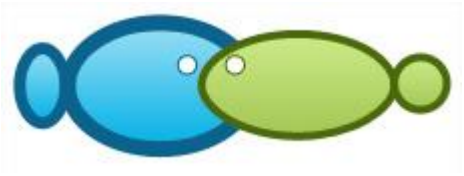

Species diversity and abundance of intertidal gastropods in Sitio Mahangin, Wilson, San Jose, Dinagat Islands, Philippines

[1]Arnel R. Andrin, [2]Mauricio S. Adlaon

[1] Department of Education, Faculty of Science Technology Engineering and Mathematics, Don Ruben Edera Ecleo Sr. Memorial National High School, San Jose, Dinagat Islands, Philippines; [2] College of Teacher Education, Surigao del Norte State University, Narciso, Surigao City, Philippines. Corresponding author: A. Andrin, aandrin@ssct.edu.ph

Abstract. Dinagat Island has a rich marine biodiversity, yet the scientific understanding of these ecosystems remains limited. The study identified the taxonomic diversity and abundance of gastropods in four established sampling areas of the intertidal zone of Sitio Mahangin, Barangay Wilson, San Jose, Dinagat Island, Philippines. This study employed a descriptive exploratory approach. A belt transect method, with a design of 550 m and one 5 m x 5 m quadrat in each plot, was applied across 4 stations in the intertidal zone. Gastropods were hand-picked, beach-combed, and surveyed systematically using snorkeling within the designated quadrats exclusively during low tide. They were categorized and identified using standard taxonomic keys. Ecological measures, such as the Shannon-Wiener diversity index, evenness, and species relative abundance, were computed using the Paleontological Statistics Software Package (PAST v. 4.03). The study identified a total of 11 families with 15 classified species of gastropods, comprising a total of 1260 individuals found across the sampling stations. The highest count of gastropods was found in station 4, while station 3 had the lowest count, in terms of the abundance of the Neritidae and Littorinidae families. This suggests that the Shannon-Wiener diversity index values were remarkably similar due to environmental factors such as habitat type. The diversity indices indicate a moderately diversified ecosystem, with station-specific variations in abundance and species evenness. This research provides baseline data for gastropod populations in Sitio Mahangin, highlighting the need for conservation measures and further annual assessments to guide sustainable management and policy planning. Overall, the study suggests that the area remains in normal condition and provides a favorable environment for gastropods to thrive.
Key Words: gastropods, belt transect, Neritidae, Littorinidae.

Introduction. The intertidal area is a dynamic zone that bridges terrestrial and marine systems, providing habitats for a variety of organisms, including gastropods. Known as limpets, snails, whelks, and slugs, gastropods are considered the most diverse group of mollusks, with approximately 100,000 species existing in environments ranging from deep seas and rivers to woodlands, deserts, and intertidal pools (Haszprunar & Wanninger 2012; Lonop-Galan et al 2021). As one of the largest classes of mollusks, gastropods inhabit aquatic environments and often occupy unique microhabitats, which is a reflection of their long maturation periods, low reproductive rates, and longevity, all of which signal environmental changes (Gümüş et al 2022). Additionally, they play roles as detritivores and deposit feeders within coastal food webs (Marshall & Tsikouras 2023). Serving as key bioindicators, gastropods contribute to ecosystem stability by decomposing plant materials and recycling nutrients, which benefits small mammals, birds, reptiles, amphibians, and arthropods (Abarquez et al 2019).

Recent research underscores that many gastropod species inhabit vulnerable wetlands such as mudflats, mangroves, sandy shores, rocky coasts, and intertidal pools, where they are often used as biological indicators of water quality (Pawar & Al-Tawaha 2017; Wijeyaratne & Kalaotuwawe 2017). Gastropods hold commercial, medical, and decorative value, and many are appreciated for their delicate and delicious taste, making them economically important (Tabugo et al 2013; Pawar & Al-Tawaha 2017). However,

excessive collection has resulted in overfishing and biodiversity loss (Pawar & Al-Tawaha 2017). Residents of Barangay Wilson report that the intertidal zone of Sitio Mahangin was once abundant in marine life, particularly gastropods. Overharvesting for food and livelihood poses a risk of driving species to extinction. There are no regulations against overharvesting, nor is there documentation of these species (Abarquez et al 2019). Although the Philippines is noted for its biodiversity (Paylangco et al 2021), there is limited data on mollusk and gastropod abundance in Mindanao. Given their significance to human diets and environmental health, a decline in gastropod populations would be an alarming threat if the mining, logging and anthropogenic activities were left unchecked (Quibod et al 2021).

