



PRELIMINARY CHECKLIST OF MOLLUSKS ASSOCIATED
WITH THE ROCKY LITTORAL OF MALECÓN DE SANTO DOMINGO,
DOMINICAN REPUBLIC

**Listado preliminar de los moluscos asociados al litoral rocoso
del Malecón de Santo Domingo, República Dominicana**

Oniel Álvarez-Abreu^{1*} and Sara Mateo²

¹ Museo Nacional de Historia Natural “Prof. Eugenio de Jesús Marciano”. Calle César Nicolás Penson, Plaza de la Cultura Juan Pablo Duarte, 10204, Distrito Nacional, Dominican Republic;  <https://orcid.org/0000-0003-4246-9475>. ² Escuela de Biología, Facultad de Ciencias, Universidad Autónoma de Santo Domingo (UASD). Ciudad Universitaria, 10105, Distrito Nacional, Dominican Republic;  <https://orcid.org/0000-0002-3610-7702>; s.mateo.ozorio@gmail.com. *Corresponding author: o.alvarezz@mnhn.gob.do.

[Received: August 21, 2023. Accepted: December 21, 2023]

ABSTRACT

A preliminary checklist of the mollusks associated with the rocky littoral of Malecón de Santo Domingo is presented. The sampling consisted of an intensive search by niches in two localities selected on the basis of their heterogeneity and access. We preliminarily report 25 species, 19 genera and 14 families of mollusks, with gastropods being the most representative group in species. It is expected that future intensive and diverse sampling methodologies in the studied areas, and other locations, will increase the diversity reported in this note.

Keywords: rocky shore, mollusk fauna, urban area.

RESUMEN

Se presenta una lista preliminar de los moluscos asociados al litoral rocoso del Malecón de Santo Domingo. El muestreo consistió en una búsqueda intensiva por nichos en dos localidades seleccionadas con base en su heterogeneidad y acceso. Reportamos preliminarmente 25 especies, 19 géneros y 14 familias de moluscos, siendo los gastrópodos el grupo más representativo en especies. Se espera que futuras metodologías de muestreo intensivo y diverso en las zonas estudiadas, y en otros lugares, aumenten la diversidad reportada en esta nota.

Palabras clave: costa rocosa, fauna de moluscos, área urbana.

Mollusks are a highly diverse group, whose major richness is evidenced in tropical littoral macrohabitats (Baqueiro-Cárdenas et al., 2007; Masagca et al., 2010). Among these habitats, rocky shores maintain one of the most heterogeneous diversity of mollusks, especially within their benthic communities (Azevedo, 1992). The rocky littoral shore of Malecón de Santo



Domingo sustains a high biodiversity associated with coral limestone cliffs, and is distinguished by its coastal anthropized plant communities and more than 43 animal species (CIBIMA, 1992). This paper aims to provide an initial inventory of marine mollusks inhabiting this ecosystem, serving as a foundational resource for further studies and conservation efforts for this distinctive coastal environment.

The study area corresponds to the supralittoral or splash zone, and macrohabitats associated to the high intertidal zone or eulittoral, with a focus on the phytals settled on rocky coastal plateaus. Two main stations were selected (station 1: 18°27'21.6"N 69°54'48.6"W, Acción Caribe Beach; station 2: 18°27'26.3"N 69°54'35.7"W, beach in front of Hotel Catalonia Santo Domingo) based on microhabitat heterogeneity and access. We performed three field surveys during low tide on June 13th, 2019, January 22nd, 2020 and February 1st, 2021, where we conducted a thorough search in all potential mollusk habitats, including crevices, rotten logs, tidal pools, algae beds, rocks and cliffs. Micromollusks were not included as part of this preliminary study.

Mollusk species identification were done *in situ* when possible, if not they were collected and taken to the facilities of the Instituto de Investigaciones Botánicas y Zoológicas Rafael M. Moscoso (IIBZ). In the lab, they were either relaxed and preserved in a 70% ethanol solution or stored dry. Selected mollusk specimens were donated to the Museo Nacional de Historia Natural “Prof. Eugenio de Jesús Marcano” (MNHNSD). Identification of mollusks were done following monographs (Abbott, 1954; Warmke & Abbott, 1961; García-Ríos, 2003; García-Cubas & Reguero, 2004; Tejada et al., 2015). High taxonomy follows Bieler et al. (2010) for Bivalvia, Bouchet et al. (2017) for Gastropoda and WoRMS (2023) for Polyplacophora. For molluscan genera and species current taxonomic status, we mainly follow WoRMS (2023).

