MOLLUSCAN HORIZONS

research article

Description of a new species of *Hirtudiscus* Hylton Scott, 1973 (Gastropoda, Scolodontidae) from the Mamoní Valley Preserve (Central Panama)

Marijn T. Roosen[1,2,3] • Efraïm Baaijens[4] • Hugo Slats[5] • Dan C. Dourson[6]

[1] Natural History Museum of Rotterdam, Westzeedijk 345, NL-3015AA Rotterdam, The Netherlands.
[2] Naturalis Biodiversity Center, P.O. Box 9517, NL-2300RA Leiden, The Netherlands.
[3] Instituto Nacional de Biodiversidad (INABIO), Pje. Rumipamba N. 341 y Av. de los Shyris (Parque La Carolina), Quito, Ecuador.
[4] Independent researcher, Boomgaard 40, NL-3264TC, Nieuw-Beijerland, The Netherlands.
[5] Independent researcher, Palmstraat 4, NL-5342AP, Oss, The Netherlands.
[6] Fundación Geoversity, Centro Mamoní, Mamoní Valley, Panama.

Corresponding author:
Marijn T. Roosen
E-mail:
roosen@hetnatuurhistorisch.nl

Article history:
Received 16 May 2026
Revised 01 September 2026
Accepted 01 September 2026
Published 10 October 2026

Handling editor:
Marcel S. Miranda

Abstract

A new species of *Hirtudiscus* Hylton Scott, 1973 is described from Centro Mamoní, a private preserve owned and operated by the nonprofit organization Fundación Geoversity, located in the Mamoní Valley (Panama) and its reproductive strategy is briefly discussed. The finding is significant as this is the first time *Hirtudiscus* is recorded in Central America.

Keywords: *Hirtudiscus hirsutissimus* nov. spec., Geoversity, Centro Mamoní, Mamoní Valley, protoconch sculpture

ZooBank identifier: urn:lsid:zoobank.org:pub:48D6692B-5996-4A87-A122-97BF4BF5BCB1

How to cite: Roosen MT, Baaijens E, Slats H, Dourson DC (2026) Description of a new species of *Hirtudiscus* Hylton Scott, 1973 (Gastropoda, Scolodontidae) from the Mamoní Valley Preserve (Central Panama). Molluscan Horizons 1: e260106.

© The authors. This work is freely available under the Creative Commons Attribution 4.0 International licence (CC BY 4.0).

1. Introduction

Hirtudiscus Hylton Scott, 1973 has become one of the more frequently discussed genera of Scolodontidae, receiving considerable attention in recent years. New species have been described from Colombia (Hausdorf 2003; Hausdorf & Medina 2006), the definition of the genus has been revised (Roosen & Breure 2024) and *Helix excisa* Reeve, 1854 was recently recognized as a member of *Hirtudiscus* (Roosen 2023). Aside from these, an unidentified species has been reported from Peru (Wendebourg & Hausdorf 2019) and a species from Ecuador was reported as *Hirtudiscus excisa* in Breure et al. (2022, as *Drepanostomella excisa*) based on museum database records. The latter might be misidentified, as other *Hirtudiscus* species have a more limited range.

Despite these reports of a wider range, all but one currently described species are restricted to Colombia (Roosen & Breure 2024). This is surprising, as *Hirtudiscus* is a rather common faunal element where it occurs and the periostracal hairs make it easily identifiable at the genus level. Consequently, it is likely that only a fraction of the total species diversity of the genus is known. In addition to that, nothing is currently known about its ecology and behaviour.

In this paper, we describe a new species from Centro Mamoní, a private nature preserve, located in the Mamoní Valley in Central Panama. This represents the first species of *Hirtudiscus* reported from Central America. In addition, we provide evidence that this new species of *Hirtudiscus* is likely ovoviviparous and

describe a novel type of protoconch sculpture in Scolodontidae: spirals consisting of a continuous sequence of arches. The possible implications of this sculpture detail are briefly discussed.

2. Material and Methods

The study area was located within the boundaries of Centro Mamoní, a private preserve located in the Mamoní Valley, near the community of Madroño in the Las Margaritas corregimiento of Chepo, Panama (9°19'12" N, 79°08'42" W); elevation roughly 237 m at the science centre rising to 400-600 m at the continental divide. The reserve spans about 405 hectares and includes a mosaic of habitats ranging from old-growth forest to regenerating secondary forest. Its vegetation is dominated by tree species from families such as Meliaceae, Calophyllaceae, and Malvaceae, along with a notably high presence of palms (Arecaceae). Within the reserve, specimens were collected under collection permit ARG-025-2026 by Dan Dourson.

