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An Annotated Checklist of Mollusca (Gastropods and Bivalves) of the Mangrove Ecosystem of Thoothukudi Coast, Gulf of Mannar, Southeast Coast of India

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ABSTRACT

The present study analyzed diversity, prepared a checklist and assessed molluscan biodiversity (gastropods and bivalves) associated with the mangrove ecosystem of the Thoothukudi coast, Gulf of Mannar, Southeast coast of India. Molluscan specimens were hand-picked fortnightly from three mangrove sampling stations (Thoothukudi, Palayakayal, and Punnakayal) along the Thoothukudi coast from December 2022 to November 2023. The investigation revealed 87 molluscs species recorded in the Thoothukudi mangroves, including 48 gastropods (7 orders, 17 families, and 34 genera, with Caenogastropoda (19 species) and Neogastropoda (9 species) being dominant. Notably, *Euchleus asper* was the sole species under order Segueniida) and 39 bivalves (6 orders, 12 families, and 33 genera, with Venerida (12 species) as the dominant order) among the gastropod Caenogastropoda and Neogastropoda were the dominant, while Venerida was the most prevalent bivalve in the Thoothukudi mangroves. This study highlights the crucial role of mangroves and its associated organism like gastropod and bivalves in supporting the mangrove ecosystem in species richness and which maintaining coastal biodiversity. Based on the Shannon-Weiner index (Shannn, 1948), the species richness indicates a healthy, stable condition of the ecosystem. The checklist provides a baseline for future monitoring and conservation, aiding protection strategies against anthropogenic impacts. This study suggests monitoring mangroves and their faunal biodiversity to maintain the sustained health of the ecosystem.

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Key words
Mollusca, Gastropods, Bivalves, Checklist, Mangrove, Gulf of Mannar

INTRODUCTION

Mollusca are the largest and most diversified phylum in tropical waters, and they consist of a diverse group of soft-bodied organisms and occur in various shapes and colors. They provide the primary food sources for humans and other secondary consumers in the ecosystems (Asakura *et al*., 2020). Since many molluscs species have significant economic value, other biological indicators, and vital components of the food web and their significance in the ecosystem cannot be understated (Raveendran *et al*., 2016). Molluscs consume both living and decaying algae and plant materials, which contributes significantly to the ecological processes associated with the decomposition of organic detritus (Kelaher *et al*., 2007; Nagelkerken *et al*., 2008). As grazers, gastropods can regulate algal blooms and ephiphyton (Asakura *et al*., 2020; Keerthana *et al*., 2023), whereas bivalves, as filter feeders, can aid in the purification of marine waters that have been silted (Chatla and Padmavathi, 2017). According to a report by the Ministry of Environment and Forests (MoEF, 2014), Government of India, in 2014, India is home to a remarkable diversity of molluscan species. Of the approximately 66,535 known species of molluscs worldwide, India hosts 5,169 species, representing a significant portion of global molluscan biodiversity (MoEF, 2014). This figure, which is considered a conservative estimate, underscores the rich and varied ecosystems present in the country, ranging from terrestrial to freshwater and marine environments. The variety of these molluscs, including gastropods and bivalves, is a strong indicator of the health of mangrove ecosystems (Mawardi *et al*., 2023). Additionally, many bivalves and gastropods are economically significant, providing food for local communities (Zvonareva *et al*.,

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2015). Understanding their species diversity and their distribution is key to managing sustainable utilization of resources and ensuring food security. With this background, the current study aimed to compile a comprehensive checklist of molluscs, particularly on gastropods and bivalves, in the mangrove ecosystems of the Thoothukudi coast. This research involves identifying and documenting the biodiversity of molluscs associated with mangroves. This data will be invaluable for forming conservation and management strategies, aiding efforts to conserve and sustain these crucial ecosystems.

