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## Diversity of Malacofauna from the Paleru and Moosy backwaters of Prakasam district, Andhra Pradesh, India

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### Abstract

Among the various groups represented in the macrobenthic fauna of the Bay of Bengal at Prakasam district, Andhra Pradesh, India, molluscs were the dominant group. Molluscs were exploited for industrial, edible and ornamental purposes and their extensive use has been reported way back from time immemorial. Hence the present study was focused to investigate the diversity of Molluscan fauna along the Paleru and Moosy backwaters of Prakasam district during 2016-17 as these backwaters are not so far explored for malacofauna. A total of 23 species of molluscs (16 species of gastropods belonging to 12 families and 7 species of bivalves representing 5 families) have been reported in the present study. Among these, gastropods such as *Umbonium vestiarium*, *Telescopium telescopium* and *Pirenella cingulata*, and bivalves like *Crassostrea madrasensis* and *Meretrix meretrix* are found to be the most dominant species in these backwaters.

**Keywords:** Malacofauna, diversity, gastropods, bivalves, backwaters

### 1. Introduction

Molluscs are the second largest phylum next to Arthropoda with estimates of 80,000-100,000 described species [1]. These animals are soft bodied and are extremely diversified in shape and colour. Among molluscs, the two major classes are Gastropoda and Bivalvia. Molluscs play a significant role in the ecosystem functions related to degradation of organic detritus as they consume living and decaying algae and plant materials [2, 3]. The gastropods as grazers can control epiphyton and algal blooms [4, 5] whereas bivalves as filter feeders can help purify silted marine waters [6]. Molluscs have been broadly grouped under three categories including epifauna (living on mud or surface area of the land), infauna (burying themselves in the mud), arboreal (attached to stems and roots of the vegetation) and some live in overlapping habitats [7-9]. They occur in various habitats such as marine, brackish and freshwater as well as terrestrial. However, they are abundant in water bodies and perform a significant role in maintaining the aquatic ecosystems. They live in diverse habitats of sea environments including the mangroves, sandy shores, coral reefs, rocky beaches and sea grasses [10]. Molluscs occupy almost all levels of the food web as predators, herbivores, detritus and filter feeders [11]. Of the conservative estimate of 66535 number of molluscan species, the Indian share is 5169 species [12]. Molluscs remain the valuable fishery resource along the coasts of India. These are essential for the sustenance of nature and used for edible purpose, ornaments, poultry and fish feed, for lime and pharmaceutical industry, etc. [13]. They are also used for domestic purposes such as washing utensils as abrasive material. In view of their significance, several studies on taxonomy, ecology, distribution and biology of molluscs have been carried out along the east and west coasts of India [14-21]. However, there is no documented evidence on the diversity of molluscan fauna of Paleru and Moosy backwaters along the east coast of Andhra Pradesh, India. Hence, the present attempt has been made to study the diversity of molluscan fauna in unexplored backwaters of Prakasam district, Andhra Pradesh, India.