Geographically, the reserve lies within the Tumbes–Chocó–Magdalena ecoregion and forms a key link within a broader biological corridor. Its position helps maintain ecological continuity among major protected areas, including Chagres National Park, Guna Yala territory, and the forested zones surrounding the Bayano River Basin and the Darién region (Guevara & López 2023).

Leaf litter samples were collected around the base of large diameter trees. The samples were processed in a field laboratory on site and sorted. Dead shells were housed in specimen jars and live animals were preserved in 96% ethanol.

Specimens were imaged with a OM System OM-1 Mark II with an OM System 90mm f3.5 PRO x2 lens within the camera setup of the second author (EB) and a Scanning Electron Microscope at Naturalis Biodiversity Center in Leiden (The Netherlands). Images were edited with Adobe Lightroom, Adobe Photoshop, Topaz Labs Denoise and GNU Image Manipulation Program (GIMP) version 3.0.4. Measurements were made digitally in GNU Image Manipulation Program (GIMP) version 3.0.4. The following abbreviations were used: H= Height; W= Width; UW= Relative Umbilical Width. All specimens used in this study were deposited in the collection of the Florida Museum of Natural History (UF).

3. Systematics

Superfamily Scolodontoidea H.B. Baker, 1925

Family Scolodontidae H.B. Baker, 1925

Genus *Hirtudiscus* Hylton Scott, 1973

Hirtudiscus hirsutissimus nov. spec.

(Figs. 1-5)

Type locality. Fundación Geoversity, Centro Mamoní, Panama Province, Panama. 9°19'12" N, 79°08'42" W

Type material. UF-594251 (holotype, dry shell); UF-594252 (paratype 1, juvenile specimen, dry); UF-594253 (paratype, one specimen, on alcohol). All material is from the type locality.

ZooBank identifier. urn:lsid:zoobank.org:act:1D4C1121-E287-46AB-BFF0-C413786BB07E

Diagnosis. *Hirtudiscus* species with a sunken spire, apical protoconch sculpture consisting of 11 rows of spiral oriented arches, brown periostracum with 11 spiral oriented rows of hairs around the periphery and a suture attached at an angle of nearly 90° to the previous whorl.

Measurements. H: 2 mm; W: 4.9 mm; UW: 44%; Whorls: 3 ¾ .

Description. Shell of small size, nearly discoid in shape, with a brown, hairy periostracum and sunken spire. Protoconch 1 ½ whorl, with up to 11 apical spirals. Under high magnification, these spirals consist of a continuous series of spiral oriented ‘arches’. The protoconch - teleoconch transition is marked by ca. 9 axial ribs without other sculptural elements. On the teleoconch, the ribs at first become stronger and are extended into short lamellae with 6-7 short hairs on the upper surface. On later teleoconch whorls, the axial ribs become less prominent and the periostracal hairs become larger on the 11 spiral oriented rows of hairs around the periphery of the shell. These hairs reach a length of up to 0.25 – 0.30 mm. The suture is distinct as younger whorls partially overlap preceding whorls and attach to them in an angle of nearly 90°. Aperture ovate, with a distinct incision in the parietal angle. Peristome simple, neither thickened nor reflected. Umbilicus open and very wide, up to 44% of the total width.

Geographic range. Only known from localities within Centro Mamoní Science Center, Mamoní Valley, Panama Province (Central Panama).

Behaviour and Ecology. The holotype (UF-594251) was kept alive for a while by Dan Dourson. During this period, the snail gave birth to a fully hatched baby snail (UF-594252). This confirms observations by Hausdorf (2003) that at least some species of *Hirtudiscus* are ovoviviparous. *Hirtudiscus hirsutissimus* nov. spec. was found around the bases of *Ficus* species, which could be important information as some *Ficus* trees contain the high concentrations of nutrients (Wendeln et al. 2000).

Etymology. The specific epithet ‘hirsutissimus’ means ‘very hairy’ or ‘the hairy’ in Latin, referring to the large amount of long periostracal hairs this species has.