MATERIALS AND METHODS

In this study, a comprehensive checklist of molluscs (gastropods and bivalves) in the mangrove region of Thoothukudi was prepared. The quadrant (20 quadrants/site/month) was placed randomly at a distance of every 10 m and the specimens collected fortnightly from three stations: Station-1, Thoothukudi (Roche Park, Lat 8°47'23''N, Long 78°9'19''E), Station-2, Palayakayal (Landing centre, Lat 8°40'13''N, Long 78°6'9''E), and Station-3, Punnakayal (Landing centre, Lat 8°38'8''N, Long 78°7'20''E) from December 2022 to November 2023. Sampling was conducted during low tide to maximize the molluscs, mangrove trees, and land area exposure. Live and dead shells of gastropods and bivalves were hand-picked, and some of them were identified on-site, while others were collected and transferred to the laboratory in an icebox. Molluscs samples were collected along the mangrove ecosystem of the Thoothukudi coast and analyzed following previous research reported by Keerthana *et al*. (2023). The bivalves and gastropods were separated and labeled individually. Along with standard websites like WoRMS, SeaLifeBase, and Natural History Museum Rotterdam, standard keys released by the Food and Agriculture Organization (Dholakia, 2013; Sonak, 2017) were used to identify the specimens. The recent taxonomic names were checked from websites such as sea life base and WoRMS (world register of marine species).

RESULTS AND DISCUSSION

The current study recorded a diverse array of 87 molluscs species belonging to two classes, Gastropoda and Bivalvia, across three selected mangrove stations along the coast of Thoothukudi (Table I). In this study, Station-1 recorded 32 genera and 42 species of molluscs. Station-2 exhibited the highest diversity with 56 genera and 72 species, indicating perhaps a more complex and heterogeneous habitat or less anthropogenic impact. Station 3 had 49 genera and 61 species, suggesting intermediate conditions between the other two stations. These species span 28 families, including Arcidae, Lucinidae, Donacidae, Psammobiidae, Tellinidae, Mytilidae, Margaritidae, Ostreidae, Pinnidae, Cyrenidae, Mactridae, Veneridae, Cerithiidae, Potamididae, Turritellidae, Littorinidae, Naticidae, Columbellidae, Melongenidae, Muricidae, Nassariidae, Tonnidae, Muricidae, Fasciolariidae, Neritidae, Ellobiidae, Chilodontaidae, and Trochidae. The Bivalvia class was represented by 39 species across six orders, 12 families, and 33 genera. The Order Venerida had the highest number of species (12), followed by the Order Cardiida with nine species and the Order Arcida with three species. The significant presence of Venerida and Cardiida indicates the favorable sedimentary conditions in these mangrove areas, which support filter-feeding bivalves. The class gastropoda comprised 48 species belonging to seven orders, 17 families, and 34 genera. The order Caenogastropoda found to be dominant with 19 species, followed by Neogastropoda with nine species. Notably, *Euchleus asper* was the only species recorded under the order Segueniidae. This diversity reflects the rich ecological niches and the adaptability of gastropods in mangrove ecosystems. Compared with previous studies, Yadav *et al*. (2019) documented 19 species of gastropods from 13 families and three species of bivalves from 3 families in the mangroves of Paradeep, Northeast India. Similarly, Karthick *et al*. (2020) reported six species of bivalves from 5 families and 11 species of gastropods from 8 families along the Tiruchendur coast, Southeast India. Chatla and Padmavathi (2017) recorded 23 species of molluscs in the Paleru and Moosy backwaters, Andhra Pradesh, with 16 species from 12 families of Gastropoda and seven species from 5 families of Bivalvia, which was closely related to the present study. Also, Ramanibai and Govindan (2018) identified 34 species of gastropods from 26 families and 17 species of bivalves from 13 families in Pulicat Lagoon, which was comparatively less than the current results. Notably, Boominathan *et al*. (2012) reported an extensive diversity of 215 molluscs species, comprising 133 gastropods and 77 bivalves, from various mangrove ecosystems across India. These studies collectively highlight molluscs communities' considerable variation and richness in mangrove habitats across the Indian coastline.

The wide distribution of families such as Ellobiidae, Littorinidae, Potamididae, and Neritidae in this study aligns with findings by Hogarth (2015) and Kantharajan *et al*. (2017), who reported these families as common in Indo-Pacific and Southeast Asian mangroves. This similarity underscores the ecological importance of these families in mangrove ecosystems, where they play crucial roles in nutrient cycling and as prey for higher trophic levels.

