Description of *Isomeria incomparabilis* nov. spec. (Gastropoda: Labyrinthidae) from Northern Ecuador

Descripción de *Isomeria incomparabilis* nov. spec. (Gastropoda: Labyrinthidae) para el norte de Ecuador

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Running title: *Isomeria incomparabilis* nov. spec.

Abstract.- A new species, *Isomeria incomparabilis* nov. spec., is described and tentatively assigned to *Isomeria* Albers, 1850. No similar species are known.

Keywords: *Isomeria* Albers, 1850, *Labyrinthus* Beck, 1837, Imbabura, new species, Andes
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Resumen.- En el presente artículo se describe *Isomeria incomparabilis* nov. spec. la cual se asigna tentativamente a *Isomeria* Albers, 1850. No se conocen especies similares.

Palabras clave: *Isomeria* Albers, 1850, *Labyrinthus* Beck, 1837, Imbabura, especie nueva, Andes
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Introduction

Sometimes terrestrial gastropod species that do not resemble any other taxa from the country are still found in Ecuador. Examples of this are the recently described species of *Adelopoma* Doering, 1885 and *Xenodiscula* Pilsbry, 1919 (Greķe et al., 2023; Roosen et al., 2023). Usually these completely unknown species are small, but sometimes larger species are discovered.

In this paper we describe a new species of Labyrinthidae Borrero et al., 2017, which weassign to *Isomeria* Albers, 1850 because of its apertural dentition. Its small and strongly carinated shell with colour bands separate it from other species of *Isomeria*.

The type material of *I. incomparabilis* nov. spec. is insufficient to investigate its affinities.

Material and methods

The holotype of *I. incomparabilis* nov. spec. is present in the collection of Pontificia Universidad Católica del Ecuador, in Quito, Ecuador (PUCE, QCAZI). Locality data was recorded from the original label. The shell was imaged with SONY DSC-HX60V camera by the second author (CD). To confirm *I. incomparabilis* nov. spec. was new to science; it was compared to all Labyrinthidae in Breure et al. (2022) and Solem (1966). Similar species will be compared to it based on the images in these publications. Whorls were counted to the nearest 1/4th whorl using the method of Gittenberger et al. (2004).

Results

Class Gastropoda Cuvier, 1795
Order Stylommatophora A. Schmidt, 1855
Family Labyrinthidae Borrero, Sei, D. G. Robinson & Rosenberg, 2017

Genus *Isomeria* Albers, 1850
Isomeria Albers, 1850: 126. Type species (by monotypy): *Helix oreas* F.C.L. Koch, 1844

***Isomeria incomparabilis* nov. spec.**
Fig. 1
Zoobank ID: urn:lsid:zoobank.org:act:23E4DCD3-0A59-4A05-B8D2-FC9ABC2DB31F

Type material.- QCAZI 278700 (holotype, one shell, dry), Leg. M. Navarrete, 02-11-2012.

Type locality. - Ecuador, Imbabura Province, Lita. (00°52'21,77"N, 78°28'00,60"W), 780 meters above sea level.

Measurements. - 28.12 mm (W), 12.83 mm (H).

Description.- Shell medium large, but small for the genus; strongly carinate; strongly depressed conical in shape. No clear differences visible between the protoconch and the teleoconch. The sculpture consists of indistinct growth lines combined with a granulated surface. The granulations are limited to the section between the carina and the umbilical wall. In addition, some sections above the carina and on the umbilical wall show minute spiral grooves. Aperture trapezoid, slightly deflected, with a thickened peristome. Two small palatal teeth are present, one almost in the carina. Umbilicus wide, about 17% of total width. Colour of the shell is light, hazelnut brow, with three dark, chestnut brown bands located below the suture, around the carina and in the umbilicus. The carina itself is white.

Geographic range.- Ecuador. Only known from the type locality in Imbabura Province.

Habitat.- The specimen was found fixed on a trunk, implying a ground dwelling lifestyle.

Comparisons.- No similar species are known from Ecuador. It is reminiscent of *Isomeria minuta* Solem, 1966, but this species has a different dentition (one basal tooth and one palatal tooth), smaller size and does not have any distinct colour patterns. Another species with which it shares some characters is *Labyrinthus dunkeri* (L. Pfeiffer, 1852), which has a similar colour pattern, carinated shell and granulated surface. However, *L. dunkeri* differs from the new species by its smaller size, 18.6 - 24.9 mm wide according to Solem (1966), and more complex apertural dentition which include one parietal lamella and two basal teeth.

Etymology.- The specific epithet *incomparabilis* refers to the difficulty in finding a similar species to compare it with.

Remarks.- Based on the limited apertural dentition, we describe *I. incomparabilis* nov. spec. as a species of *Isomeria*, even though other shell characters most closely resemble a species currently included in *Labyrintus* (*L. dunkeri*). More, preferably living, specimens need to be found and studied to confirm this placement.

Isomeria incomparabilis nov. spec. resembles *Labyrinthus* Beck, 1837 due to its less inflated, carinated whorls and low spire, but *Labyrinthus* species have more numerous and/or larger teeth and lamella on the palatal and parietal wall (Borrero, et. al., 2017). Moreover, in Ecuador *Labyrinthus* only occurs in the Amazon rainforest and on the eastern slopes of the Andes (Breure et al., 2022; Solem, 1966). It is possible that apertural dentition should not always be the main character to distinguish between these genera, but we do not have the information needed to study this. Sequencing and comparing the DNA of *I. incomparabilis* nov. spec. and *L. dunkeri* could help answer this question.

In the description of *Isomeria minuta*, Solem (1966) also mentions that this species shows characters referable to both *Isomeria* and *Labyrinthus* and highlights that the transition between both shell shapes may have happened several times during their evolution.

For all papers we published the past years we visited several main museums in Ecuador and several countries in Europe (The Netherlands, Belgium, Spain etc.). We did not find this species in any other collections.

Discussion

This paper describes yet another new species of terrestrial gastropod from Ecuador. This species does not teach us a lot at the moment. Of course, seen in context it shows that even larger gastropod species have yet to be discovered in Ecuador, but as it is based on only one empty shell it does not provide additional insights on the ecological relationships of gastropod communities in the rainforests of Ecuador. In any case, its discovery is a significant addition to the country's malacofauna and deserves to be published. That is also the main purpose of this paper: showing that truly aberrant, large species can still be discovered in areas that have received little attention in the past. Hopefully the description of *I. incomparabilis* nov. spec. will lead to more research into this and other poorly known species. In addition, this description hopefully increases interest in collecting new material in less studied Ecuadorian provinces, such as Carchi and Esmeraldas, that are very close to the type locality.

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Declaration of conflict of interest

The authors declare no conflict of interest.

Authors' contribution

MR and CD recognised the species as new, compared it to its congeners and wrote the manuscript.

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Figures

Fig. 1 *Isomeria incomparabilis* nov. spec. Holotype (QCAZI 278700), dry shell, from Lita, Imbabura Province, northwest Ecuador. Scale 10 mm.