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Research Article

NOTES ON THE MARINE MOLLUSCS COLLECTION FROM OKHA BEACH, GULF OF KACHCHH, GUJURAT IN 1980

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ABSTRACT

A historical collection of marine Molluscs from Okha beach, Gujurat was examined to document species diversity and provide baseline data for inter tidal fauna. The specimens were collected in 1980 and were deposited unidentified in National Zoological Collection of ZSI, CZRC, Jabalpur. A total of 30 species belonging to 25 genera and 14 families under three major classes (Polyplacophora, Gastropoda, and Bivalvia) were identified using current taxonomic references and verified through the World Register of Marine Species (WoRMS). The study includes one Chiton species (*Rhyssoplax peregrina*), 24 gastropods, and 5 bivalves. Comparison with previous studies indicates that molluscan research in Okha has remained limited and scattered. This study provides a historical snapshot of Molluscan diversity with validated and updated species list for the Okha coast and clarifies the taxonomic status of previously doubtful species, contributing to the regional database of the Gulf of Kachchh. The study also provides and contributes valuable information for comparative studies on temporal changes in the region.

Keywords: Molluscs, Gastropod, Bivalve, Malcofauna Diversity, Okha beach, Chiton, Gulf of Kachchh.

INTRODUCTION

Marine Molluscs play a vital role in intertidal and sub tidal ecosystems, contributing ecologically and economically as grazers, filter feeders, prey for other organisms and indicators of environmental health. The Gulf of Kachchh (GoK) an Inlet of Arabian Sea, located along the northwestern coast of India, spreads along district Devbhumi Dwarka, Jamnagar and Morbi district, is known for its diverse habitats, including coral reefs, mangroves and rocky shores, which supports rich molluscan assemblages (Hatkar *et al*., 2024). Okha, situated at the western tip of the Shaurashtra peninsula, is one of the prominent intertidal localities of the gulf, The intertidal ecosystem around Port Okha is rocky in nature with sandstones of vast expanse and prolonged exposure. (Pandey *et al*., 2017). Despite this biodiversity, historical faunastic records from this area are relatively scarce.

The Zoological collections of institutes often preserve valuable material that remains unidentified for years represents untapped source of data for understanding temporal changes in species composition. Revisiting such specimens can provide important insights into historical biodiversity. The present note reports a total 30 marine molluscs species, including one chiton species *Rhyssoplax peregrine* (Thiele, 1904) collected from Okha beach in May, 1980 and Preserved in the National Zoological Collection of Zoological survey of India, Central Zone Regional Centre, Jabalpur. The coastal waters of Gujarat, especially the Gulf of Kachchh (GoK), are known for their rich marine biodiversity, is known to harbor 233 molluscs species (Hatkar *et al.*, 2024); yet molluscan studies remain fragmentary and geographically uneven. Earlier works by Gopalkrishnan (1970) and Sarvaiya (1977) provided the first accounts of molluscs from selected localities around Okha, but many of their recorded species have since been synonymized or reclassified. Recent localized studies and checklists from the region indicate variable species counts depending on area and sampling effort: for example, Soni & Thakur (2015) prepared a checklist of Beyt Dwarka listing 82 species and regional surveys in Devbhumi–Dwarka have reported 54 species in targeted sampling (Bhatt, Joshi and kamboj,2020). Gadhvi *et al.,* 2023 studied

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the diversity of Molluscs at selected sites of District devbhumi, dwarka and reported 15 species of Molluscs from Okha. Similarly, Pandey, Desai and Mathew studies 3 key species of Gastropods aboundance in Okha in the year 2017. Larger Gulf-wide compilations report of Hatkar in 2024 reported 233 species of Gastropods and 123 species of bivalve along with 2 species of Polyplacophore from surveys of the GoK, emphasizing both richness and patchy sampling coverage.

MATERIALS AND METHOD

Okha is situated at the westernmost tip of the Saurashtra Peninsula (22°28′N, 69°05′E) within the Devbhoomi Dwarka district of Gujarat. The coastline is characterized by rocky and sandy intertidal zones influenced by tidal currents of the Gulf of Kachchh.

Collection Data

The present data are based on a 1980 molluscan collection made from various intertidal zones along the Okha coast, has since been stored in the ZSI Zoological collection under dry condition along with some corals. Recently, Specimens were cleaned, preserved, and identified using standard Malacological keys (Subba Rao, 2003 and Dey, 2016). The collection includes 30 species comprising 1 Polyplacophoran, 24 Gastropods, and 5 Bivalves.