Table I. Checklist of molluscs: gastropods and bivalves of the mangrove ecosystems of the Thoothukudi coast.

S. No	Species name	Common name	Sampling stations	No. recorded	Size range (cm)	Utility
Phylum: Mollusca; Class: Bivalvia; Subclass: Autobranchia						
Infraclass: Pteriomorphia; Order: Arcida; Family: Arcidae						
1	*Larkinia grandis* (Broderip & Sowerby, 1829)*	Mangrove cockle	TH	106	1.8 - 2.7	-
2	*Tegillarca granosa* (Linnaeus, 1758)*	Blood cockle	TH, PA, PU	138	1.5 – 2.4	C
3	*Barbatia sp.,* (Gray, 1842)*	Ark clam	PA, PU	184	2.6 – 3.5	-
Infraclass: Heteroconchia; Order: Lucinida; Family: Lucinidae						
4	*Anodontia alba* (Link, 1807) *	Buttercup lucine	TH, PA, PU	162	1.2 – 2.6	-
5	*Anodontia edentula* (Linnaeus, 1758) *	Toothless lucine	TH, PA	136	1.6 - 2.8	C
6	*Loripes orbiculatus* (Poli, 1795)*	Pale lucine	PA, PU	155	1.9 – 2.6	-
	Order: Cardiida; Family: Donacidae					
7	*Donax incarnates* (Gmelin, 1791)*	Fleshy donax	PA, PU	142	2.3 – 2.7	-
8	*Latona sordida* (Hanley, 1845)*	Beam clams	PA, PU	112	2.2 – 3.3	-
9	*Donax pulchellus* (Hanley, 1843)*	Beautiful donax	PA, PU	128	1.2 – 2.5	-
10	*Hecuba scortum* (Linnaeus, 1758)*	Leather donax	PA, PU	146	4.5 – 7.9	-
11	*Donax semisulcatus* (Hanley, 1843)*	Half striated donax	PA, PU	118	3.5 – 4.6	-
12	*Hiatula planulata* (Reeve, 1857)*	Sunset clams	TH, PA	122	3.6 – 8.5	-
13	*Alaona ala* (Hanley, 1845)*	Tellin clams	TH, PA, PU	102	2.4 – 3.6	-
14	*Ardeamya petitiana* (d'Orbigny, 1845)*	Not found	TH, PA	98	2.1 – 2.8	-
15	*Serratina fissa* (Spengler, 1798)*	Not found	PA, PU	114	1.9 – 2.5	-
Infraclass: Pteriomorphia						
	Order: Mytilida; Family: Mytilidae					
16	*Byssogerdius striatulus* (Hanley, 1843)*	Not found	PA, PU	116	2.7 – 3.5	-
17	*Mytella strigata* (Hanley, 1843)*	Charru mussel	PA, PU	124	1.8 – 3.4	-
18	*Perna perna* (Linnaeus, 1758)*	Brown mussel	PA, PU	143	5.3 – 8.1	HC
19	*Perna viridis* (Linnaeus, 1758)*	Green mussel	TH, PA, PU	187	7.6 – 9.8	HC
	Order: Ostreida; Family: Margaritidae					
20	*Pinctada imbricata* (Roding, 1798)*	Atlantic pearl oyster	TH, PA, PU	248	2.6 – 5.5	HC
21	*Magallana cuttackensis* (Newton and Smith, 1912)*	True oysters	TH, PA, PU	270	7.2 – 8.9	-
22	*Magallana bilineata* (Roding, 1798)*	Philippine cupped oyster	TH, PA, PU	176	5.6 – 7.8	C
23	*Ostrea edulis* (Linnaeus, 1758)*	Edible oyster	PA, PU	142	3.8 – 6.2	C
24	*Saccostrea cucullata* (Born, 1758)*	Hooded oyster	PA, PU	164	3.4 – 5.7	C
25	*Pinna sp.,* (Linnaeus, 1758)*	Pen shells	TH, PA	126	7.3 – 9.5	C
Infraclass: Heteroconchia						
	Order: Venerida; Family: Cyrenidae					
26	*Villorita cyprinoides* (Gray, 1825)#	Black clam	PA, PU	246	2.8 – 3.6	-
	Family: Mactridae					
27	*Mactra grandis* (Gmelin, 1791)*	Plain Trough shell	PA, PU	360	4.5 – 5.1	C
	Family: Venerida					
28	*Chamelea gallina* (Linnaeus, 1758)*	Stripped Venus clam	TH, PA	288	2.6 – 3.9	C
29	*Circe scripta* (Linnaeus, 1758)*	Script venus	TH	152	3.6 – 4.2	-
30	*Eucallista purpurata* (Lamarck, 1818)*	Purple amiantis	PA, PU	134	4.1 – 4.6	-
31	*Gafrarium pectinatum* (Linnaeus, 1758)*	Comb venus	TH, PA, PU	211	3.9 – 4.4	-