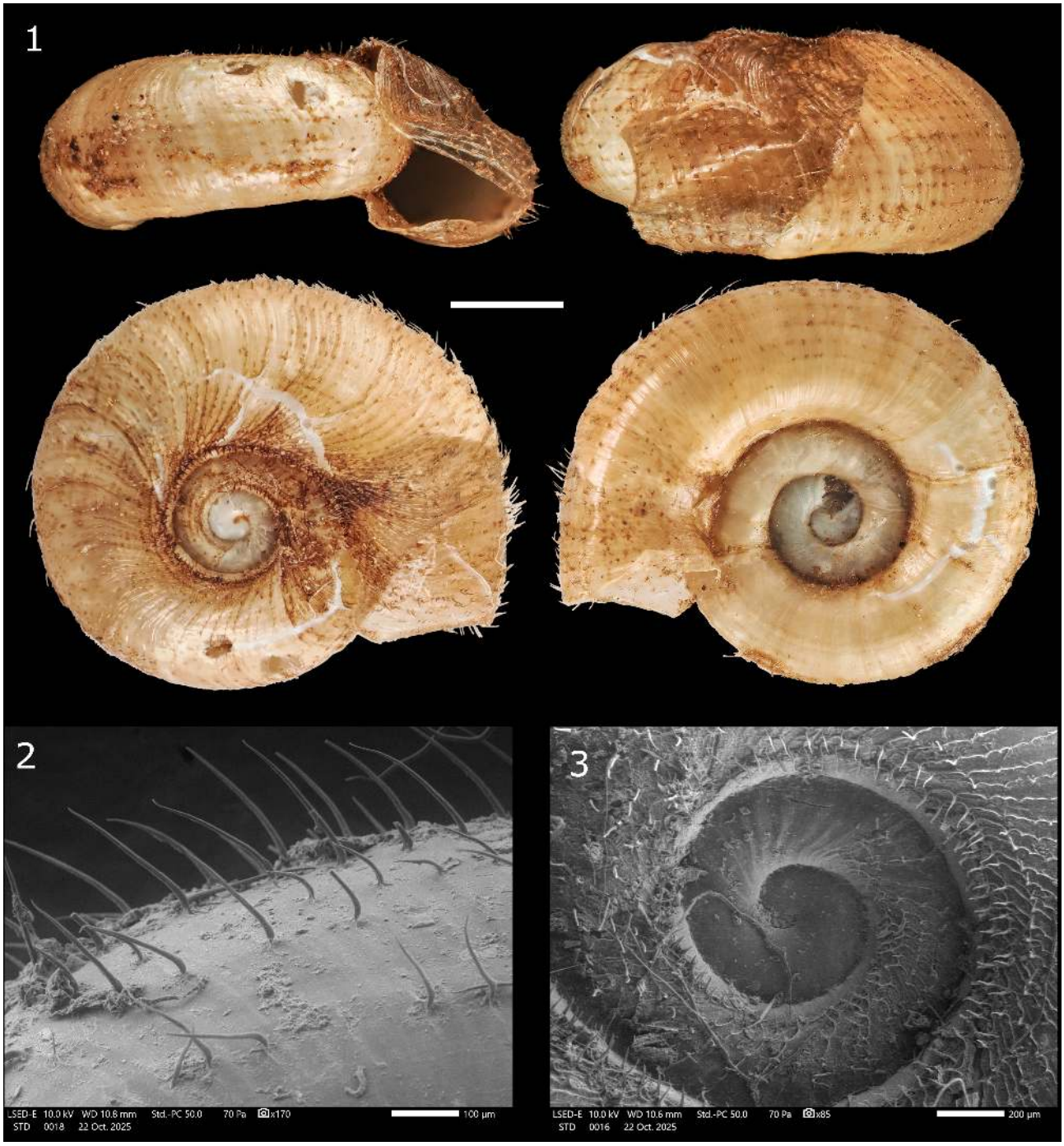


Figure 1-3. Different views and closeups of the holotype (UF-594251). 1: apertural, lateral, apical and umbilical view, scale bar 1 mm. 2: closeup of the periostracal hairs on the ultimate whorl, scale bar 100 µm. 3: closeup of the apex, showing the macrosculpture of the early whorls, scale bar 200 µm.