Taxonomic Identification and Verification

All specimens were re-identified following current systematic keys and verified using the World Register of Marine Species (WoRMS) to confirm valid names and synonymies. Older records from earlier studies were cross-checked for comparison and validation.

RESULTS AND DISCUSSION

Examination of the 1980 collection revealed a total of 30 molluscan species, belonging to 23 genera and 19 families under three major classes — Polyplacophora (1 species), Gastropoda (24 species), and Bivalvia (5 species). The class Gastropoda was found to be the most dominant group in terms of species richness. The list includes *Rhysoplax peregrina* (Thiele, 1909) as the only chiton species, while genera such as Nerita, Cerithium, Astralium, and Murex was dominant among gastropods. The bivalves included representatives of families Veneridae, Pholadidae, and Ostreidae. The complete species list of specimens deposited in NZC of 1980 collection is studied, organized by class and Family is represented in table -1, along with Remarks. Table -2 represents the list of species reported based on the Literature survey of Okha beach, along with its non-synonymised name and current updated names. The reference sited is also represented in Table -2.

Table 1. Marine Molluscs collected from Okha Beach, Gujurat (1980) along with the species details.

Sl.No.	Class	Family	species
1	Polyplacophora	Chitonidae	*Rhyssoplax peregrina* (Thiele, 1909)
2	Gastropoda	Nacellidae	*Cellana radiata* (Born,1778)
3	Gastropoda	Neritidae	*Nerita albicilla* Linnaeus,1758
4	Gastropoda	Neritidae	*Nerita undata Linnaeus,1758*
5	Gastropoda	Neritidae	*Nerita oryzarum* Recluz,1841
6	Gastropoda	Turbinidae	*Astralium semicostatum* (Kiener,1850)
7	Gastropoda	Turbinidae	*Astralium stellare* (Gmelin,1791)
8	Gastropoda	Turbinidae	*Lunella coronate* (gmelin,1791)
9	Gastropoda	Muricidae	*Hexaplex kuesterianus* (Tapparone-canefri,1875)
10	Gastropoda	Muricidae	*Drupella rugosa* (born,1778)
11	Gastropoda	Muricidae	*Purpura panama* (Roeding,1798)
12	Gastropoda	Turbinidae	*Turbo bruneus* (Roeding,1798)
13	Gastropoda	Cerithidae	*Rhinoclavis sinensis* (Gmelin,1791)
14	Gastropoda	Cerithidae	*Clypeomorus bifasciata* (Sowerby,1855)
15	Gastropoda	Cerithidae	*Cerethium scabridum* (R.A. Philippi,1848)
16	Gastropoda	Trochidae	*Trochus radiatus* Gmelin,1791
17	Gastropoda	Trochidae	*Trochus maculatus* Linnaeus,1758
18	Gastropoda	Babyloniidae	*Babylonia spirata* Linnaeus, 1758
19	Gastropoda	Cymatiidae	*Gyrineum natator* (Roeding,1798)
20	Gastropoda	Pisaniidae	*Cantharus spiralis* (Gray,1828)
21	Gastropoda	Muricidae	*Chicoreus brunneus* Linnaeus,1807
22	Gastropoda	Muricidae	*Murex tribulus Linnaeus,1758*
23	Gastropoda	Muricidae	*Indothais lacera* (Von Born,1778)
24	Gastropoda	Muricidae	Chicoreus torrefactus (G.b.sowerby II,1841)
25	Gastropoda	Conidae	*Conus coronatus Gmelin,1791*
26	Bivalvia	Veneridae	*Protapes gallus* (Gmelin,1791)

27	Bivalvia	Veneridae	*Dosinia postrata* (Lin,1758)
28	Bivalvia	Veneridae	*Gafrarium divaricatum (Gmelin,1791)*
29	Bivalvia	Pholadidae	*Pholas orientalis* Gmelin,1791
30	Bivalvia	Ostreidae	*Crassostrea sps.*

Table 2. Marine molluscs reported from the study site (Okha coast, Gujurat) in previous studies. Species synonymised with its updated name is marked with *.