Table continued on next page.....

S. No	Species name	Common name	Sampling stations	No. recorded	Size range (cm)	Utility
32	*Lliochione subrugosa* (Wood, 1828)*	Venus clams	PA, PU	168	3.1 – 3.7	-
33	*Marcia opima* (Gmelin, 1791)*	Fertile venus	TH, PA, PU	144	3.5 – 3.9	-
34	*Meretrix casta* (Gmelin, 1791)*	Backwater hard clam	TH, PA, PU	432	3.7 – 4.6	-
35	*Meretrix meretrix* (Linnaeus, 1758)*	Asiatic hard clam	TH, PA, PU	582	3.6 – 4.3	C
36	*Paratapes textile* (Gmelin, 1791)*	Textile venus	TH, PA	142	3.2 – 3.8	C
37	*Pelecyora trigona* (Reeve, 1850)*	Trigonal dosinia	PA, PU	151	2.8 – 3.6	-
38	*Protapes gallus* (Gmelin, 1791)*	Rooster venus	PA, PU	173	3.5 – 5.2	C
39	*Sunetta menstrualis* (Menke, 1843)*	Mauve sunetta	TH, PU	132	2.6 – 3.5	SF
Phylum: Mollusca; Class: Gastropoda						
	Order: Caenogastropoda					
	Family: Cerithiidae					
40	*Cerithium atratum* (Born, 1778)*	Dark cerith	TH, PA, PU	678	1.8 – 2.5	-
41	*Cerithium coralium* (Kiener, 1841)*	Coral cerith	TH, PA	799	1.6 – 2.2	C
42	*Cerithium lutosum* (Menke, 1828)*	Variable cerith	TH, PA, PU	822	1.5 – 2.0	-
43	*Cerithium traillii* (Sowerby, 1855)*	Traills cerith	TH, PA	756	2.1 – 2.8	-
44	*Clypeomorus batillariaeformis* (Habe and Kosuge, 1966)*	Necklace or channeled cerith	TH, PA	528	2.3 – 2.9	-
45	*Clypeomorus bifasciata* (Sowerby, 1855)*	Sea snail or mud snail	PA, PU	711	1.4 – 2.3	-
46	*Pseudovertagus clava* (Gmelin, 1791)*	Cerithids	PA, PU	432	1.3 – 2.5	-
47	*Rhinoclavis kochi* (Philippi, 1848)*	Kochi's cerith	PA, PU	620	2.1 – 3.1	-
	Family: Potamididae					
48	*Cerithidea anticipata* (Iredale, 1929)*	Sea snail or mud snail	TH	384	2.4 – 3.6	-
49	*Pirenella alata* (Philippi, 1849)*	Mud whelks	TH, PU	512	2.2 – 2.8	-
50	*Pirenella arabica* (Reid, 2016)*	Not found	TH, PA	488	1.8 – 3.0	-
51	*Pirenella cancellata* (Ozawa and Reid, 2016)*	Not found	TH, PA	311	1.7 – 2.3	-
52	*Pirenella cingulata* (Gmelin, 1791)*	Hom snails	TH, PA, PU	454	1.6 – 2.4	C
53	*Pirenella conica* (Blainville, 1829)*	Not found	TH, PA	208	1.1 – 1.4	-
54	*Pirenella microptera* (Kiener, 1841) *	Not found	TH, PA	334	1.3 – 2.5	-
55	*Pirenella retifera* (Sowerby, 1855) *	Mangrove whelk	PA, PU	386	1.0 – 1.8	-
56	*Terebralia palustris* (Linnaeus, 1767)*	Giant mangrove whelk	TH, PA	212	2.0 – 2.9	-
57	*Terebralia sulcata* (Born, 1778)*	Sulcate swamp cerith	PA, PU	188	2.2 – 2.8	-
	Family: Turritellidae					
58	*Turritella acutangula* (Linnaeus, 1758)*	Tower shells	PA, PU	122	6.3 – 7.9	-
	Order: Littorinimorpha					
	Family: Cymatiidae					
59	*Lotoria triangularis* (Perry, 1811)*	Perry's Triton	TH, PA	134	4.2 – 5.8	-
60	*Ranularia testudinaria* (Adams and Reeve, 1850)*	Tortoise Triton	TH, PA	128	5.4 – 6.9	-
61	*Naria ocellata* (Linnaeus, 1758)*	Ocellate cowry	PA, PU	106	2.5 – 3.1	-
	Family: Littorinidae					
62	*Littoraria scabra* (Linnaeus, 1758)*	Mangrove periwinkle	TH, PA	154	1.4 – 2.8	-
63	*Eunaticina papilla* (Gmelin, 1791)*	Papilla moon snail	PA, PU	96	2.1 – 3.6	-
	Family: Tonnidae					
64	*Tonna galea* (Linnaeus, 1758)*	Giant tun	TH	45	5.7 – 7.3	C
	Order: Neogastropoda					
	Family: Columbellidae					
65	*Euplica scripta* (Lamarck, 1822)*	Dotted dove shell	PA, PU	168	2.2 – 2.8	-
	Family: Melongenidae					
66	*Volegalea cochlidium* (Linnaeus, 1758)*	Spiral melongena	TH	105	5.2 – 7.3	-