### 2. Materials and Methods

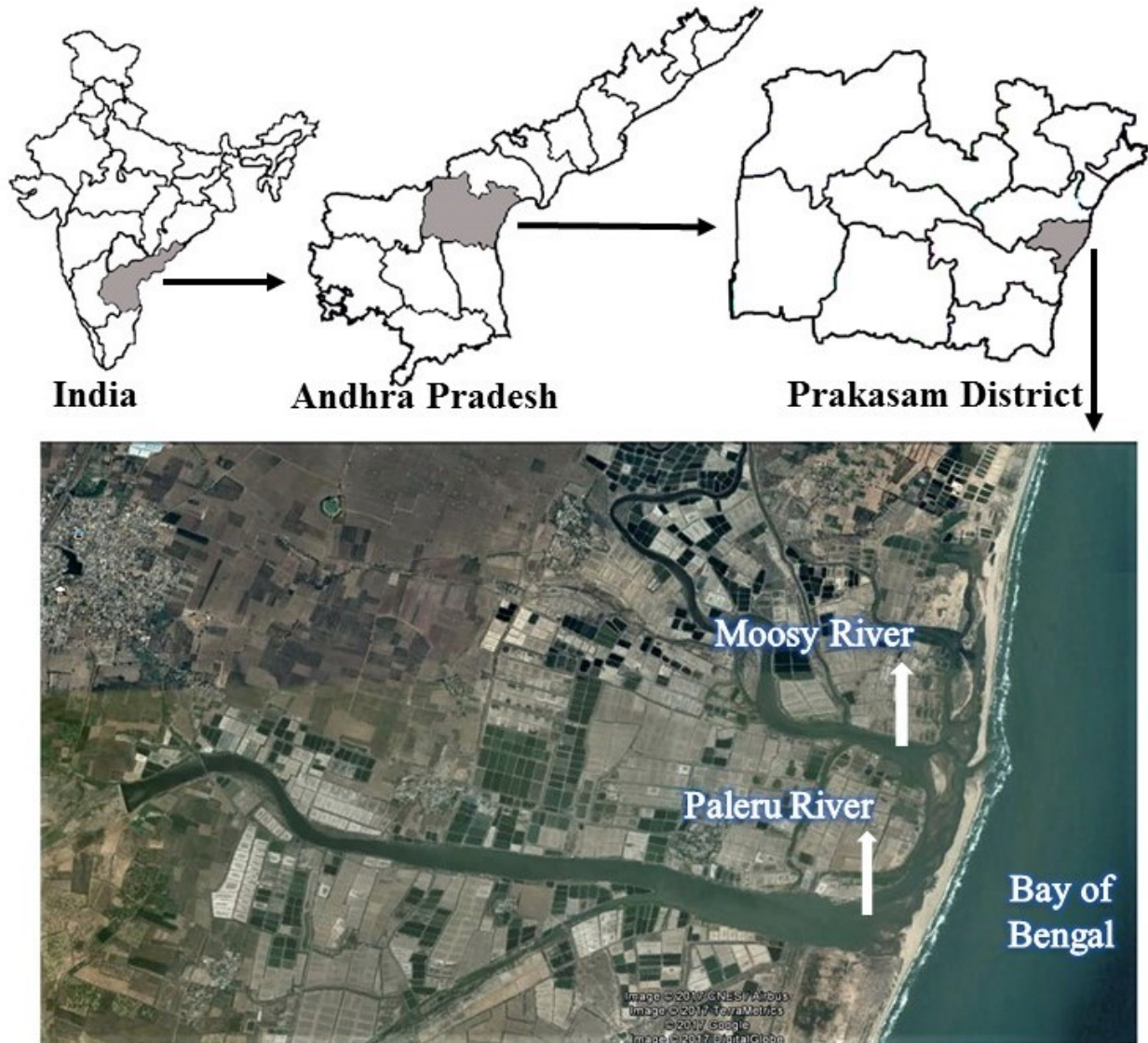
The study area (15° 31' 05" to 15° 33' 38" N and 80° 09' 89" to 80° 10' 63" E) lies between Paleru and Moosy rivers at Prakasam District, Andhra Pradesh, India (Fig. 1). The Prakasam district is endowed with a long coastline of 102 km with rich fishery resources. This region is consisting of backwaters, adjacent salt pans and aquaculture farms (2790ha).

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The Paleru and Moosy rivers are merged together and flow into the Bay of Bengal. Sampling was mainly carried out in

sandy and mud flats as well as in mangroves adjacent to Moosy river.



**Fig 1:** Location of the study area

Samples were collected from the mud flats, sand-mud swamps, mangroves, wooden piles and also from landed bycatch from fishing boats of the study area from January 2016 to March 2017. The molluscan epifauna and infauna were collected from the sampling site by hand picking, digging and scrapping the substratum [22]. The arboreal forms were gathered from the stems, roots and other parts of mangroves [23]. The specimens were collected in separate ziploc bags and were carried to the laboratory and they were brushed to clean the fouling biomass and mud. The organisms were photo documented and identified to species level by following standard taxonomic keys [24-30]. After identification, all the specimens were deposited in the museum of the Department of Zoology and Aquaculture, Acharya Nagarjuna University, Guntur, India.