Monitoring species abundance and diversity in the intertidal zone is crucial for conserving marine biodiversity, especially concerning gastropods, due to the absence of scientific data in the study area, which prompted this research. This study aimed to offer preliminary data on gastropod diversity and abundance in the Sitio Mahangin intertidal zone, supporting conservation efforts and informing policy regulations to protect aquatic mollusks, with a particular focus on gastropods.

Material and Method

Entry protocol. Prior to the conduct of the study, a research permit was formally secured from both the municipal and barangay levels through an official communication letter. To ensure proper coordination and courtesy, an ocular visit was also carried out at the Municipal Agricultural Office in the Municipality of San Jose, Province of Dinagat Islands. This step ensured institutional approval, facilitated access to the study site, and reinforced the credibility of the research process.

Description of the study sites. The study area is located in Sitio Mahangin, Wilson, San Jose, Dinagat Islands, Philippines. Four sampling stations were selected for the collection of gastropods, with the precise positions and altitudes documented using a GPS (Global Positioning System) application. These stations, referred to as study stations 1, 2, 3, and 4, each have distinct substrates and ecological features. Station 1, situated in a mangrove area at coordinates 10° 2' 45.36" N, 125° 35' 20.94" E. Station 2, located in a region with predominantly rocky substrates at coordinates 10° 2' 53.34" N and 125° 35' 14.82" E. Station 3, encompassing a sandy-rocky area along the intertidal zone at coordinates 10° 2' 53.34" N and 125° 35' 10.98" E. Lastly, station 4, characterized by a rocky terrain with mangroves extending into the intertidal flat at coordinates 10° 2' 56.58" N, 125° 35' 7.38" E (Figure 1).

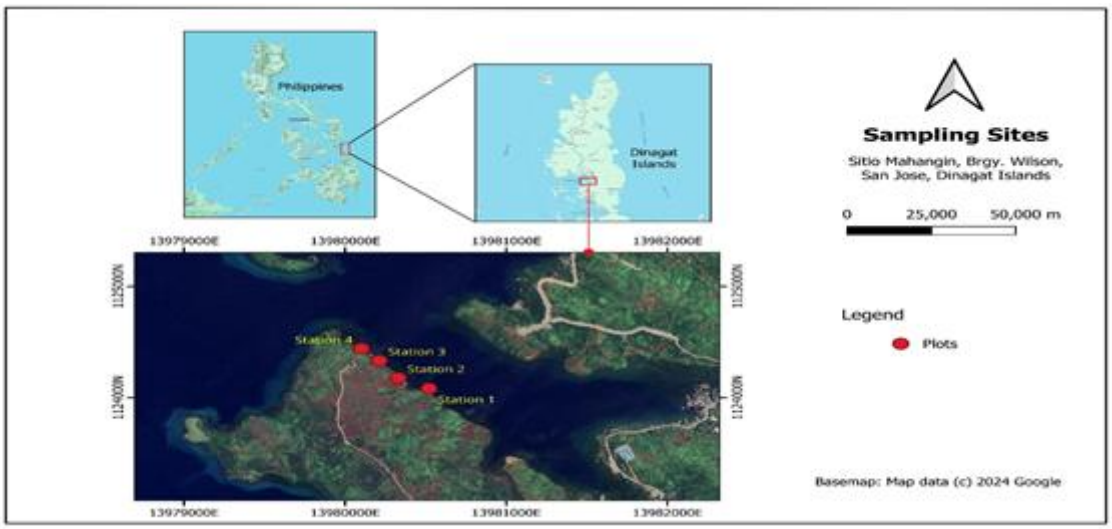

Figure 1. Research location at Sitio Mahangin, Barangay Wilson San Jose, Dinagat Islands.

