

Notes on some terrestrial molluscs of Bali

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This paper includes the descriptions of two new species from Bali: *Palaina astenis* and *Geotrochus rimatus*. The first is a representative of the Diplommatinidae, the second is of uncertain affinity: no soft parts are available, but on account of shell characters it fits best in *Geotrochus* (Helicarionidae). A previously described species, *Tomatellina perinconspicua* Vermeulen, 1996, is reduced to synonymy; it now appears to be based on juvenile specimens of *Carychium javanum* Von Moellendorff, 1897.

Key words: Gastropoda, Prosobranchia, Diplommatinidae, Pulmonata, Carychiidae, Helicarionidae, taxonomy, Indonesia, Bali.

Recent collecting activities on Bali have yielded material of two more undescribed species, in addition to those described in Vermeulen (1996). *Geotrochus rimatus* was found in more or less undisturbed montane forest, a habitat where novelties can be expected. *Palaina astenis*, however, occurs in degraded vegetation (*Imperata* and secondary scrub) on limestone bedrock. It shows that even such environments, which are often ignored by collectors, can be of malacological interest. Next to the new species, a taxonomical correction is given: *Tomatellina perinconspicua* is reduced to synonymy.

Thanks are due to the Florida Museum of Natural History, Gainesville (UF), who made a recently acquired collection of Bali snails, containing *Geotrochus rimatus*, available for study, to Dr. A.J. Whitten, who collected some soil samples in the degraded and little promising environment harbouring *Palaina astenis*, and to the Nationaal Natuurhistorisch Museum (RMNH), for the use of the library and other facilities put at my disposal. Dr. A.C. van Bruggen has carefully read the manuscript.

After each reference to material seen by the author the number of specimens is given after a slash: /. The drawings were made by the author, with pencil, using a Wild M8 stereo microscope with camera lucida device.

Family DIPLOMMATINIDAE

Palaina astenis spec. nov.
(fig. 1)

Distribution. — BALI. Near Udayana University (leg. Whitten, V 5134/9, incl. HOLOTYPE RMNH 57256).

About opaque, shining, white. Spire dextral, fusiform. Whorls convex, suture impressed. Constriction level with the columellar side of the peristome. Tuba about 3/4 whorl, with a slight swelling close to the constriction. Radial ribs distinct, present over most of the shell, not sinuous, densely placed. Spiral striation absent or very inconspicuous. Umbilicus closed, last half-whorl with a spiral thickening in the umbilical area. Peri-

stome well rounded on the palatal and basal side, double, the outer peristome not spreading beyond the inner; the inner somewhat protruding. Shell 2.4-2.6 mm high, 1.1-1.3 mm wide, with 5 $1/8$ -5 $5/8$ whorls.

Ecology. — Degraded vegetation on limestone bedrock, in leaf litter; alt c. 100 m a.s.l.

Notes. — 1. Well characterized among the dextral *Palaina* species by the presence of a spiral ridge in the umbilical region.

2. Named in honour of the Asia Technical Division (ASTEN) of the World Bank, Washington, which, among other things, occupies itself with environmental and biodiversity aspects of World Bank projects in Southeast Asia. The collecting activities of Dr. A.J. Whitten, specialist at this Division, have considerably increased our knowledge of the Southeast Asiatic snail fauna, and have highlighted snails as possible biodiversity markers.

Family CARYCHIIDAE

Carychium javanum Von Moellendorff, 1896.

Carychium javanum Von Moellendorff, 1897: 90.

Tomatellina perinconspicua Vermeulen, 1996: 151.

Notes. — Recently collected series of specimens ranging from juvenile to adult show that *Tomatellina perinconspicua* is based on juveniles of *Carychium javanum*.

Family HELICARIONIDAE

***Geotrochus rimatus* spec. nov.**

(fig. 2)

Distribution. -- BALI. Bedugul, forest adjacent to Botanical Gardens (leg. Lee, UF 266544/1, HOLOTYPE).

Thin, opaque, shiny, brown. Spire dextral, low conical. Apex more or less rounded. Whorls distinctly and sharply keeled at the periphery, slightly convex above, more distinctly convex below; suture impressed. Radial sculpture: inconspicuous growth lines, some radial ribs above the periphery. Spiral sculpture absent. Umbilicus open, narrow. Aperture obliquely lunate. Peristome thin, present as a thin glazing on the parietal side, somewhat reflected on the columellar side. Shell 3 mm high, 5.1 mm wide, with 4 $7/8$ whorls.

Ecology. — Primary montane forest on volcanic soil; alt. 1800 m a.s.l.

