

An unidentifiable species of ?*Radiodiscus* Pilsbry, 1905 (Gastropoda; Charopidae) from the Un poco del Chocó nature reserve

Una especie no identificable? de *Radiodiscus* Pilsbry, 1905 (Gastropoda; Charopidae) en la reserva natural Un poco del Chocó

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Abstract A broken shell of a ?*Radiodiscus* species is described from the Un poco del Chocó nature reserve (Pichincha province, Ecuador). This is the first time a species of Charopidae from Ecuador is described and imaged, but as small taxa have not received a lot of attention in previous studies more species are expected to be found in the country.

Keywords ?*Radiodiscus*, Pichincha province, Tumbes-Chocó-Magdalena hotspot, Charopidae

Introduction

Recently there has been a lot of attention for the continental gastropods in Ecuador, with emphasis on providing a complete overview of all known species and the description of obscure new taxa (Breure et al. 2022; Greke et al. 2022; Roosen 2023; Roosen & Dorado 2022, 2023; Roosen et al. 2023). However, all of these efforts are just a beginning and many more taxa are found for the first time. Several of these species also belong to genera and families hitherto not recognized in Ecuador or only reported as unknown genera and species (e.g. Roosen 2019; Ramirez & Hausdorf 2022). Some families mentioned in Roosen (2019), like the Charopidae, were already expected to be found in Ecuador by Correoso (2008).

The purpose of this paper is to give a more elaborate description of the species of Charopidae found in the Un poco del Chocó nature reserve, so far only reported in an unpublished thesis by Roosen (2019), that is not widely available. Although the species cannot be formally described, providing images and a detailed description might help other scientists to recover more species.

Material & Methods

The shell of ?*Radiodiscus* sp. was collected from a leaf litter sample in the Un poco del Chocó nature reserve, a small private reserve consisting of 15 hectares of lower montane rainforest (secondary growth and primary forest). This sample was collected in the secondary growth forest and searched without sieving, so the smallest species and fragments could be collected. The shell was collected as part of a larger study, based on which several new taxa were already described as new to science (Roosen 2023; Roosen et al. 2023). The collection methodology will be discussed more thoroughly in a forthcoming paper on the ecology of all terrestrial gastropods collected from this reserve. Scanning Electron Microscope (SEM) images were made with a variable pressure SEM at the Royal Belgian Institute of Natural Sciences (RBINS).

Breure et al. (2022) and Correoso (2008) were used to establish whether it was an already known Ecuadorian species. Aside from this, descriptions of similar Charopids were also studied in an attempt to identify the species to the genus level (e.g. Pilsbry & Ferris 1905; Hausdorf 2005). The specimen was deposited in the collection of the Instituto Nacional de Biodiversidad (INABIO) in Quito, Ecuador. Other abbreviations used: m a.s.l. = meters above sea level.

Systematic part

Charopidae F.W. Hutton, 1884

Radiodiscus Pilsbry, 1906

Remarks. Typical species of *Radiodiscus* have more, smaller spirals on the protoconch. Therefore we only tentatively assign this unknown species to *Radiodiscus* until more material is available.

?*Radiodiscus* sp. 1

Fig. 1

Studied material.- INABIOEC-MCL -1168 (one damaged shell, dry), Ecuador, Pichincha Province, Un poco del Chocó nature reserve, near Las Tolas (Gualea), lower montane rainforest, 1,200 m a.s.l., coordinates 00°03'10.8"N, 78°50'32.0"W, leg. M.T. Roosen 2019.

Description.- Shell small, subdiscoid, with a slightly raised spire and a deep suture. Protoconch of ca. 1.5 whorls, sculptured with 7 strong spiral grooves between the shoulder and the suture. Transition to teleoconch damaged. Teleoconch with 11 thin, distinct spirals above the suture and numerous axial ribs of variable strength, ca. 60 on ½ whorl. The spirals cross the axial ribs, creating a reticulate pattern on the shell. The cross section of the youngest whorl is nearly circular, aperture and peristome broken. Umbilicus of medium width (25-35 %), with axial ribbing on the umbilical walls.

Dimensions.- Diameter: 1.1 mm; Estimated maximum diameter: at least 2.0 mm; whorls: 3 ½ (reconstruction).

Differential diagnosis.- It differs from other species of *Radiodiscus* in several aspects: 1) The spiralsculpture on the protoconch is stronger and not equally divided over the protoconch whorl like in typical *Radiodiscus*; 2) Axial ribs on the teleoconch are usually much stronger than the spiralsculpture, so the pattern of the shell would not be reticulate; 3) Axial ribs are usually more evenly distributed over the shell. No similar species are known from Ecuador.

Distribution.- Ecuador: Pichincha Province: Un poco del Chocó nature reserve, near Las Tolas (Gualea), lower montane rainforest, 1,200 m a.s.l.

Remarks.- Based on the shell characters, the species discussed in this paper differs significantly from all other known species of *Radiodiscus*. It might even be a representative of a new genus, based on the protoconch sculpture. However, it is not possible to introduce a new species (or genus) based on one damaged shell.

Discussion & Conclusion

The shell described in this paper is badly damaged. Although it is likely new to science it cannot be named in this shape. However, all conchological characteristics that are important to assign it to the Charopidae are still visible. This is important as this family was so far only reported from Ecuador in the supplementary materials of Ramirez & Hausdorf (2022).