Comparisons. In general shape, the new species is similar to *H. triserialis* Hausdorf & C.I. Medina, 2006, but differs by being notably smaller. In addition, *H. triserialis* has three distinct rows of longer periostracal hairs, a feature not seen in *H. hirsutissimus* nov. spec. *Hirtudiscus antioquiensis* Hausdorf & C.I. Medina, 2006 and *H. comatus* Hausdorf, 2003 are similar in size, but: 1) *H. hirsutissimus* nov. spec. has stronger axial ribbing on the last ½ protoconch whorl; 2) The spire of *H. hirsutissimus* nov. spec. is more sunken combined with a deeper suture; 3) The hairs of *H. hirsutissimus* nov. spec. are more crowded and smaller (0.25 mm instead of 0.3 – 0.5) and 4) *H. hirsutissimus* nov. spec. has more pronounced structures in its periostracum, which results in small lamellae on the teleoconch. Moreover, the protoconch sculpture in other *Hirtudiscus* species consists of wavy, 'scalloped' spirals, while the sculpture of *H. hirsutissimus* nov. spec. consists of a series of spiral-oriented arches.

Remarks. The new species is the first record of *Hirtudiscus* from Central America. In Colombia, most *Hirtu-*

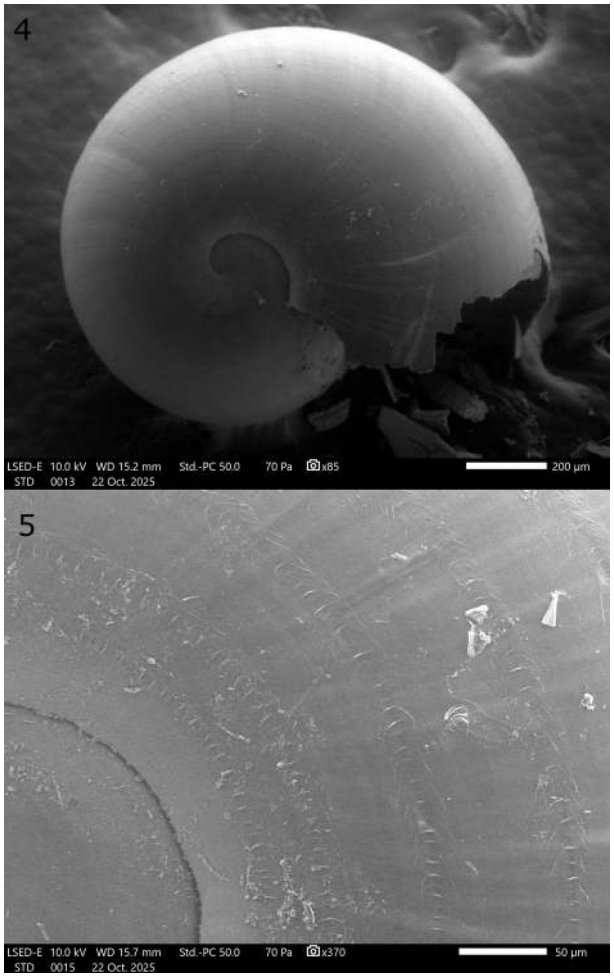


Figure 4-5. Detailed views of the newly hatched paratype (UF-594252). 4: apical view of the entire shell, scale bar 200 µm. 5: microsculpture on the protoconch, scale bar 50 µm.

discus species have a relatively small range. More species are likely present in Panama.

4. Discussion

A new species of *Hirtudiscus* is reported from Panama. This discovery might initially appear minor; it contributes crucial insights into the biology and biogeography of the Scolodontidae. Specifically, this taxon (1) represents the first record of *Hirtudiscus* from Panama and Central America; (2) confirms the hypothesis of ovoviviparity within the genus *Hirtudiscus* proposed in Hausdorf (2003) and; (3) provides the first opportunity to examine the protoconch sculpture of a neonate *Hirtudiscus*. Accordingly, these findings offer vital new data regarding the distribution of the genus, reproductive strategies, and novel morphological characters that might be useful to distinguish *Hirtudiscus* species.

The protoconch sculpture warrants careful consideration. Across other taxa, including taxa within the Scolodontidae (Roosen & Breure 2024, Roosen et al. 2025), protoconch sculpture is routinely used to delimit genera. Because excellent preservation alone cannot account for the distinct protoconch sculpture variations observed between *H. hirsutissimus* nov. spec. and other *Hirtudiscus* species, these differences suggest that *H. hirsutissimus* nov. spec. may belong to a separate closely related, and currently, unrecognized genus. This requires further study.