### 3. Results and Discussion

In the present study, 23 species of molluscs were recorded. Of which 16 species are belonging to 12 families of class Gastropoda and the remaining 7 species are represented by 5 families of class Bivalvia (Table 1 and Plate I & II). Among them, gastropods such as *Umbonium vestiarius*, *Telescopium telescopium* and *Pirenella (=Cerithidea) cingulata*, and bivalves like *Crassostrea madrasensis* and *Meretrix meretrix* were dominant. In the present study, majority of molluscan species have been observed from mud flats and sand-mud swamps. The *Telescopium telescopium*, *Pirenella cingulata*, *Crassostrea gigas* and *Crassostrea madrasensis* beds were mostly found in mud flats and in mangrove region. *Tegillarca (=Anadara) granosa* and *Meretrix meretrix* have been found buried in the soft muddy bottom. *Perna viridis* was found to be attached to the beds of *C. gigas*, *C. madrasensis* and also on walls of different hard substrata with the help of byssal threads.

**Table 1:** A Checklist of Gastropods and Bivalves at Paleru and Moosy Backwaters

Gastropods			
No.	Order	Family	Scientific name
1	Neogastropoda	Babyloniidae	<i>Babylonia spirata</i> (Linnaeus, 1758)
2	Neogastropoda	Babyloniidae	<i>Babylonia zeylanica</i> (Bruguiere, 1789)
3	Neogastropoda	Turridae	<i>Lophiotoma indica</i> (Roding, 1798)
4	Neogastropoda	Muricidae	<i>Murex trapa</i> (Roding, 1798)
5	Neogastropoda	Olividae	<i>Oliva oliva</i> (Linnaeus, 1758)
6	Neogastropoda	Melongenidae	<i>Pugilina cochlidium</i> (Linnaeus, 1758)
7	Neogastropoda	Muricidae	<i>Rapana rapiformis</i> (Born, 1778)
8	Neogastropoda	Nassariidae	<i>Bullia vittata</i> (Linnaeus, 1767)
9	Neogastropoda	Fascioliariidae	<i>Fusinus forceps</i> (Perry, 1811)
10	Littorinimorpha	Bursidae	<i>Bursa echinata</i> (Link, 1807)
11	Littorinimorpha	Bursidae	<i>Bursa rana</i> (Linnaeus, 1758)
12	Littorinimorpha	Tonnidae	<i>Tonna tessellata</i> (Lamarck, 1816)
13	Caenogastropoda	Turritellidae	<i>Turritella attenuata</i> (Reeve, 1849)
14	Caenogastropoda	Potamididae	<i>Telescopium telescopium</i> (Linnaeus, 1758)
15	Caenogastropoda	Potamididae	<i>Pirenella cingulata</i> (Gmelin, 1791)
16	Archaeogastropoda	Trochidae	<i>Umboonium vestiarium</i> (Linnaeus, 1758)
Bivalves			
17	Ostreida	Ostredidae	<i>Crassostrea gigas</i> (Thunberg, 1793)
18	Ostreida	Ostredidae	<i>Crassostrea madrasensis</i> (Preston, 1916)
19	Ostreida	Ostredidae	<i>Ostrea edulis</i> (Linnaeus, 1758)
20	Ostreida	Pteriidae	<i>Isognomon alatus</i> (Gmelin, 1791)
21	Arcida	Arcidae	<i>Tegillarca granosa</i> (Linnaeus, 1758)
22	Mytilida	Mytilidae	<i>Perna viridis</i> (Linnaeus, 1758)
23	Venerida	Veneridae	<i>Meretrix meretrix</i> (Linnaeus, 1758)