The Charopid found in Un poco del Chocó fits within the general idea that many small species of land snails have so far been overlooked in Ecuador. This is also reflected by the many other new minute taxa reported from the Un poco del Chocó nature reserve (Roosen 2019; Roosen 2023; Roosen et al. 2023). We hope that brief contributions like this help other scientists to recognize and describe these hidden gastropod species.

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Declaration of interest and Authors' Contributions

All authors declare there is no conflict of interest. MR collected the material, arranged the photography of the shell and wrote most of the species description. NB acquired the necessary permits and contributed to the rest of the manuscript.

References

- Breure ASH, Roosen MT & Ablett ID 2022. Land and freshwater molluscs of mainland Ecuador: An illustrated checklist. *Iberus* 40: 1–290.
- Correoso M. 2008. Los Molluscos Terrestres y Fluviales Del Ecuador Continental. La Biodiversidad Desconocida 1st ed. SIMBIOE, Quito 179 p.
- Greke K, Kagainis U, Telnov D 2023. First record of the family Diplommatinidae Gray, 1847 (Gastropoda: Architaenioglossa) from Ecuador with description of a new *Adelopoma* Doering, 1885. *Zootaxa* 5339 (3): 273-284
- Hausdorf B. 2005. The genus *Lilloiconcha* in Colombia (Gastropoda: Charopidae). *Journal of Natural History* 39(30): 2795–2808.
- Pilsbry H. A. and Ferriss J. H. 1906. Mollusca of the Southwestern States. II. Proceedings of the Academy of natural Sciences of Philadelphia. 58: 123-175, pls 5-9
- Roosen MT 2019. Abundance, species richness and biodiversity of terrestrial gastropods in the “Un poco del Chocó” nature reserve in North-western Ecuador. Unpublished thesis, HAS University of Applied Sciences, Den Bosch.
- Roosen M 2023. The Helicinidae (Gastropoda) of the Un poco del Chocó nature reserve (NW Pichincha province, Ecuador). *Folia Malacologica* 31: 61–67.

Roosen MT and Dorado C 2022. Revision of the genus *Bourciera* (Gastropoda; Helicinidae), with the description of six new species from Ecuador and Peru. *Folia Malacologica* 30: 155–167.

Roosen MT, Weijsenfeld J, Dorado C 2023. Notes on the genus *Xenodiscula* Pilsbry, 1919 (Gastropoda, Scolodontidae), with the description of a new species from NW Ecuador. *Folia Malacologica* 31(2): 100–106.

Salvador RB, Brook FJ, Shepherd LD, Kennedy M 2020. Molecular phylogenetic analysis of Punctoidea (Gastropoda, Stylommatophora). *Zoosystematics and Evolution* 96 (2): 397-410.

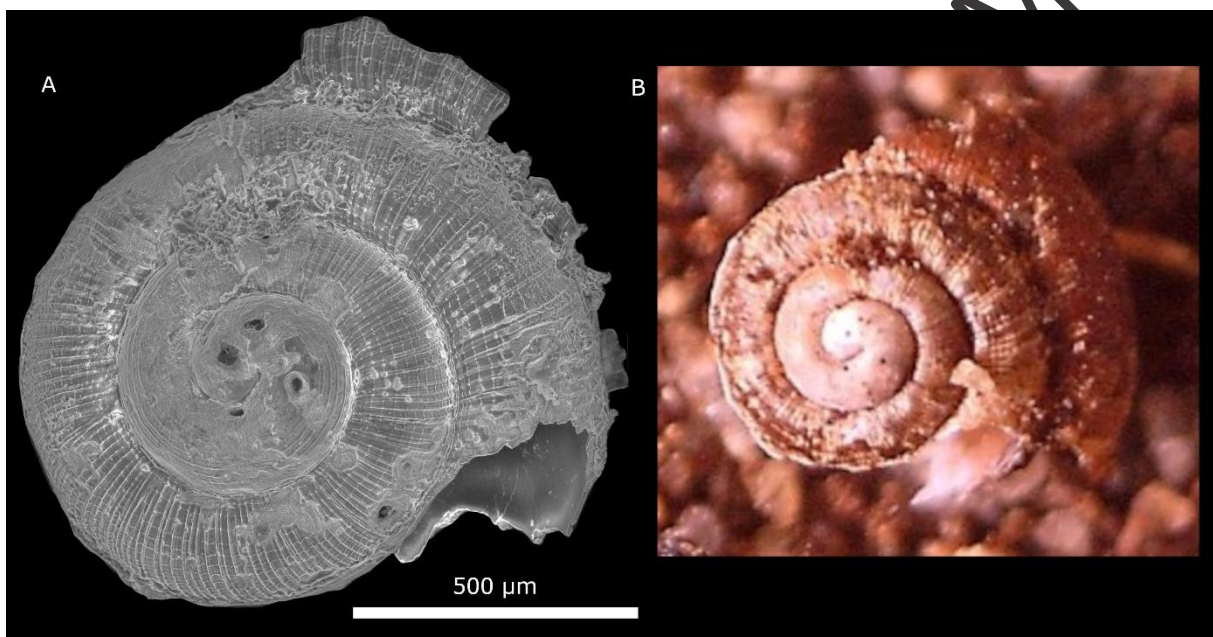


Fig. 1. ?*Radiodiscus* sp., apical view. A: SEM image (photographed by Laetitia Despontin). B: USB microscope photograph (MR). Scalebar 100 um.