Sampling scheme methods and techniques. This research study used a survey method conducted with a descriptive exploratory approach that describes the diversity and abundance of gastropods. Data collection with in-situ observation to the observation location and hand sorting for direct sampling in their habitat based on the environmental conditions in the field. Systematic sampling of gastropods using a purposive sampling technique. It used the belt transect method presented in (Figure 2). According to Johan (2003) and Ratih et al (2021), the belt transects method aims to describe the population of an organism, the number of individuals and colonies, and the number of species and distribution. One of the organisms' characteristics is the varied sizes with specific maximum sizes, like invertebrates.

In the study belt transect design applied, a spread of 550 m sampling plot was laid on study stations 1 to 4 for species acquisition within the lowest tide limit to the shoreline in the intertidal zone. The transects were spread over four stations with different substrates types. Each station consisted of one plot in the shape of a 5 m x 5 m quadrant, were the determination of transects relates to the conditions of the location and substrate in the field (Ratih et al 2021). Sampling was carried out in October 2024 during low tide in the intertidal flats. A sampling trip was made for each station. Plots were surveyed by hand picking and beach combing along with systematic snorkel surveys. Two local gleaners known to the area were utilized for consistency in doing sampling across the entire study period. For every plot, sampling was conducted for 30 minutes. Rocks and stones along with wood were overturned to carefully ensure there was no missing opportunity search of gastropods. The surface was swept and dug gently using sharp tools for example knives and hand shovels in order to expose the burrowing gastropods species for muddy substrates.

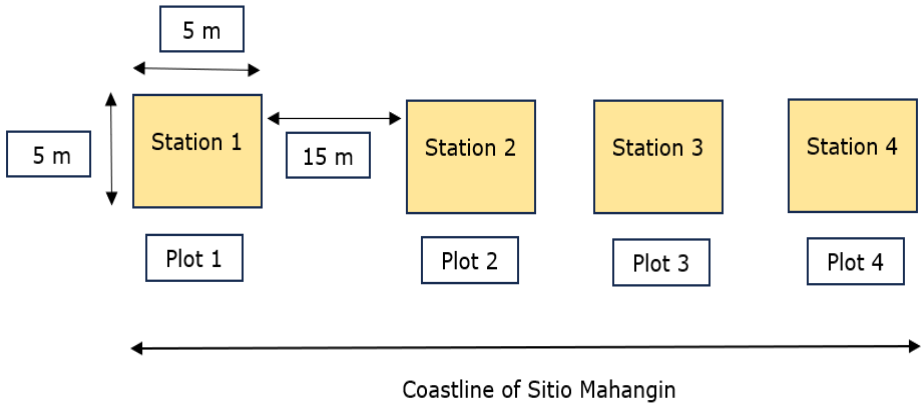

Figure 2. The design of belt transects in the sampling location.

Data collection and identification of the gastropod specimens. The number of individuals encountered was recorded for each plot and only live gastropods were collected. Representatives of specimens were placed inside zip-lock bags with markings and brought to laboratory fisheries near the study location for processing of voucher specimens for the unidentified species. Status of all specimens were identified up to the species level following the works of (Springsteen & Leobrera 1986; Abbot 1991; Abbott & Morris 1995; Esqueda et al 2000; Poppe 2008; Laureta 2008; Dolorosa et al 2015; Abarquez et al 2019; Ablett & Breure 2024). Additional sources from World Register of Marine Species online database be consulted thoroughly for confirmation of the validity of species names (https://marinespecies.org/).

Statistical analysis. Relative abundance (P_i) was used to measure the species abundance while biodiversity indices such as evenness, species richness index (S), Shannon-Wiener index (H'), and Simpson's Dominance index (D) was computed using the Paleontological Statistical Software Package (PAST) version 4.03, which was developed by Hammer et al (2001).

Relative abundance (P_i). It represents the proportional presence of a species within a community or a sample of that community. It was calculated for each species using the following equation (Achacoso et al 2016):

$$P_i = (n_i / N) \times 100$$

Where:
n_i - number of individuals of the same species;
N - total number of individuals for all species.

Shannon-Wiener Diversity Index (H'). It was used to calculate species diversity at each sampling site. In this equation, H' represents the value of the Shannon-Weiner Index, p_i is the proportion of the i^{th} species, ln is the natural logarithm, and s is the number of species in the community (Shannon 1948). According to Fernando et al (1998), on the scale for biological diversity, parameters are categorized as follows: values of 3.50 and above indicate very high diversity, 3.00–3.49 indicate high diversity, 2.50–2.99 indicate moderate diversity, 2.00–2.49 indicate low diversity, and 1.99 and below indicates a very low diversity. H' was calculated as follows:

$$H' = - \sum_{i=1}^{s} p_i \ln p_i$$

Where:
pi - proportion of the ith species;
ln - natural logarithm;
s - number of species in the community.