Table continued on next page.....

S. No	Species name	Common name	Sampling stations	No. recorded	Size range (cm)	Utility
	Family: Muricidae					
67	*Trophon plicatus* (Lightfoot, 1786) *	Murex snails or rock snails	PA, PU	172	4.1 – 5.3	-
	Family: Nassariidae					
68	*Nassaria coromandelica* (Smith, 1894)*	Indian Phos	PA, PU	122	3.3 – 4.5	-
69	*Nassarius stolatus* (Gmelin, 1791)*	Nassa mud snails or dog whelks	PA, PU	138	2.4 – 2.8	-
70	*Phrontis tiarula* (Kiener, 1841)*	Western mud nassa	PA, PU	145	1.5 – 1.9	-
71	*Tritia reticulata* (Linnaeus, 1758)*	Netted dog-whelk	PA, PU	136	2.1 – 2.7	-
	Family: Muricidae					
72	*Murex trapa* (Roding, 1798)*	Rare spined murex	TH, PU	58	6.2 – 6.8	C
	Family: Fasciolariidae					
73	*Fusinus longissimus* (Gmelin, 1791)*	Long spindle	TH	48	10.5–12.6	-
Subclass: Neritimorpha						
	Order: Cycloneritida; Family: Neritidae					
74	*Clithon olivaceum* (Recluz, 1843)*	Nerites	PA, PU	164	2.1 – 2.6	-
75	*Clithon oualaniense* (Lesson, 1831)*	Guamanian nerite	PA, PU	131	0.7 – 1.1	-
76	*Nerita polita* (Linnaeus, 1758)*	Turbo snail	PA, PU	138	2.5 – 3.2	C
77	*Neritodryas dubia* (Gmelin, 1791)*	Nerites	PA, PU	123	1.9 – 2.5	-
78	*Vitta virginea* (Linnaeus, 1758)*	Virgin nerites	PA, PU	118	0.9 – 2.2	-
79	*Vittina waigiensis* (Lesson, 1831)*	Red racer nerite snail	PU	132	1.6 – 2.3	-
Subclass: Heterobranchia; Infraclass: Euthyneura						
	Order: Ellobiida; Family: Ellobiidae					
80	*Allochroa bronnii* (Philippi, 1846)*	Hallow shelled snails	PU	145	1.8 – 2.6	-
81	*Cassidula aurisfelis* (Bruguiere, 1789)*	Cat ear helmet snail	TH, PA,PU	112	1.2 – 2.5	-
82	*Cassidula labrella* (Deshayes, 1830)*	Not found	PU	135	1.6 – 2.3	-
83	*Cassidula nucleus* (Gmelin, 1791)*	Banded	TH, PU	108	1.3 – 2.2	-
84	*Melampus adamsianus* (Pfeiffer, 1855)*	Salt march snail	PA, PU	118	1.7 – 2.3	-
Subclass: Vetigastropoda						
	Order: Seguenziida; Family: Chilodontaidae					
85	*Euchelus asper* (Gmelin, 1791)*	Sea snail	TH, PA	138	1.2 – 2.5	-
	Order: Trochida; Family: Trochidae					
86	*Trochus cariniferus* (Reeve, 1842)*	Small sea snail	TH,	126	1.0 – 2.2	-
87	*Umbonium vestiarium* (Linnaeus, 1758)*	Button top snail	TH, PU	134	1.3 – 1.8	C