A total of 25 species of mollusks are preliminarily reported, which are in three classes (Polyplacophora, Bivalvia and Gastropoda), 14 families and 19 genera (see Figure 1 and Table I for the display of the data). This corresponds to 24% of the total species reported to be associated to rocky littorals of the country (104) by CIBIMA (1992), and 4.8% of the marine molluscan fauna from the Dominican Republic enlisted by Herrera-Moreno & Betancourt-Fernández (2005). The families with the highest species richness were Neritidae and Littorinidae with four species both. Two genera, *Nerita* Linnaeus, 1758 and *Echinolittorina* Habe, 1956, were the most representative with three species each. Gastropods represent 76% of all species identified, followed by chitons with 16% and bivalves with 8%.

Caribbean rocky littoral molluscan diversity seems to be homogenous regarding representativeness. The preliminary faunistic composition recorded on this note is similar to other checklists of rocky littoral mollusks from past studies. Diez García & Reyes la Fuente (2014) reported a total of 20 species, 14 genera, and 9 families from four localities in Santiago de Cuba (Cuba) supralittoral and eulittoral zones. Subsequently, Jover Capote (2021) documented 38 species, 31 genera, and 22 families in the same localities. Both studies showed an overlap of 10 species, and their results have a similarity to ours of 44% regarding number of species, 47% for genera and 59% of the total families. As sharing 52 (42%) of the total taxa (species, genera, families) registered by the last authors, and six proper to our study areas, we assume that the diversity might increase with different sampling techniques, addition of micro-mollusk species and exploration of the lower eulittoral and sublittoral zones from other localities in future studies.

