J. Exp. Zool. India Vol. 25, No. 2, pp. 1371-1376, 2022	www.connectjournals.com/jez	*ISSN 0972-0030*
DocID: https://connectjournals.com/03895.2022.25.1371		eISSN 0976-1780

DIVERSITY OF MANGROVE ASSOCIATE MOLLUSCS : A CASE STUDY OF SIKKA COAST, GULF OF KACHCHH, GUJARAT

Siddharth Kumar Jatav[1], Tushar Dave[1], Hitesh Kardani*[2], Satyendra Katara[1] and Jeet Parmar[1]

[1]Department of Fisheries Resources Management, College of Fisheries Science, Kamdhenu University, Veraval, India.
[2]Fisheries Research Station, Junagadh Agricultural University, Sikka, India.
*e-mail : hiteshkardani@gmail.com

(Received 29 April 2022, Revised 21 June 2022, Accepted 2 July 2022)

ABSTRACT : The present study was conducted at two sites of Sikka coast, Gulf of Kachchh, India, site I (mangroves near Digvijay Cement Company jetty) and site II (mangroves on the left side of GSFC jetty). A total 20 species of gastropod and bivalves belongs to 11 superfamily, 15 family and 18 genera were reported. During study, 17 species of gastropods belong to 8 superfamily, 12 family, 15 genus and 3 bivalve species belong to 3 superfamily, 3 family and 3 genus were reported. The maximum number of species was observed at site II during the month of December 2020 and from site I the maximum number of species recorded was during the month of March 2021. *Pirenella cingulata, Clypeomorus bifasciata* and *Trochus radiatus* were the most dominating species of gastropod belongs to family Cerithidae and Trochidae. The gastropods including *Pirenella cingulata, Clypeomorus bifasciata* and *Telescopium telescopium* were found during all the months of sampling period from both sites with 100% occurrence. *Murex trapa*, *Chicoreus brunneus* and *Nerita* species were recorded in site I, but not recorded in site II. *Mitrella blanda*, *Nassarius hipaticus* and *Nassarius tadjallii* were reported in site II but not in site I. Physicochemical parameters such as Water temperature, pH, Salinity, Dissolved Oxygen etc were also recorded for both sites.

Key words : Bivalves, gastropod, molluscan, Mangrove, Gulf of Kachchh.

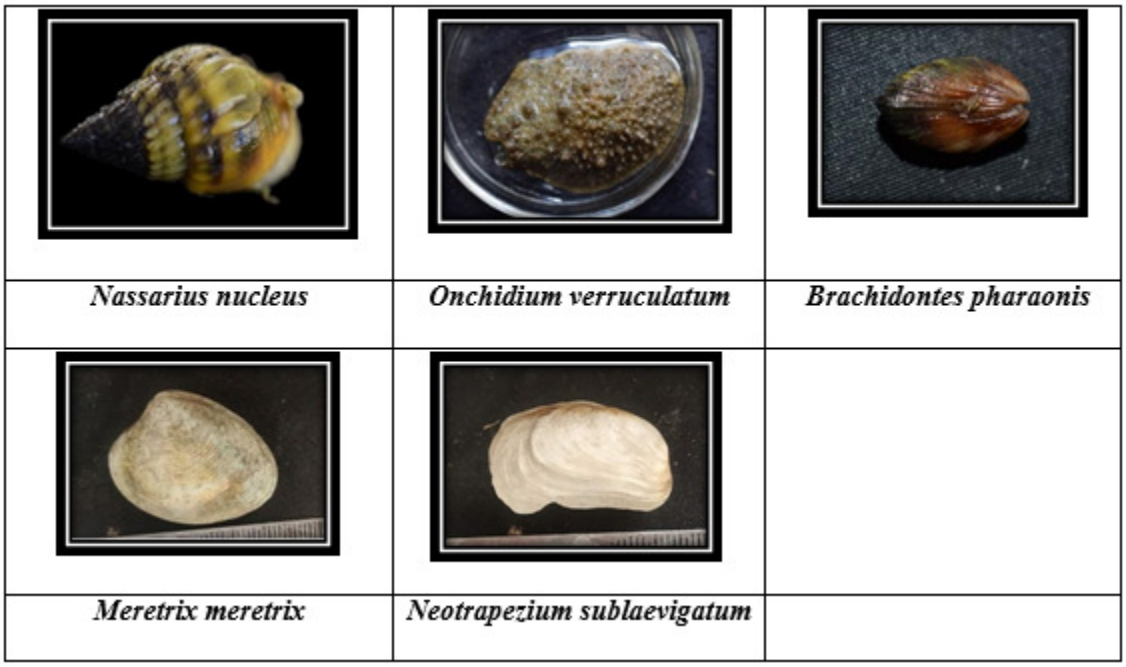
How to cite : Siddharth Kumar Jatav, Tushar Dave, Hitesh Kardani, Satyendra Katara and Jeet Parmar (2022) Diversity of mangrove associate molluscs : A case study of Sikka Coast, Gulf of Kachchh, Gujarat. *J. Exp. Zool. India* **25**, 1371-1376. DocID: https://connectjournals.com/03895.2022.25.1371