TH, Thoothukudi; PA, Palayakayal; PU, Punnakayal; #, least concern; *, not evaluated; C, commercial; HC, highly commercial; SF, subsistence fisheries .

The diversity and distribution of molluscs recorded in this study underscore the ecological richness of the mangrove habitats along the Thoothukudi coast. The findings contribute valuable data to understanding molluscs diversity in Indian mangroves and highlight the need for ongoing conservation efforts to protect these vital ecosystems against environmental and anthropogenic pressures. Further comparative studies across different geographic regions and long-term monitoring are essential to understand the impacts of climate change and habitat degradation on molluscs communities in mangrove ecosystems.

Ravindran and Rajesh (2013) catalogued three species of gastropods spanning three genera from Punnakayal. Among these, the utility status of 16 species was classified under the commercial category, with an additional three species falling into the high commercial category and one species designated for subsistence fisheries. Intriguingly, an analysis of the international union for conservation of

nature (IUCN) status unveiled that nearly all species (86) were categorized as not evaluated (NE), with only one species listed under the least concern (LC) category (Table I). Mangroves serve as indispensable habitats for numerous coastal wildlife, offering crucial breeding sites and nursery grounds. In this intricate web of coastal ecology, bivalves and gastropods emerge as pivotal players, influencing the dynamics of mangrove ecosystems. Despite their significance, our understanding of the molluscan species inhabiting mangrove environments remains limited. The study area, bordered by salt pans, industrial activities, and other anthropogenic influences, highlights the urgent need for ongoing ecosystem monitoring. Such care is imperative to safeguard these invaluable resources and ensure sustainability amidst rising environmental pressures. Regular monitoring efforts can furnish invaluable insights into the health of mangrove ecosystems, facilitating informed conservation strategies to preserve these vital habitats for future generations. This study suggests monitoring mangroves and their faunal biodiversity to maintain the sustained health of the ecosystem.

DECLARATIONS

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IRB approval

This article has approved by review committee members of Fisheries College and Research Institute, Tamil Nadu Dr. J. Jayalalithaa Fisheries University, Thoothukudi – 628 008, Tamil Nadu, India.

Ethical approval

No animals were harmed during the entire research.

Statement of conflict of interest

The authors have declared no conflict of interest.

REFERENCES

Asakura, A., Kawamura, M., Kamiya M. and Satoh, T.P., 2020. Basic taxonomy of marine organisms. Japanese marine life: A practical training guide in marine biology. *Springer Chem. Japan*, **1**: 21-34. https://doi.org/10.1007/978-981-15-1326-8_3

Boominathan, M., Ravikumar, G., Chandran M.S. and Ramachandra, T.V., 2012. Mangrove associated molluscs of India. *Natl. Conf. Conserv. Manage. Wetl. Ecosyst.*, **7**: 1-11.