**Fig 1:** *Babylonia spirata*



**Fig 2:** *Babylonia zeylanica*



**Fig 3:** *Lophiotoma indica*



**Fig 4:** *Murex trapa*



Fig 5: *Oliva oliva*



Fig 6: *Pugilina cochlidium*



Fig 7: *Rapana rapiformis*



Fig 8: *Bullia vittata*



Fig 9: *Fusinus forceps*



Fig 10: *Bursa echinata*



Fig 11: *Bursa rana*



Fig 12: *Tonna tessellata*



Fig 13: *Turritella attenuate*



Fig 14: *Telescopium Telescopium*



Fig 15: *Pirenella cingulate*

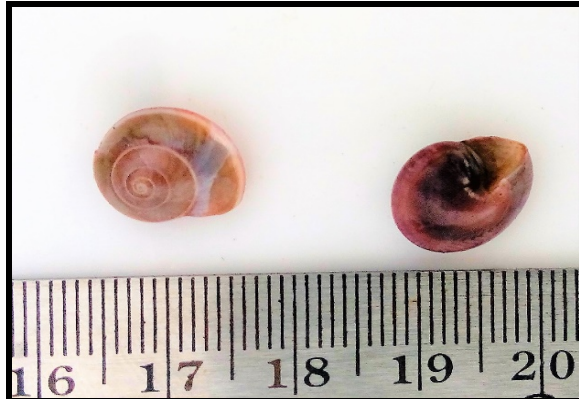


Fig 16: *Umboonium vestiarius*

Plate I: Gastropods



Fig 17: *Crassostrea gigas*

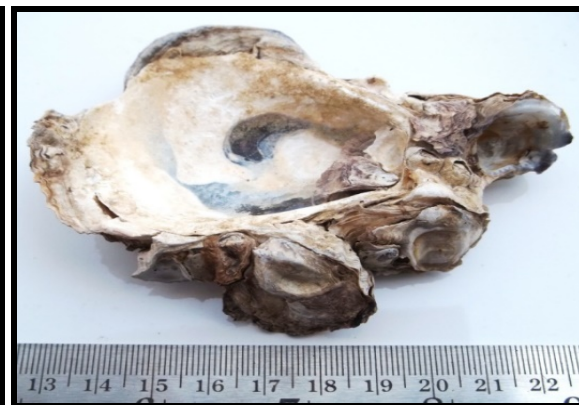


Fig 18: *Crassostrea madrasensis*



Fig 19: *Ostrea edulis*

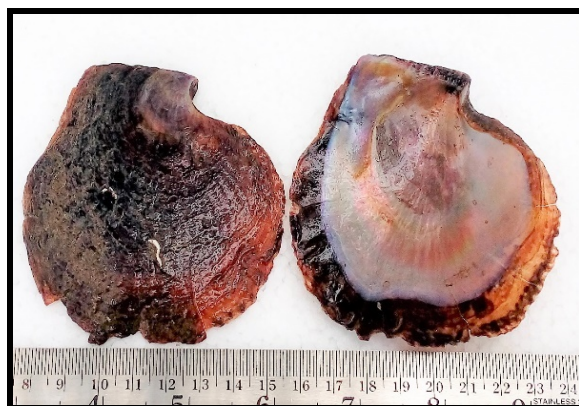


Fig 20: *Isognomon alatus*

Fig 21: *Tegillarca granosa*Fig 22: *Perna viridis*Fig 23: *Meretrix meretrix***Plate II: Bivalves**

The molluscan diversity of Andhra Pradesh was carried out by several workers. Mention may be made to the recent works on molluscan diversity along the east coast of Andhra Pradesh. From Nuvvalarevu backwaters in Srikakulam district, 6 species of gastropods and 3 species of bivalves were reported [31]. In Bhavanapadu mangroves, Northeast coast of Andhra Pradesh, 15 species of gastropods and 4 species of bivalves were recorded [32]. At Tekkali Creek of Srikakulam district, 22 species of molluscs including 16 species of gastropods and 6 species of bivalves were recorded [33]. About 70 species of molluscs were identified along the east coast from Krishna to Nellore districts of Andhra Pradesh [34]. In Pennera river estuary, 29 estuarine molluscs were reported [35]. From Coringa mangroves of Godavari estuarine ecosystem, 10 species of gastropods and 5 species of bivalves were recorded [36]. In east godavari estuarine ecosystem, 14 gastropods and 8 bivalves were reported [37]. However, the species recorded in the present study are relatively more and the best representatives of molluscan assemblages of similar areas and need further investigation.

The local fishing communities collect these molluscs for their livelihood and especially bivalves are used for human consumption. They are good source of proteins, mineral and glycogen, and easily digestible compared to other animal foods [38]. The non-edible molluscs were deposited into heaps on the platforms for sun drying and then utilized for domestic and commercial purposes.

**4. Conclusion**

In the present study 23 species of molluscs were recorded on mud flats, sandy areas, swamps and mangroves of Paleru and

Moosy backwaters. Gastropods were observed to be predominant in this area. The study provides the base line information on malacofauna and it would assist the researchers for further studies on molluscs and manage the resources for sustainability.

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