Simpson's Dominance index (D). It measures the probability that two randomly selected individuals from a community belong to the same species (Simpson 1949) and it was calculated as follows:

$$D = - \sum_{i=1}^{S} (n_i/N)^2$$

Where:
n_i - number of individuals in species;
N - total number of individuals for all species;
S - species richness.

Evenness index (J'). It measures the degree of equitability in the distribution of individuals among a group of species. It was calculated as follows (Pielou 1966):

$$J' = H'/\ln(S)$$

Where:
H' - Shannon-Weiner index;
ln - natural logarithm;
S - species richness.

Results and Discussion. A total composition of 1260 individuals belonging to 15 species from 11 families of intertidal gastropods reported in the study, namely: Angariidae, Cerithiidae, Conidae, Cypraeidae, Littorinidae, Lottiidae, Neritidae, Pisaniidae, Strombidae, Tegulidae, and Turbinellidae (Table 1). In the study documents recorded a 15 species within this family, namely: *Lambis lambis* (Linnaeus, 1758), *Canarium labiatum* (Röding, 1798), *Pollia fumosa* (Dillwyn, 1817), *Nerita albicilla* (Linnaeus, 1758), *Nerita histrio* (Linnaeus, 1758), *Tectus fenestratus* (Gmelin, 1791), *Turbo stenogyrus* (P. Fischer, 1873), *Mauritia arabica* (Linnaeus, 1758), *Angaria delphinus* (Linnaeus, 1758), *Monetaria annulus* (Linnaeus, 1758), *Cerithium nodulosum* (Bruguiere, 1792), *Vasum*

turbinellus (Linnaeus, 1758), *Patelloida saccharina* (Linnaeus, 1758), *Austrolittorina cincta* (Quoy & Gaimard, 1833), *Patelloida striata* (Quoy & Gaimard, 1834) (Figure 3).

The recorded frequency of gastropods shows the highest abundance for the species from the family Neritidae, namely: *N. albicilla* (16.75%) and *N. histrio* (13.10%), which can be found frequently at study station 1 and 4. It indicates that the topography condition of this station is dominantly rocky shoreline and has mangroves, where these species best thrive, consuming the thin coating of algae that covers rock and mangrove surfaces (Zvonareva & Kantor 2016). The second most abundant species relatively and evenly distributed in each station are coming from the family of Littorinidae, namely *A. cincta* (11.67%). Its abundance indicates that this species has the ability to tolerate low levels of salinity on hot, sunny days which living on rocky shore environment, as a key determinant for its survival (Little et al 2009). Other recorded gastropods species are composed only of single-family species of such as: *P. fumosa* (Dillwyn, 1817) and *T. stenogyrus* (P. Fischer, 1873). The local interactions and niche partitioning observed in these species enhance ecosystem functioning by allowing each species to utilize specific resources and habitats. This supports the idea that a greater species richness, reflected in the diversity and relative abundances, contributes to stronger and more resilient ecological processes in marine environments (Hagan et al 2023).

Table 1

The recorded intertidal gastropods species in Sitio Mahangin, Barangay Wilson, San Jose Dinagat Islands, Philippines