Chatla, D. and Padmavathi, P., 2017. Diversity of malacofauna from the Paleru and Moosy backwaters of Prakasam district, Andhra Pradesh, India. *J. Ent. Zool. Stud.*, **5**: 881-887.

Dholakia, A.D., 2013. *Identification of marine and freshwater molluscs shells*. Daya Publishing House, New Delhi.

Hogarth, P.J., 2015. *The biology of mangroves and seagrasses*. Oxford Univ. Press. https://doi.org/10.1093/acprof:oso/9780198716549.001.0001

Kantharajan, G., Pandey, P.K., Krishnan, P., Samuel, V.D., Bharti V.S. and Purvaja, R., 2017. Molluscan diversity in the mangrove ecosystem of Mumbai, west coast of India. *Reg. Stud. Mar. Sci.,* **14**: 102–111. https://doi.org/10.1016/j.rsma.2017.06.002

Karthick, M., Saravanakumari, R., Suvitha, A.S., Kalyani T.P. and Azhagu, R., 2020. Diversity of molluscs in Tiruchendur coast, Tuticorin district, Tamil Nadu, India. *Sci. Acta Xaveriana Int. Sci. J.,* **11**: 13-18.

Keerthana, M., Arisekar, U., Kingston, S.D. and Sudhan, C., 2023. Malacofaunal diversity (gastropods and bivalves) along the mangrove forest area of the Gulf of Mannar marine biosphere region, South India. *Reg. Stud. Mar. Sci.,* **67:** 103201. https://doi.org/10.1016/j.rsma.2023.103201

Kelaher, B.D, Castilla, J.C., Prado, L., York, P., Schwindt E. and Bortolus, A., 2007. Spatial variation in molluscan assemblages from coralline turfs of Argentinean Patagonia. *J. Mollus. Stud.,* **73**: 139-146. https://doi.org/10.1093/mollus/eym008

Mawardi, A.L., Khalil, M., Sarjani T.M. and Armanda, F., 2023. Diversity and habitat characteristics of gastropods and bivalves associated with mangroves on the east coast of Aceh Province, Indonesia. *Biodiv. J. Biol. Biodiv.,* **24**. https://doi.org/10.13057/biodiv/d240959

MoEF, 2014. *India's fifth national report to the convention on biological diversity*. Ministry of Environment and Forests, Govt. of India, New Delhi, 1-100.

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. *Aquat. Bot.*, **89**: 155-185. https://doi.org/10.1016/j.aquabot.2007.12.007

Ramanibai, R. and Govindan, S., 2018. Mollusc diversity at Pulicat Lagoon (India). *Transylvanian Rev. Syst. Ecol. Res.*, **20**: 31-42. https://doi.org/10.1515/trser-2018-0003

Raveendran, S., Sathick, O., Muthukumaravel, K., Rajakumar, R. and Ramu, S., 2016. Molluscan diversity in Keezhathottam of Thanjavur district, tamil Nadu, India with special reference to gastropods and bivalves. *Int. J. Zool. appl. Biosci.,* **1**: 141-143.

Ravindran, V.S. and Rajesh, S., 2013. Biodiversity of Punnakayal Mangroves, SE coast, India. *Int. J. Sci. Res.*, **2**: 256-258. https://doi.org/10.15373/22778179/FEB2013/85

Sonak, S.M., 2017. Molluscs and their shells. In: *Marine Shells of Goa*. Springer, Cham. pp. 1-23. https://doi.org/10.1007/978-3-319-55099-2_1

Yadav, R., Malla, P.K., Dash, D., Bhoi, G., Patro S. and Mohapatra, A., 2019. Diversity of gastropods and bivalves in the mangrove ecosystem of Paradeep, east coast of India: A comparative study with other Indian mangrove ecosystems. *Mollus. Res.,* **39**: 325–332. https://doi.org/10.1080/13235818.2019.1644701

Zvonareva, S., Kantor, Y., Li. X. and Britayev, T., 2015. Long-term monitoring of Gastropoda (Mollusca) fauna in planted mangroves in central Vietnam. *Zool. Stud.,* **54**: 1-16. https://doi.org/10.1186/s40555-015-0120-0