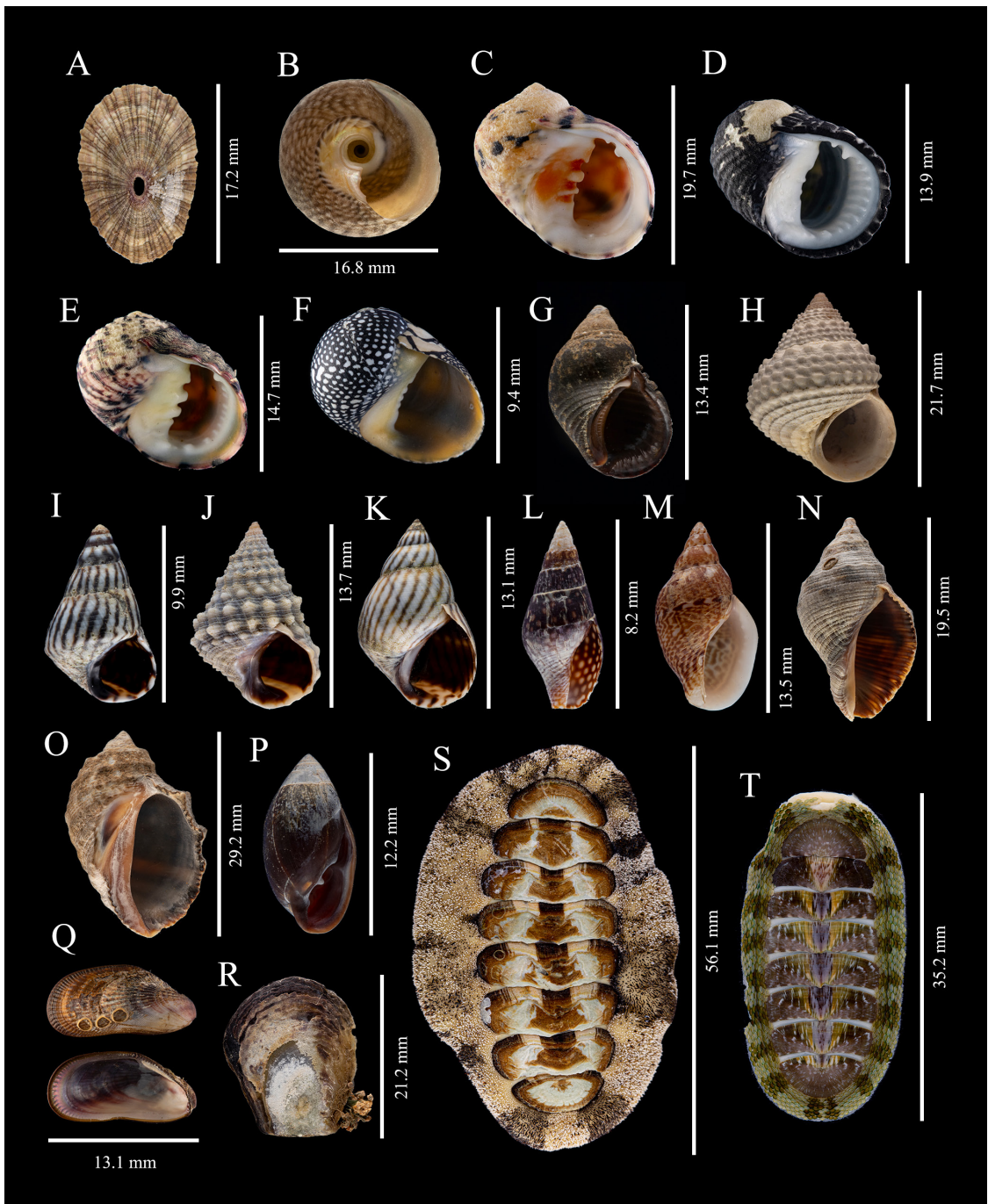


Figure 1. Some mollusks species associated to the Malecón de Santo Domingo Rocky Littoral. **A)** *Fissurella rosea*; **B)** *Tegula excavata*; **C)** *Nerita peloronta*; **D)** *Nerita tessellata*; **E)** *Nerita versicolor*; **F)** *Puperita pupa*; **G)** *Supplanaxis nucleus*; **H)** *Cenchritis muricatus*; **I)** *Echinolittorina angustior*; **J)** *Echinolittorina tuberculata*; **K)** *Echinolittorina ziczac*; **L)** *Mitrella ocellata*; **M)** *Rhombinella laevigata*; **N)** *Stramonita floridana*; **O)** *Plicopurpura patula*; **P)** *Tralia ovula*; **Q)** *Brachidontes exustus*; **R)** *Isognomon alatus*; **S)** *Acanthopleura granulata*; **T)** *Chiton marmoratus*.

Table I. Preliminary checklist of mollusks associated to the rocky littoral of Malecón de Santo Domingo.

Families	Genera	Species
POLYPLACOPHORA		
Callistoplacidae	<i>Ceratozona</i> Dall, 1882	1. <i>Ceratozona squalida</i> (C. B. Adams, 1845)
Chitonidae	<i>Acanthopleura</i> Guilding, 1830	2. <i>Acanthopleura granulata</i> (Gmelin, 1791)
	<i>Chiton</i> Linnaeus, 1758	3. <i>Chiton marmoratus</i> Gmelin, 1791 4. <i>Chiton squamosus</i> Linnaeus, 1764
BIVALVIA		
Mytilidae	<i>Brachidontes</i> Swainson, 1840	5. <i>Brachidontes exustus</i> (Linnaeus, 1758)
Isognomonidae	<i>Isognomon</i> Lightfoot, 1786	6. <i>Isognomon alatus</i> (Gmelin, 1791)
GASTROPODA		
Lottiidae	<i>Lottia</i> Gray, 1833	7. <i>Lottia antillarum</i> G. B. Sowerby I, 1834
Fissurellidae	<i>Fissurella</i> Bruguière, 1789	8. <i>Fissurella nodosa</i> (Born, 1778)
		9. <i>Fissurella rosea</i> (Gmelin, 1791)
Tegulidae	<i>Tegula</i> Lesson, 1832	10. <i>Tegula excavata</i> (Lamarck, 1822)
Neritidae	<i>Nerita</i> Linnaeus, 1758	11. <i>Nerita peloronta</i> Linnaeus, 1758
		12. <i>Nerita tessellata</i> Gmelin, 1791 13. <i>Nerita versicolor</i> Gmelin, 1791
	<i>Puperita</i> Gray, 1857	14. <i>Puperita pupa</i> (Linnaeus, 1767)
Planaxidae	<i>Supplanaxis</i> Thiele, 1929	15. <i>Supplanaxis nucleus</i> (Bruguière, 1789)
Littorinidae	<i>Cenchritis</i> Martens, 1900	16. <i>Cenchritis muricatus</i> (Linnaeus, 1758)
		17. <i>Echinolittorina angustior</i> (Mörch, 1876)
		18. <i>Echinolittorina tuberculata</i> (Menke, 1828) 19. <i>Echinolittorina ziczac</i> (Gmelin, 1791)
Vermetidae	<i>Petalconchus</i> Lea, 1843	20. <i>Petalconchus varians</i> (d'Orbigny, 1839)
Columbellidae	<i>Mitrella</i> Risso, 1826	21. <i>Mitrella ocellata</i> (Gmelin, 1791)
	<i>Rhombinella</i> Radwin, 1968	22. <i>Rhombinella laevigata</i> (Linnaeus, 1758)
Muricidae	<i>Plicopurpura</i> Cossmann, 1903	23. <i>Plicopurpura patula</i> (Linnaeus, 1758)
	<i>Stramonita</i> Schumacher, 1817	24. <i>Stramonita floridana</i> (Conrad, 1837)
Ellobiidae	<i>Tralia</i> Gray, 1840	25. <i>Tralia ovula</i> (Bruguière, 1789)