Family	*Scientific name*	*Study stations (frequency)*				*Total number of individuals per species*	*Relative abundance (%)*
		1	*2*	*3*	*4*		
Angariidae	*Angaria delphinus* (Linnaeus, 1758)	9	4	2	32	47	3.73
Cerithiidae	*Cerithium nodulosum* (Bruguiere, 1792)	4	3	2	25	34	2.70
Cypraeidae	*Mauritia arabica* (Linnaeus, 1758)	6	3	0	13	22	1.75
	Monetaria annulus (Linnaeus, 1758)	9	10	13	27	59	4.68
Littorinidae	*Austrolittorina cincta* (Quoy & Gaimard, 1833)	71	6	7	63	147	11.67
Lottiidae	*Patelloida striata* (Quoy & Gaimard, 1834)	29	9	3	49	90	7.14
	Patelloida saccharina (Linnaeus, 1758)	21	3	1	32	57	4.52
Neritidae	*Nerita albicilla* (Linnaeus, 1758)	58	30	23	100	211	16.75
	Nerita histrio (Linnaeus, 1758)	76	24	16	49	165	13.10
Pisaniidae	*Pollia fumosa* (Dillwyn, 1817)	35	17	10	56	118	9.37
Strombidae	*Canarium labiatum* (Röding, 1798)	14	13	7	30	64	5.08
	Lambis lambis (Linnaeus, 1758)	8	8	1	19	36	2.86
Tegulidae	*Tectus fenestratus* (Gmelin, 1791)	25	13	8	35	81	6.43
Turbinidae	*Turbo stenogyrus* (P. Fischer, 1873)	27	14	7	46	94	7.46
Turbinellidae	*Vasum turbinellus* (Linnaeus, 1758)	8	3	1	23	35	2.78
Total abundance of species		400	160	101	599	1260	100.00

Figure 4 highlights the differences in measurements of gastropods species across the four stations in a value from 0 to 90. It revealed that station 4 stands out with the highest values for most species which indicates more abundant compare to stations 1, 2, and 3 shows the lower abundance or less prominence at these stations.

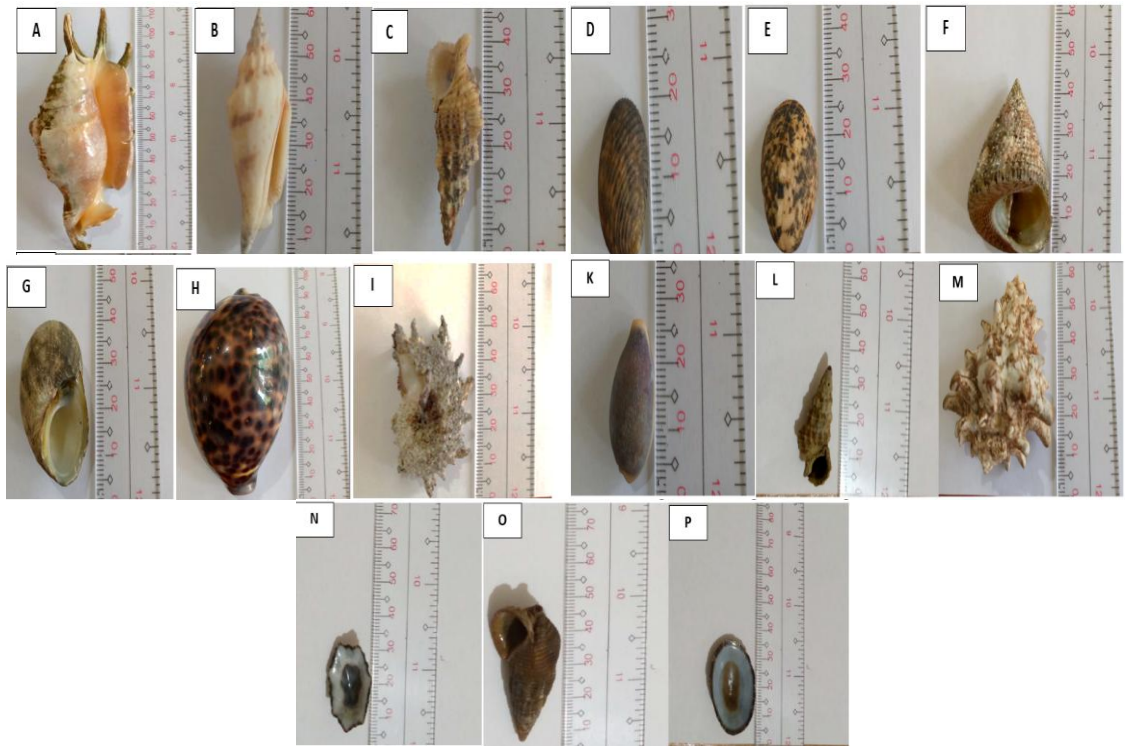

Figure 3. Representative specimens from the 11 families in 15 species. A) *Lambis lambis*, B) *Canarium labiatum*, C) *Pollia fumosa*, D) *Nerita albicilla*, E) *Nerita histrio*, F) *Tectus fenestratus*, G) *Turbo stenogyrus*, H) *Mauritia arabica*, I) *Angaria delphinus*, K) *Monetaria annulus*, L) *Cerithium nodulosum*, M) *Vasum turbinellus*, N) *Patelloida saccharina*, O) *Austrolittorina cincta*, P) *Patelloida striata*.