INTRODUCTION

The mangroves are salt tolerant plants arises with in the intertidal zone of tropical and subtropical estuarine region. Mangroves are very important to the ecosystem as they protect the coast from erosion and provide many resources for utilisation in the forestry, fisheries, food, agriculture and medicinal industries (Venkatesan *et al*, 2010). The mangrove are one of the most productive ecosystem distributed along the tropical coast and act as a buffer zone between the land and ocean (Kathiresan and Rajendran, 2005). They also assist in maintaining water quality and reduce pollution by filtering suspended material and recycle nutrients (Bandaranayake *et al*, 2002). They provide feeding, reproductive, shelter and nursery sites to several terrestrial and aquatic species (Kathiresan and Rajendran, 2005).

Globally mangrove covers an area of 137,760 km^2 (Giri *et al*, 2011) and the higher percent of mangrove vegetation occurs between 5′N and 5′S, 32′N and 38′S (Morrisey *et al*, 2010). In India, mangroves cover about 4827 km^2 with 57% along the east coasts, 23% along the west coast and 20% in Andaman and Nicobar Islands (Vannucci, 2002). The total number of mangrove associated faunal species recorded from Indian mangrove is 3111 which includes prawns, crabs, molluscs, fishes, reptiles, amphibians, birds and mammals (Kathiresan and Quasim, 2005). Molluscs are one of the most dominant groups in the mangrove ecosystem (Nagelkerken *et al*, 2008). Total 5,070 species of molluscs have been recorded of which, 3,370 are from marine habitats (Subba Rao, 1991) and 215 species of molluscs have been noted from Indian mangroves (Boominathan *et al*, 2012). Gastropods and bivalves are the two major classes of molluscs inhabiting mangrove and play a crucial role in maintaining the functioning and productivity of mangroves through spring-cleaning encrusting fauna like barnacles from the root systems (Shanmugam and Vairamani, 2009). These macro benthic gastropod and bivalves can be divided into three groups epifauna (living on mud or surface area of the land), infauna (burying themselves in the substratum),

Fig. 4 continued....



observed on mangrove leaves. Lower number of bivalves compared to gastropods might be due to rocky sub state nearby mangrove vegetation (Fig. 3). Site wise physico chemical parameters such as Salinity, pH, water temperature and dissolved oxygen were measured, which are presented in Figs. 1 and 2.

CONCLUSION

The diverse and dispersed mangrove habitat of sikka coast is rich in diversity of molluscs. Gastropods and bivalves shares more than 90% of recorded marine molluscs of mangroves and comprise an important trophic component of detritus-food webs. Gastropods being herbivores, carnivores, scavengers and filter feeder play a key role in the mangrove ecosystems. Mangrove areas are increasing day by day at few sites in sikka due to silt deposition while at some sites they are under tremendous pressure of anthropogenic activities which includes pollution, inter tidal zone are allotted for commercial activities such as ship repairs and constructions.

REFERENCES

Abott R T (1954) *American Sea shells.* Dvan Nostrand Company Inc., New York.

Apte D (1998) *The book of Indian shells*. Bombay Natural History Society, Oxford University press, Delhi.

Bandaranayake W M (2002) Bioactivities, bioactive compounds and chemical constituents of mangrove plants. *Wetland Ecol. Manag.* **10**(6), 421-452.