Sl. No.	Family	Non synonimysed name as per sited in References	Synonimysed name as per WoRMS.	Reference in which species mentioned
1	Turbinidae	*Turbo intercostalis* Menke, 1846	*Turbo intercostalis* Menke, 1846	Gopalkrishnan,1970, Sarvaiya ,1977 and Pandey,2017
2	Turbinidae	*Turbo coronatus Gmelin, 1791*	*Lunella coronata (Gmelin, 1791)*	Pandey,2017
3	Turbinidae	*Astraea semicostata* (Kiener, 1850)	**Astralium semicostatum* (Kiener, 1850)	Gopalkrishnan,1970, Sarvaiya ,1977 and Pandey,2017
4	Turbinidae	*Turbo coronatus* Gmelin, 1791	**Lunella coronata* (Gmelin, 1791)	Gopalkrishnan,1970 and Sarvaiya ,1977
5	Turbinidae	*Turbo bruneus* (Röding, 1798)	Turbo bruneus (Röding, 1798)	Gadhvi et al,2023
6	Tegulidae	*Tectus tentorium* (Gmelin, 1791)	**Trochus tentorium* Gmelin, 1791	Gadhvi,2023
7	Neritidae	*Nerita rumphii* Récluz, 1841	**Nerita polita* Linnaeus, 1758	Gopalkrishnan,1970
8	Neritidae	*Nerita albicilla* Linnaeus, 1758	*Nerita albicilla* Linnaeus, 1758	Gopalkrishnan,1970
9	Neritidae	*Nerita dombeyi* Récluz, 1841	*Nerita dombeyi* Récluz, 1841	Sarvaiya,1977
10	Neritidae	Nerita undata Linnaeus,1758	*Nerita undata* Linnaeus,1758	Gadhvi,2023
11	Cypraeidae	*Lyncina lynx* (Linnaeus,1758)	**Cypraea lynx* (Linnaeus,1758)	Gopalkrishnan,1970
12	Cypraeidae	*Cypraea carneola* Linnaeus, 1758	*Lyncina carneola* (Linnaeus, 1758)	Gopalkrishnan,1970
13	Cypraeidae	*Cypraea moneta* Linnaeus, 1758	**Monetaria moneta* Linn,1758	Gopalkrishnan,1970
14	Cypraeidae	*Austrocypraea reevei* (J. E. Gray, 1832)	*Austrocypraea reevei* (J. E. Gray, 1832)	Gadhavi,2023
15	Naticidae	*Sinum cuvierianum* (Récluz, 1843)	**Eunaticina papilla lamarckiana* (Récluz, 1843)	Gopalkrishnan,1970
16	Bursidae	*Bursa granularis* (Röding, 1798)	*Dulcerana granularis (Röding, 1798)	Gopalkrishnan,1970
17	Potamididae	*Cerithidea fluviatilis* (Potiez & Michaud, 1838)	**Pirenella cingulata* (Gmelin, 1791)	Gopalkrishnan,1970
18	Cerithiidae	*Clypeomorus bifasciata* (G. B. Sowerby II, 1855)	*Clypeomorus bifasciata* (G. B. Sowerby II, 1855)	Gadhavi,2023
19	Cerithiidae	*Cerithium coralium* Kiener, 1841	*Cerithium coralium* Kiener, 1841	Gadhavi,2023
20	Cerethiidae	*Cerithium caeruleum* G. B. Sowerby II, 1855	*Cerithium caeruleum* G. B. Sowerby II, 1855	Gadhvi,2023
21	Turritellidae	*Turritella acutangula* (Linnaeus, 1758)	*Turritella acutangula* (Linnaeus, 1758)	Gopalkrishnan,1970
22	Turritellidae	*Turritella radula* Kiener, 1843	*Turritella radula* Kiener, 1843	Gadhvi,2023 **(not listed in Indian checklist and distribution is doubtful)**
23	Buccinidae	*Nassa hepatica*	**Buccinum hepaticum*	Gopalkrishnan,1970

		(Pulteney, 1799)	Pulteney, 1799	
24	Muricidae	*Thais rudolphi* (Lamarck, 1822)	**Purpura persica* (Linnaeus, 1758)	Gopalkrishnan,1970 and Sarvaiya ,1977
25	Muricidae	*Drupa contracta* (Reeve, 1846)	*Ergalatax contracta (Reeve,1846)	Gadhvi,2023
26	Pisaniidae	*Cantharus undosus* (Linnaeus, 1758)	**Pollia undosa* (Linnaeus, 1758)	Gopalkrishnan,1970
27	Olividae	*Oliva gibbosa* (Born, 1778)	**Agaronia gibbosa* (Born, 1778)	Gopalkrishnan,1970 and Sarvaiya ,1977
28	Conidae	*Conus piperatus* Dillwyn, 1817	*Conus biliosus (Roding,1798)	Gopalkrishnan,1970
29	Turbinellidae	Xancus pyrum (Linnaeus, 1767)	*Turbinella pyrum (Linn,1767)	Sarvaiya,1977
30	Columbellidae	*Pyrene flava* (Bruguière, 1789)	*Pyrene flava* (Bruguière, 1789)	Gadhvi,2023
31	Tethydidae	*Melibe rangi* Bergh, 1875	**Melibe viridis* (Kelaart, 1858)	Gopalkrishnan,1970
32	Aplysiidae	*Aplysia benedicti* Eliot, 1900	**Aplysia argus* Rüppell & Leuckart, 1830	Gopalkrishnan,1970
33	Architectonicidae	*Architectonica laevigata (Lamarck, 1816)*	*Architectonica laevigata (Lamarck, 1816)*	Gadhvi,2023
34	Angariidae	*Angaria delphinus (Linnaeus, 1758)*	*Angaria delphinus (Linnaeus, 1758)*	Gadhvi,2023
35	Nacellidae	*Patella radiata* Born, 1778	**Cellana radiata* (Born, 1778)	Gopalkrishnan,1970
36	Veneridae	*Dosinia cretacea* (Reeve, 1850)	*Dosinia cretacea* (Reeve, 1850)	Gadhvi,2023
37	Veneridae	*Dosinia exoleta* (Linnaeus, 1758)	*Dosinia exoleta* (Linnaeus, 1758)	Gadhvi,2023
38	Mactridae	*Mactra violacea* Gmelin, 1791	*Mactra violacea* Gmelin, 1791	Gadhvi,2023