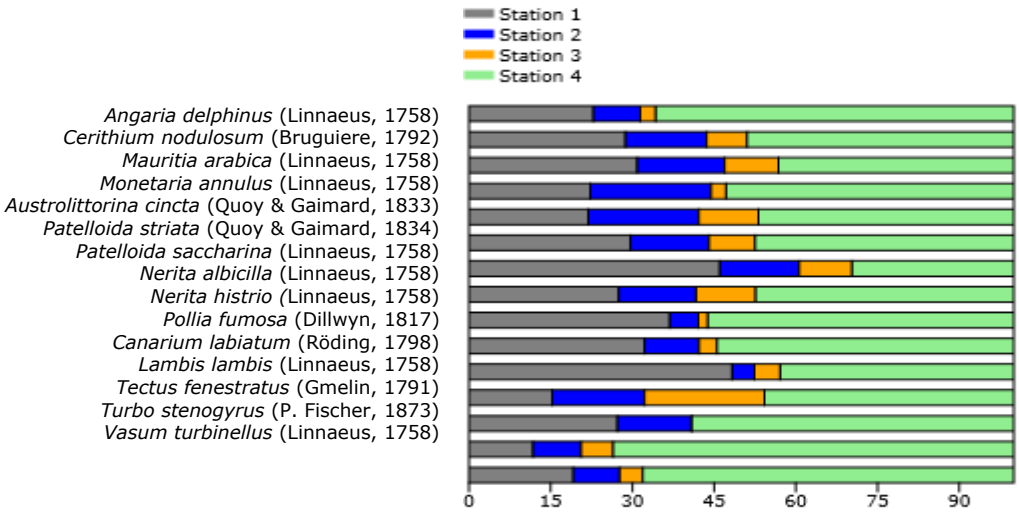

Figure 4. Relative abundance of intertidal gastropods in four sampling stations.

Table 2

Biodiversity indices of the four sampling stations

Indices	*Station 1*	*Station 2*	*Station 3*	*Station 4*
Taxa (S)	15	15	14	15
Individuals	400	160	101	599
Dominance (D)	0.1161	0.1028	0.126	0.08531
Shannon (H')	2.369	2.456	2.274	2.583
Evenness (J')	0.7127	0.7774	0.6944	0.8823

Gastropods diversity indexes were identified throughout the four sampling areas (see Table 2). Station 4 (N=599) has the greatest species diversity, whereas at the station 1 (N=400), was found the second highest species diversity, followed by station 2 (N=160) and station 3 (N=101). It demonstrates that the value of H' correlates with the sampling sites' species diversity. Moreover, with respect to H' values, station 4 had the highest H' value, of 2.583, followed by station 2, with 2.456, station 1, with 2.369 and station 3, with 2.274.

The results of species diversity, according to the Shannon Diversity Index values' classification for each station, suggest that the gastropods' community in the research area is still moderately diversified (Fernando et al 1998). Meanwhile, the high dominance value (D=0.126) recorded at station 3 was due to the greater number or abundance of species from the Neritidae family. Station 4 had the evenest distribution, with the value of 0.8823. This evenness suggests that species competition at this location, for food and territory, in contrast to other areas (Ladias et al 2020). Moreover, with an evenness value closer to 1 indicates that each species consists of the same number of individuals while if the value is close to zero, it indicates that most of the individual belongs to one or a few species (Yudha & Sutikno 2025).

