. of Aquat. Bio.& Fisheries, Issue,2015:3:15-55
2. MoEF. India’s fifth national report to the convention on biological diversity. 2014. Ministry of Environment and Forests, New Delhi, 2014, 100.
3. Molluscabase Accessed at <http://www.molluscabase.org>, 2016.
4. Narasimham, Balan K, Kripa V, Satyanandan TV. Stock assessment of the pharaoh cuttlefish *Sepia pharaonis*. Indian J. Fish,1993:40(1,2):85-94.
5. Narasimham, Molluscan KA. Fisheries of India. BR Publications, New Delhi, 2015, 348.
6. Venkataraman K, Wafa MVM. Coastal and marine biodiversity of India.Indian journal of Geo-marine Sciences,2005:34(1):57-75
7. Tripathy B, Mukhopadhyay. Marine faunal diversity in India,2015, Pages 39-74.