While some researchers argue that anatomical data are essential for species discrimination within the Scolodontidae, all known species of *Hirtudiscus* can easily be distinguished based on shell characters (Hausdorf 2003, Hausdorf & Medina 2006, Roosen 2023, Roosen & Breure 2024). Morphometrics combined with sculpture details and periostracal structures provide sufficient diagnostic information to identify and describe the distinct species. Moreover, most Scolodontids appear identifiable to the species level based on shell morphology alone. Because conservation priorities often rely on documented regional biodiversity, we chose to describe this new taxon using the available data. This approach does not preclude the need for more thorough investigations into the phylogeny and anatomy of these species; we are currently preparing an extensive review of *Hirtudiscus* and intend to collect additional adult specimens of *H. hirsutissimus* nov. spec. for inclusion in that study.

Acknowledgements. We would like to thank Bertie-Joan van Heugten (Naturalis) for imaging the new species with a Scanning Electron Microscope. Additionally, we are also grateful to the following individuals from Geoversity for their assistance: Nathan Gray, Zita Dias, and Nico Armstrong. Lastly, we wish to thank the anonymous reviewers for their comments which greatly improved the manuscript.

Authors' Contributions. MTR: Conceptualization, Investigation, Writing – Original Draft. EB: Visualisation, Writing – Review & Editing. HS: Writing – Original Draft. DCD: Conceptualization, Investigation, Supervision, Writing – Review & Editing.

Conflict of Interest. The authors have declared that no conflicts of interest exist.

Use of AI. No use of AI.

References

Baker HB (1925) The Mollusca collected by the University of Michigan - Williamson Expedition in Venezuela, III. Occasional Papers of the Museum of Zoology, University of Michigan 156: 1-57.

Breure ASH, Roosen MT, Ablett JD (2022) Land and freshwater molluscs of mainland Ecuador: an illustrated checklist. Iberus 40: 1-290.

Guevara N, López M (2023) Riqueza y abundancia de especies de murciélagos (Orden Chiroptera) de la

Reserva del Valle Mamoní, República de Panamá. Acta Zoológica Lilloana 67: 217-232. https://doi.org/10.30550/j.azl/2023.67.1/2023-05-09

Hausdorf B (2003) Systematic position and taxonomy of the genus *Hirtudiscus* from Colombia (Gastropoda: Scolodontidae). Journal of Molluscan Studies 69: 179-186.

Hausdorf B, Medina Bermúdez CI (2006) Two new *Hirtudiscus* species from Colombia (Gastropoda: Scolodontidae). Malacologia 49: 211-215.

Hylton Scott MI (1973) Endodóntidos neotropicales V (Gastropoda Pulmonata). Neotropica 19: 126–131.

Reeve LA (1851–1854) Monograph of the genus Helix. In Conchologia iconica, or, illustrations of the shells of molluscous animals (Vol. 7, Pls. 1-210, unpaginated text). L. Reeve & Co.

Roosen MT (2023) *Helix excisa* L. Pfeiffer, 1855 is a species of *Hirtudiscus* Hylton Scott, 1973 (Gastropoda: Scolodontidae). Folia Malacologica 31: 107-111.

Roosen MT, Breure ASH (2024) Revision of the genera of Scolodontidae, part 1: disentangling *Happia* Bourguignat, 1890 from Austroselenites Kobelt, 1905, *Drepanostomella* Bourguignat, 1890, *Hirtudiscus* Hylton Scott, 1973, *Luteostriatella* gen. nov., and *Systrophiella* H.B. Baker, 1925. Journal of Conchology 45: 91-110.

Roosen MT, Salvador RB, Breure ASH (2025) Revision of the genera of Scolodontidae, part 4: *Miradiscops* H.B. Baker, 1925 and *Mayadiscops* gen.nov. Journal of Conchology 45: 604-616. https://doi.org/10.61733/jconch/4552

Wendebourg B, Hausdorf B (2019) The land snail fauna of a South American rainforest biodiversity hot spot: the Panguana conservation area in the Peruvian Amazon. Journal of Molluscan Studies 85: 311-318. https://doi.org/10.1093/mollus/eyz014

Wendeln MC, Runkle JR, Kalko EKV (2000) Nutritional values of 14 fig species and bat feeding preferences in Panama. Biotropica 32(3): 489–501. https://doi.org/10.1111/j.1744-7429.2000.tb00495.x