Conclusions. This preliminary study successfully identified 15 species of intertidal gastropods across 11 families, in Sitio Mahangin, Wilson San Jose, Dinagat Islands, Philippines. The study observed that station 4 recorded the highest number of gastropods, followed by station 1, station 2, and station 3, which had the lowest number of species. The species from the Neritidae family were the most abundant among the gastropod species. The Shannon diversity index for each station indicated a moderately diverse gastropod population in the research area. This paper is significant as it provides baseline data on intertidal gastropod species in the under-researched region of Sitio Mahangin, Wilson San Jose, Dinagat Islands, Philippines. Although this is an initial investigation, the authors recommend conducting an annual assessment of gastropod diversity, specifically focusing on the Neritidae and Littorinidae families. This will help generate concrete data regarding the number of species present in Sitio Mahangin, Barangay Wilson, San Jose Dinagat Islands, Philippines. Such information would be beneficial for decision-makers in formulating and implementing effective regulatory policies aimed at preserving and sustainably utilizing these species. Additionally, future research in the area should include the analysis of water physico-chemical parameters.

Acknowledgements. The authors would like to express their gratitude to Surigao del Norte State University for the opportunity to serve as educator-researcher. Special appreciation is also extended to the Bureau of Fisheries and Aquatic Resources (BFAR), Officer in Dinagat Islands for facilitating a connection with the Department of Agriculture in the municipality. The authors would like to thank the Municipal and Barangay Officials, particularly the mayor, and municipal agriculturist Mrs. Gonzales, for granting permission to conduct this study. The authors are also grateful to the staff member, Mr. Yongco, for his guidance during the visits to the research sites, and to the hired gleaners for their support during the sampling process.

Conflict of interest. The authors declare that there is no conflict of interest.

References

Abarquez V. R., Mendez N., Galan G. L., 2019 Preliminary study on diversity of intertidal gastropods in Barangay Day-asan, Surigao City, Philippines. Ruhuna Journal of Science 10(1):18-31.

Abbot R. T., 1991 Seashells of South East Asia. General Printing Services Pte. Ltd, Singapore, 145 p.

Abbott R. T., Morris P. A., 1995 A field guide to shells: Atlantic and Gulf Coasts and the West Indies. Houghton Mifflin, Boston, 350 p.

Ablett J. D., Breure A. S. H., 2024 Annotated type catalogue of Orthalicoidea Mollusca, Gastropoda in the Natural History Museum, London: A supplement. Folia Malacologica 32(1):27-46.

Achacoso S. C., Walag A. M. P., Saab L. L., 2016 A rapid assessment of foliage spider fauna diversity in Sinaloc, El Salvador City, Philippines: A comparison between habitats receiving different degrees of disturbance. Biodiversity 17(4):156-161.

Dolorosa R. G., Picardal R. M., Conales S. F., 2015 Bivalves and gastropods of Tubbataha Reefs Natural Park, Philippines. Check List 11(1):1506.

Esqueda M. C., Ríos-Jara E., Michel-Morfín J. E., Landa-Jaime V., 2000 The vertical distribution and abundance of gastropods and bivalves from rocky beaches of Cuastecomate Bay, Jalisco, México. Revista de Biología Tropical 48(4):765-775.

Eviota M. P., Cuadrado J. T., Adlaon M. S., 2021 Species composition of coral reef fish in the Nonoc Island, Philippines. AACL Bioflux 14(5):2820-2825.

Fernando E. S., 1998 Resource inventory and assessment of biodiversity in the Subic Bay Metropolitan Authority Report SBMA. Report, 283 p.

Gümüş B. A., Gürbüzer P., Altındağ A., 2022 Towards a sustainable world: Diversity of freshwater gastropods in relation to environmental factors. A case in the Konya Closed Basin, Türkiye. Diversity 14(11):934.

Hagan J., Gamfeldt L., Schrofner-Brunner B., 2023 Quantifying how biodiversity affects ecosystem functioning across space and time in natural marine ecosystems. Research Square preprint, https://doi.org/10.21203/rs.3.rs-3249429/v1.

Hammer Ø., Harper D. A. T., Ryan P. D., 2001 PAST: Paleontological Statistics Software Package for Education and Data Analysis. Palaeontologia Electronica 4(1):1-9.

Haszprunar G., Wanninger A., 2012 Molluscs. Current Biology 22(13):510-514.

Ladias J. A., Hampong O. B., Demayo C. G., 2020 Diversity and abundance of gastropods in the intertidal zone of Muduing Bay, Zamboanga Peninsula, Philippines. Proceedings of the International Academy of Ecology and Environmental Sciences 10(2):45-55.

Laureta L. V., 2008 Compendium of the economically important seashells in Panay, Philippines. The University of the Philippines Press. Diliman, Quezon City. Journal of Environmental Treatment Techniques 3(3):1176-1181.