The examination of these historical collections provides a baseline dataset for Molluscan diversity at Okha beach four decades ago. Comparision with contemporary surveys indicates that many of these species continue to occur in the Gulf of Kachchh, though habitat modifications and anthropogenic pressure may have influenced species composition and abundance over time. These tables can serve as a reference for future faunastic studies and conservation assessments in the Gulf of Kachchh (GoK). The present study is based on marine molluscan specimens collected from the okha coast, GoK during 1980, which provides an important baseline record for the region. The collection reveals a considerably higher number of species than those reported in more recent surveys conducted along the Okha coast includes taxa (such as chitons) that were under-reported in earlier surveys of 1970 and 1977. Gadhvi (2023) reported only 15 species of molluscs from Okha, of which the presence of *Austrocypraea reevei* (J. E. Gray, 1832) and *Turritella radula* Kiener, 1843 is doubtful according to Indian faunal checklist (Tripathy *et al*., 2024). Pandey (2017) recorded only three molluscan species, while Parmar (2020) listed 13 species from Okha and 108 from the Gulf of Kachchh as a whole. Bhatt (2020) studied marine molluscs from the Gulf but excluded Okha from sampling sites. Soni and Thakur (2015) reported 82 species from Beyt Dwarka, located adjacent to Okha, highlighting the regional richness that supports the current findings. The molluscan composition shows a dominance of gastropods, especially families Muricidae, Cerithiidae, and Turbinidae, indicating rocky-sandy intertidal habitats typical of the Okha coast. The presence of Crassostrea sp. and Pholas orientalis also suggests mixed substrata suitable for bivalves. The present study contributes a more detailed species inventory from Okha, including one chiton species, which was mentioned in earlier works but without specific identification. This work thus provides the first confirmed record of *Rhyssoplax peregrina* (Thiele, 1909) from Okha. Many species reported earlier from the Gulf have undergone taxonomic revision, and synonymisation based on WoRMS has been applied in the present list. The study underlines the need for continued monitoring of the molluscan diversity along the Okha coast to understand ecological changes and conservation priorities. The difference in recorded diversity may reflect the variations in sampling intensity, temporal and spatial coverages, and methodological approaches rather than an actual decline in species richness.

It is important to note that present account is entirely based on historical specimens preserved in National zoological collection of zoological survey of India, Jabalpur and does not involve any recent field survey from the study area. Therefore, the absence of several species in later literature can't be interpreted as their disappearance or local extinction. More than the taxa mentioned might still occur in the region but remain undocumented due to limited or targeted sampling efforts in subsequent years. The present documentation underscores the importance of historical collection in understanding the long-term patterns of faunal composition in coastal ecosystems. Such data serves as valuable baseline for assessing ecological changes resulting from coastal development, Port activities, habitat modifications and natural disturbance that have intensified the Gulf of kachchh region since the 1980s.Comprehensive analysis of old and new datasets, even when indirect, can highlight potential areas where biodiversity reassessment is urgently needed.

CONCLUSION

The present study, based solely on historical collections documents 30 Molluscan species from the Okha coast, including one confirmed Chiton species. The study serves as an important reference for assessing long term faunal changes along the Okha coast. It reinforces the necessity for comprehensive, site-specific surveys along the Okha coast to validate the current status of this historical recorded species.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICS APPROVAL

Not applicable

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AI TOOL DECLARATION

The authors declares that no AI and related tools are used to write the scientific content of this manuscript.

DATA AVAILABILITY

Data will be available on request

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