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A Comparative Study on the Molluscan Diversity in the Selected Beaches of Kollam and Thiruvananthapuram districts of Kerala ,India

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Abstract - Biodiversity of bivalves and gastropods at Pozhikkara and Kappil beaches of kollam and thiruvananthapuram Districts of Kerala was assessed in this study. A total count of 1130 molluscs were collected in which 24 species belonging to 19 families of two classes ; Class gastropods and Class bivalves were observed. Study was carried from December-2022 to May 2023 by using Beachcombing method in sandy areas and scrapping of molluscs in the Rocky areas selected for the study . In family of Muricidae three species were found and in Babylonidae ,Turitellidae and Bursidae two species of each was observed ,remaining families were included with one species each were recorded from the study areas .***Perna perna*** and ***Donax scrotum*** were seen in large number during the study period. . ***Cymaticum perryi*** ,***Natica marochinesis*** ,***Faunus ater*** and ***Nipponaphera quasilla*** were least in number during study period

***KeyWords*:**Pozhikkara,Kappil,Mollusc,Beachcombing,Bivalves,Gastropods

1.INTRODUCTION

Biodiversity generally refers to variety and variability of life on earth .According to IUCN Biodiversity defined as biological diversity encompasses all species of plants , animals and microorganisms and the ecosystem and ecological processes of which they are parts . It include both the number and frequency of ecosystem , species ,or genes in a given assemblages . Biodiversity, is commonly measured by ecologists and biogeographists as species richness, or the number of species found at a particular point in space or time (Fernandez et al., 2007). Mollusca is one of the most diverse groups of animals on the planet , which at least 50,000 living species (and more likely around 2,00,000) . It include such familiar organisms as snails , octopuses , oysters , and chitons . Molluscs are a clade of organisms that all have soft bodies which typically have a head and a foot region .Often their bodies are covered by a hard exoskeleton , as in shells of snails and clams or the plates of Chitons. Molluscs have been classified based on their morphological, anatomical and biological features and they are second only to Arthropod in numerical abundance. The number of species identified under phylum molluscs varied from 80,000 to 1, 00, 000 (Shanmugam and Vai Ramani, 2009). Molluscs have high protein content (Bykov, 1974) the shells are rich in calcium carbonate which is a major source of raw material for the lime industries. The molluscan shells form one of the important raw material for many calcium based industries, since 33 to 40% of the shell is calcium 90 to 98% of which occurs as calcium carbonate. Shell grit forms an important ingredient in the preparation of dental Cream, Talcum powder and in carbide industry, people from various parts of the world using powdered molluscan shell as an ailment for various complications ranging from skin disease to rickets and asthma (Subba Rao, 2003), molluscs have been used in the preparation of ayuruvedic and homeopathic medicines form a long time.

2. Body of Paper

The study was conducted in two beaches of Kerala Pozhikkara and kappil beaches from December 2022 to May 2023 , for a period of 6 months . Pozhikkara beach is located at the South Western tip of Kollam's coastal area along the arabian sea coast .It is about 12km from Paravur town . Kappil beach is located in Edava Panchayat of Varkala Taluk of thiruvanthapuram district of Kerala Both the beaches have the backwater meeting points .

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The specimens were collected from both the sandy areas and rocky areas of both the beaches. For the collection of mollusc from shore ; Beachcombing method was followed .The molluscs attached to the rocks were Collected by scrapping using knives and foreceps . The collected specimens were cleaned, sundried and photographed for further study. The collected specimens were identified with the help of expert advice and using reference book ,and recorded the data including date of collection and numbers of specimens.

Diversity index was calculated using Simpsons Diversity Index which takes into account both the number and abundance of species and is useful in comparing similar habitats in different areas

Simpson's Index of Diversity formula

$$D = 1 - \left(\frac{\sum n(n-1)}{N(N-1)} \right)$$

n = the total number of organisms of a particular species

N = the total number of organisms of all species

The value of D ranges between 0 and 1. With this index, 1 represents infinite diversity and 0, no diversity.

From the samples collected and the observations done on the two study areas during the study period from December 2022 to May 2023 a total of 1130 number of molluses in which 25 species were identified which belongs to 19 families and 2 classes from both the study areas.710 numbers were found in site 1 which belongs to 19 families and 420 numbers were found in site 2 which belongs to 13 families .