Boominathan M, Chandran M D S and Ramachandra T V (2008) Economic Valuation of Bivalves in the Aghanashini Estuary, West Coast, Karnataka. ENVIS Technical Report: 30. Centre for Ecological Sciences, Indian Institute of Science, Bangalore, India.

Dey A (2006) *Handbook on mangrove associate molluscs of Sundarbans*. Zoological Survey of India, Kolkata.

Giri C, Ochieng E, Tieszen L L, Zhu Z, Singh A, Loveland T, Masek J and Duke N (2011) Status and distribution of mangrove forests of the world using earth observation satellite data. *Glob. Ecol. Biogeog*. **20**(1), 154–159.

Ingole B, Naik S, Furtado R, Ansari Z and Chatterji A (2002) Population characteristics of the mangrove clam Polymesoda (Geloina) erosa (Solander, 1786) in the Chorao mangrove, Goa, In: National 4 Conference on Coastal Agriculture, 6-7 April 2002. Indian Council of Agricultural Research, Old Goa, India, pp. 211–212.

Kardani Hitesh K, Mankodi P C and Thivakaran G A (2014) Diversity and distribution of gastropods of intertidal region of Northern Gulf of Kachchh, Gujarat, India. *Ecology, Environment and Conservation* **20**(1), 105-110.

Kathiresan K and Quasim S Z (2005) *Biodiversity in mangrove ecosystems*. Hindustan Publishers, New Delhi.

Kathiresan K and Rajendran N (2005) Coastal mangrove forests mitigated tsunami. *Estuarine, Coastal and Shelf Science* **65**, 601–606.

Kathiresan K (2009) *Mangrove Ecosystems*. In : Training Course on Mangroves and Biodiversity.

Kathiresan K and Bingham B L (2001) Biology of mangroves and mangrove ecosystems. *Adv. Mar. Biol*. **40**, 81-251.

Kesavan K, Palpandi C and Shanmugam A (2009) A checklist of malacofauna of the Vellar estuarine mangroves, India. *J. Threatened Taxa* **1**(7), 382-384.

Modayil M J (2007) A Field Guide to the Common Marine Molluscs of India, CMFRI, Kochi, 80pp.

Morrisey D, Swales A, Dittmann S, Morrison M, Lovelock C and Beard C (2010) The Ecology and Management of Temperate Mangroves. pp: 43–160.

Nagelkerken I, Blaber S J M, Bouillon S, Green P, Haywood M, Kirton L G, Meynecke J O, Pawlik J, Penrose H M, Sasekumar

A and Somerfield P J (2008) The habitat function of mangroves for terrestrial and marine fauna: A review. *Aquatic Botany* **89**, 155–185.

Pereira C, Rao C V and Krishnan S (2002) Study of the dominant fauna of mangroves at Seven Bungalows beach, Versova, Mumbai - A preliminary study. In: *Proceedings of the National Seminar on Creeks, Estuaries and Mangroves - Pollution and Conservation*,(ed. Quadros G), 28-30 Nov 2002. Vidya Prasarak Mandal's B.N. Bandodkar College of Science, Thane, India, pp. 196-200.

Radhakrishnan C, Gopi K C and Palot M J (2006) Mangroves and their faunal associates in Kerala. Occasional paper No 246. Records of Zoological Survey of India. Zoological Survey of India, Calicut, Kerala.

Shanmugam A and Vairamani S (2009) Molluscs in mangroves: A case study. In: *International Training Course on Biodiversity in Mangrove Ecosystem-course Manual* (eds. Kathiresan K and Khan S A), Annamalai University, Annamalai Nagar, India, pp. 422–433.

Subba Rao N V (1991) *Mollusca in Animal Resources of India*. Zoological Survey of India, Calcutta.

Subba Rao N V (2003) Indian Seashells (Part-1): Polyplacophora and Gastropoda. Records of the Zoological Survey of India, Occasional Paper 192.

Vannucci M (2002) Indo-west Pacific mangroves. In : *Mangrove ecosystems* (ed.Lacerda L D), Springer, Berlin, 122 – 215

Venkatesan V, Kalidas C, Zacharia P U and Rajagopal S (2010) Distribution of molluscan fauna in the Karangad estuarine mangroves, South East Coast of India. *AES Bioflux Adv. Environ. Sci.* **2**(2), 113-119.