Little C., Williams G. A., Trowbridge C. D., 2009 The biology of Rocky Shores. Oxford University Press eBooks. The Quarterly Review of Biology 85(2):217.

Lonop-Galan G., Mendez N. P., Porquis H. C., 2021 Abundance and diversity of Conidae and Cypraeidae in the intertidal zone of Bucas Grande Island, Surigao del Norte, Philippines. Biological Forum An International Journal 13(3):483-487.

Marshall D. J., Tsikouras B., 2023 Clay-shielded estuarine gastropods are better protected against environmental acidification than unshielded individuals. The Science of the Total Environment 866:161367.

Pawar P. R., Al-Tawaha A. R., 2017 Biodiversity of marine gastropods along the Uran Coasts, Navi Mumbai, West Coasts of India. American-Eurasian Journal of Sustainable Agriculture 11(2):19-30.

Paylangco J. C. C., Gamalinda E. F., Seronay R. A., Jumawan J. C., 2021 Assessment of macroinvertebrates as bioindicators of water quality in the littoral zone of Lake Mainit, Philippines. Asian Journal of Biological and Life Sciences 9(3):371-378.

Pielou E., 1966 The measurement of diversity in different types of biological collections. Journal of Theoretical Biology 13:131-144.

Poppe G. T., 2008 Philippine marine mollusks (Gastropoda-Part 1). ConchBooks, Hackenheim, 758 p.
Quibod M. N. R. M., Alcantara K. N. L., Bechayda N. A., Estropia C. J. C., Guntinas J. B., Obin M. a. H. A., Raymundo R. M., Soniega E. P., 2021 Terrestrial vertebrates in modified landscapes in Northeastern Mindanao, Philippines. Journal of Animal Diversity 3(3):72-85.
Ratih S. A., Pertiwi M. P., Rostikawati R. T., 2021 Mollusk diversity in the intertidal zone of Menganti Beach, Kebumen, Central Java. DEPIK 10(1):23-29.
Shannon C. E., 1948 A mathematical theory of communication. Bell System Technical Journal 27(3):379-423.
Simpson E. H., 1949 Measurement of diversity. Nature 163(4148):688.
Springsteen F. J., Leobrera F. M., 1986 Shells of the Philippines. Manila: Carfel Seashell Museum, Kyodo Printing Co. Inc., 377 p.
Tabugo S. R. M., Pattuinan J. O., Sespene N. J. J., Jamasali A. J., 2013 Some economically important bivalves and gastropods found in the island of Hadji Panglima Tahil, in the province of Sulu, Philippines. International Research Journal of Biological Sciences 2(7):30-36.
Wijeyaratne W. M. D. N., Kalaotuwawe K. M. B. P. P., 2017 Evaluation of the water and sediment quality of a lotic water-body in the western coastal region of Sri Lanka using rapid bioassessment protocol II RBP II of Benthic Macroinvertebrates. Sri Lanka Journal of Aquatic Sciences 22:85-97.
Zvonareva S., Kantor Y., 2016 Checklist of gastropod molluscs in mangroves of Khanh Hoa province, Vietnam. Zootaxa 4162(3):401-437.
Yudha P. A., Sutikno A., 2025 Diversity of predatory coccinellids in rice field agroecosystem in Kampar Regency, Riau, Indonesia. IOP Conference Series Earth and Environmental Science 1469(1):012014.
*** https://www.marinespecies.org/

Received: 25 December 2024. Accepted: 15 September 2025. Published online: 04 October 2025.
Authors:
Arnel Romero Andrin, Department of Education, Faculty of Science Technology Engineering and Mathematics, Don Ruben, San Jose, Dinagat Islands, 8427, Philippines, e-mail: aandrin@ssct.edu.ph
Mauricio Sila Adlaon, PhD, College of Teacher Education, Surigao del Norte State University (SNSU), Narciso Street, Surigao City 8400, Philippines, e-mail: madlaon@ssct.edu.ph

How to cite this article:
Andrin A. R., Adlaon M. S., 2025 Species diversity and abundance of intertidal gastropods in Sitio Mahangin, Wilson, San Jose, Dinagat Islands, Philippines. AACL Bioflux 18(5):2225-2233.