Table -1: Checklist of Mollusc identified in Site 1

SL.NO	FAMILY	COMMON NAME	SCIENTIFIC NAME
GASTROPODS			
1.	Rostellariidae	Indian tibia	***Tibia curta***
2.	Ficidae	Paper fig shell	***Ficus ficus***
3.	Turbinellidae	Chank shell	***Turbinella pyrum***
4.	Babyloniidae	Spiral babylon	***Babylonia spirata***
5.	Cymattidae	Robin redbreast tritons	***Cymaticum perryi***
6.	Muricidae	Ramose murex	***Chicoreous ramosus***
7.	Fasciolariidae	Nicobar spindle	***Fusinus nicobaricus***
8.	Muricidae	Toad purpura	***Thais bufo***
9.	Cassiade	Grey bonnet or Glaucus bonnet	***Phalium glaucum***
10.	Bursidae	Frog shell	***Bursa rana***
11.	Muricidae	Rudolphs pupura or Salmon lipped whelk	***Purpura panama***
12.	Pachychilladae	Black devil snail	***Faunus ater***
13 .	Turitella		***Turritella attenuata***
14	Trochidea	Radiate top shell	***Trochus radiatus***
15.	Bursidae	Frilled frog shell	***Bursa crumena***
16 .	Babylonidae	Indian Babylon	***Babylonia zeylanica***
17.	Turritella	Tower shells	***Turritella duplicate***
18	Cancellaridae	Nutmeg snail	***Nipponaphera quasilla***
BIVALVES			
19	Arcidae	Arc clams	***Anadara indica***
20.	Mactridae		***Mactra turgida***
21.	Veneridae	Venus clams	***Sunetta scripta***
22.	Glycymeridae	Bitter sweet clams	***Glycemeris glycemeris***
23.	Mytillidae	Brown mussel	***Perna perna***
24	Donaxidae	Leather donax	***Donax scrotum***

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Table 1 :Checklist of Mollusc Identified in Site 2

SL.NO	FAMILY	COMMON NAME	SCIENTIFIC NAME
Gastropods			
1.	Rostellariidae	Indian tibia	***Tibia curta***
2.	Turbinellidae	Chank shell	***Turbinella pyrum***
3..	Babyloniidae	Spiral babylon	***Babylonia spirata***
4.	Cymattidae	Robin redbreast tritons	***Cymaticum perryi***
5.	Muricidae	Ramose murex	***Chicoreous ramosus***
6.	Babylonidae	Indian Babylon	***Babylonia zeylanica***
7.	Turritella	Tower shells	***Turritella duplicate***
8	Trochidea	Radiate top shell	***Trochus radiatus***
9	Muricidae	Toad purpura	***Thais bufo***
10	Turitella		***Turritella attenuata***
11	Muricidae	Rudolphs pupuraor Salmon lipped whelk	***Purpura panama***
12	Naticidae	Red Banded Moon Snail	***Natica marochinesis***
Bivalves			
13	Arcidae	Arc clams	***Anadara indica***
14.	Veneridae	Venus clams	***Sunetta scripta***
15 .	Mytillidae	Brown mussel	***Perna perna***
16.	Donacidae	Wedge clam	***Donax scrotum***
17	Mactridae		***Mactra turgida***

Figure 1: Samples of collected specimens

Charts

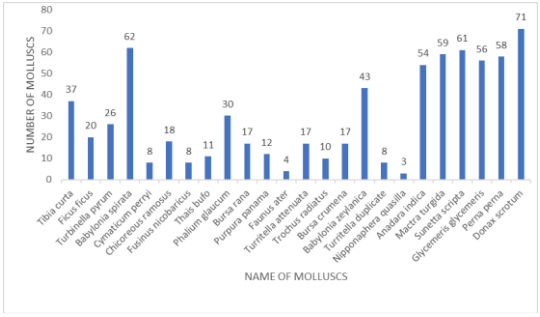

Chart 1: Bar diagram showing the Distribution of Mollusc in Pozhikkara beach

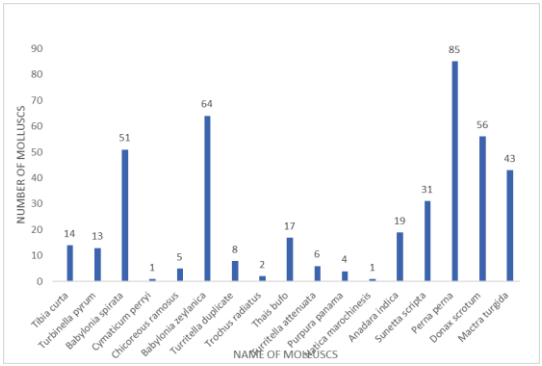

Chart 2 : Bar diagram showing the Distribution of Mollusc in kappil beach

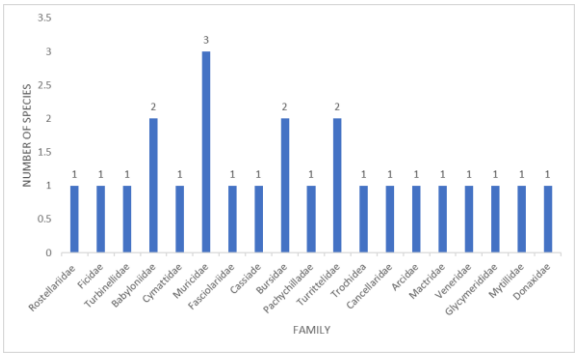

Chart 3 : Bar diagram showing the families of molluscs identified in Pozhikkara Beach