Notes. — 1. No soft parts are available, and therefore of uncertain affinity. Included in *Geotrochus* on account of shell characters; differs from other species of this genus occurring on the Sunda Shelf in having a more densely coiled, rimate shell. The sympatric *Inozonites retardatus* (Rensch, 1934) differs in having a transparent shell with spiral striation and a less prominent peripheral keel.

REFERENCES

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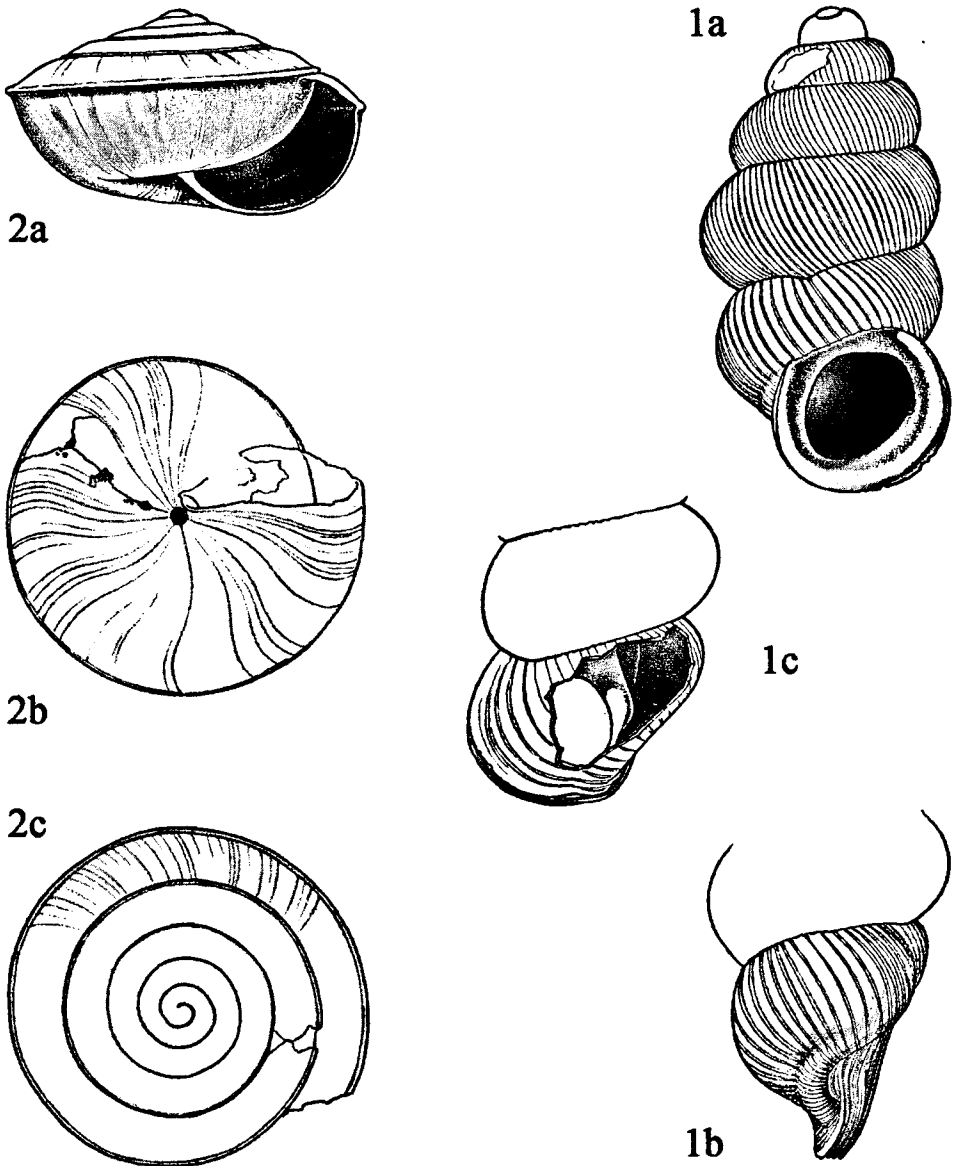


Fig. 1. *Palaina astensis*, a, holotype specimen, Bali: Udayana University (RMNH 57256), front view; b, other specimen from the same location, left lateral view; c, other specimen from the same location, back view with part of the shell wall removed to show columella. Actual height of holotype specimen 2.6 mm.

Fig. 2. *Geotrochus rimatus*, a, holotype specimen, Bali: Bedugul (UF 266544), front view; b, do., umbilical view; c, do., apical view. Actual height of specimen 3 mm.