ACKNOWLEDGEMENTS

We are grateful to Alfredo Dalmau, who accompanied us in field work. Our deepest gratitude to Judá Martínez for his help in the field work and for selflessly taking the beautiful photos used in this work. Also, to the professors Ruth Bastardo and Altagracia Espinosa of the Instituto de Investigaciones Botánicas y Zoológicas Prof. Rafael M. Moscoso (IIBZ), for receiving us at the institute for processing of the samples and their support. We also thank professors Yira Rodríguez and Gladys Rosado of the Centro de Investigaciones de Biología Marina Idelisa Bonnelly de Calventi (CIBIMA) for their help in consulting literature, Max Alphonse for his useful revision and corrections of the language, and the anonymous reviewers for their helpful comments on the manuscript.

REFERENCES

- Abbott, R. T. (1954). *American Seashells*. D. Van Nostrand Company, Inc.
- Azevedo, J. M. N. (1992). Algae-associated marine molluscs in the Azores. *Biological Journal of the Linnean Society*, 46(1–2) 177–187. <http://dx.doi.org/10.1111/j.1095-8312.1992.tb00859.x>
- Baqueiro-Cárdenas, E. R., Borabe, L., Goldaracena-Islas, C. G., & Rodríguez-Navarro, J. (2007). Los moluscos y la contaminación. Una revisión. *Revista Mexicana de Biodiversidad*, 78, 1–7.
- Bieler, R., Carter, J. G., & Coan, E. V. (2010). Classification of Bivalve Families in: Bouchet, P., & Rocroi, J.-P. (Eds.), *Nomenclator of Bivalve Families* (pp. 113–184). ConchBooks. <https://doi.org/10.4002/040.052.0201>
- Bouchet, P., Rocroi, J.-P., Hausdorf, B., Kaim, A., Kano, Y., Nützel, A., Parkhaev, P., Schrödl, M., & Strong, E. E. (2017). Revised Classification, Nomenclator and Typification of Gastropod and Monoplacophoran Families. *Malacologia*, 61(1–2), 1–526. <https://doi.org/10.4002/040.061.0201>
- Centro de Biología Marina (CIBIMA). (1994). *Estudio Preliminar Sobre la Biodiversidad Costera y Marina en la República Dominicana*. Universidad Autónoma de Santo Domingo, Santo Domingo.
- Diez García, Y. L., & Reyes la Fuente, Y. L. (2014). Riqueza y composición de los moluscos del supralitoral rocoso en Santiago de Cuba, Cuba. *Amici Molluscarum*, 22(2), 15–24.
- García-Cubas, A., & Reguero, M. (2004). *Catálogo ilustrado de los moluscos gasterópodos del Golfo de México y Mar Caribe*. Universidad Nacional Autónoma de México.
- García-Ríos, C. (2003). *Los Quitones de Puerto Rico*. San Juan, Puerto Rico y Santo Domingo, República Dominicana: Isla Negra Editores.
- Herrera-Moreno, A., & Betancourt-Fernández, L. (2005). Inventario de la fauna marina de la Hispaniola. *Ciencia y Sociedad*, 30(1), 158–167. <https://doi.org/10.22206/cys.2005.v30i1.pp158-167>
- Jover Capote, A. (2021). Abundancia y diversidad trófica de moluscos del mesolitoral rocoso en un gradiente de eutrofización de la costa suroriental de Cuba. *Novitates Caribaeae*, (17), 1–14. <https://doi.org/10.33800/nc.vi17.243>
- Masagca, J. T., Mendoza, A. V., & Tribiana, E. T. (2010). The status of mollusk diversity and physical setting of the mangrove zones in Catanduanes Island, Luzon, Philippines. *Biotropia*, 17(2), 62–76.
- Tejeda, C. R., Maceira, D., García-Ríos, C., & Espinosa, J. (2015). Listado actualizado y claves para Polyplacophora (Mollusca) en Cuba. *Novitates Caribaeae*, (8), 112–119. <https://doi.org/10.33800/nc.v0i8.49>

Warmke, G., & Abbott, R. (1961). *Caribbean Seashells: A Guide to the Marine Mollusks of Puerto Rico and Other West Indian Islands, Bermuda and the Lower Florida Keys*. Livingston Publishing Company.

WoRMS Editorial Board. (2023). World Register of Marine Species. Available from <https://www.marinespecies.org> at VLIZ. Accessed 2023-07-21. <https://doi.org/10.14284/170>

Citation: Álvarez-Abreu, O., & Mateo, S. (2024). Preliminary checklist of mollusks associated with the rocky littoral of Malecón de Santo Domingo, Dominican Republic. *Novitates Caribaea*, (23), 86–92. <https://doi.org/10.33800/nc.vi23.349>