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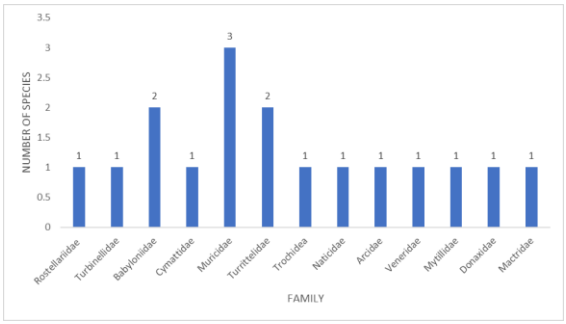

Chart 4 : Bar diagram showing the families of molluscs identified in Kappil Beach

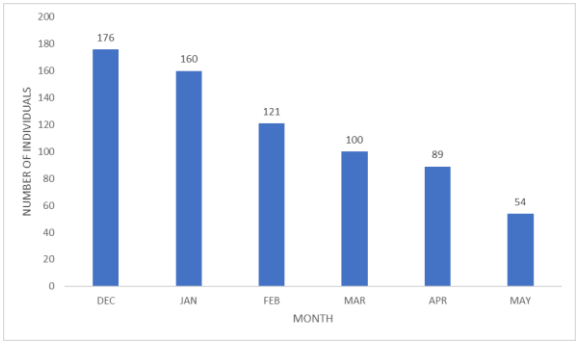

Chart 4 : Bar diagram showing the monthly variation of molluscs in Pozhikkara Beach

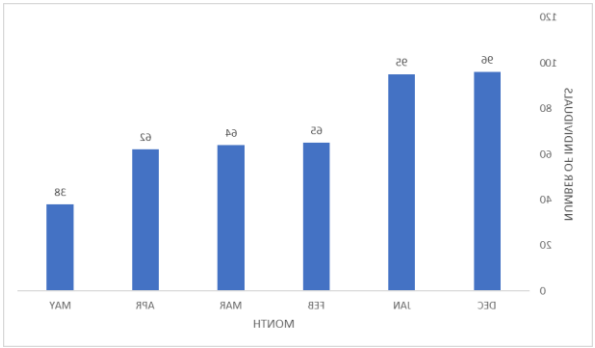

Chart 5 : Bar diagram showing the monthly variation of molluscs in Kappil Beach

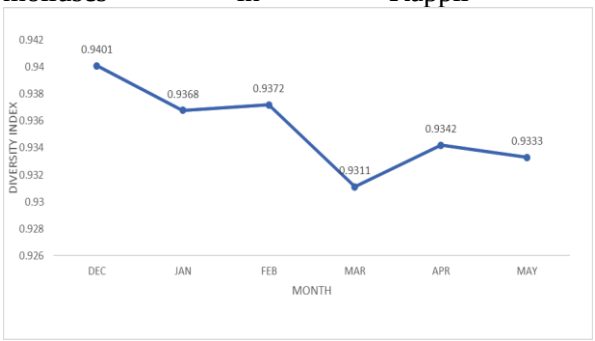

Chart 6: Diversity index shown by the molluscs identified in Pozhikara Beach

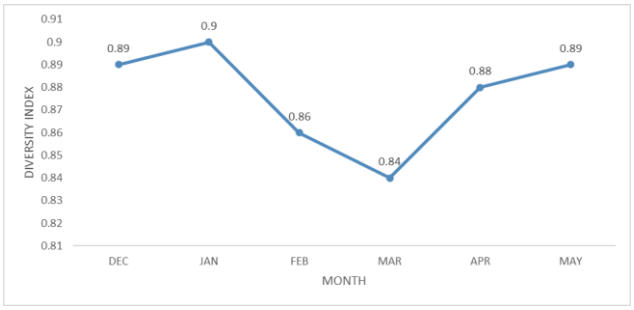

Chart 7: Diversity index shown by the molluscs identified in Kappil Beach

3. CONCLUSIONS

The present study focused on the distribution of Molluscs in Pozhikkara and Kappil beaches suggested that there are about 24 species identified during the study period belonging to 19 Families and 2 Classes . Different kinds of molluscs, their names as well as their taxonomic positions were studied from both the study areas and found that each and every species is different from one another, they vary in size , colour, shape and their patterns . ***Donax scrotum*** were recorded abundantly in pozhikkara beach while ***Perna perna*** were recorded abundantly in Kappil beach during the study period**.** Most number of species were found in the Families Mytillidae, Babylonidae, Bursidae and Turritellidae .The number of molluscs were gradullay decreased from the December to May , that may be due to pollution , over exploitation of some molluscs species as a source of commercial activities ,environmental disturbances in the marine water or may be due to the adverse climatic conditions and change in temperature .

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