

First record of the genus *Ditropopsis* E. A. Smith, 1897 (Architaenioglossa: Cyclophoridae) from North Moluccas

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Abstract

Two new species of the genus *Ditropopsis* E. A. Smith, 1897 (Architaenioglossa: Cyclophoridae) from Obi Islands, North Moluccas are described and illustrated. An updated key to species of *Ditropopsis* from the Papuan region (in broad sense) is presented.

Zusammenfassung

Zwei Arten der Landschnecken-Gattung *Ditropopsis* E. A. Smith, 1897 (Architaenioglossa: Cyclophoridae) von den Obi-Inseln (Nord Molukken) werden abgebildet und beschrieben. Ein ergänzender Artenschlüssel zu den *Ditropopsis* der Papuanischen Region (in umfassendem Sinn) wird präsentiert.

Key words: Mollusca, Cyclophoridae, *Ditropopsis*, Papuan region, North Moluccas, Obi Islands, new species, determination key

Introduction

Eleven species of genus *Ditropopsis* E. A. Smith, 1897 are known from the Papuan region sensu lato (including the Moluccas, Raja Ampat Islands and New Guinea) (GREKE 2011), of which New Guinea is the most species rich. The new records from the Obi Islands are the first for the North Moluccas.

The only account of non-marine molluscs from Obi Islands was published many years ago (BENTHEM JUTTING 1959) with no of *Ditropopsis* species being recorded. But she overlooked one important publication by Preston (1913) devoted to land malacofauna of tiny Belang-Belang island (formerly known as Beilan-Beilan) north of Obira. Preston described two genera and two subgenera as also 14 species new to science and these taxa were not listed in BENTHEM JUTTING's (1959) account of Obi malacofauna. Malacofauna of

these hilly and quite isolated islands has not been well studied and the total number of species will be more than is currently estimated.

Two species new to science are being described and illustrated in this paper, namely *D. obiensis* sp. nov. and *D. perlucidula* sp. nov. and these are the first records of *Ditropopsis* from the North Moluccas. Consequently the *Ditropopsis* fauna of the Papuan region consist of 13 species, of which four are known from New Guinea (three from Indonesian Papua and one from Papua New Guinea), two from Raja Ampat island of Misool, one from Cenderawasih Bay island of Biak, three from Lease Islands, two from Obi Islands, and one species sharing both Indonesian Papua and Misool Island.

The following abbreviations are used:

- KGC – private collection Kristine Greke, Dzidriqas, Latvia
- NME – Naturkundemuseum Erfurt, Germany
- env. – environs
- vill. – village, little settlement.

Descriptions of new taxa

***Ditropopsis obiensis* sp. nov.** (Figs 1–6, map 1)

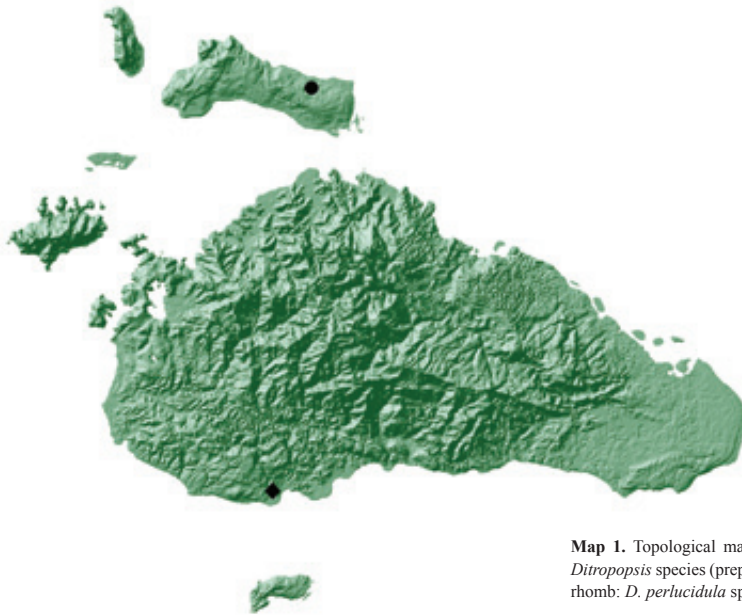
Holotype NME: INDONESIA E, Maluku Utara Prov., Obi Islands, Bisa Island N of Obira, 1 km SW Madapolo vill., 29.IX.2011, primeval lowland rainforest on limestone, leg. L. Wagner.

Paratypes 4 specimens (2 NME, 2 KGC): same data as holotype.

Derivatio nominis: Named after area of origin, Obi Islands in North Moluccas.

Measurements, holotype: Height 2.1 mm, width 3.9 mm, operculum diameter 1.1 mm.

Description: Shell dull, colourless on the first three whorls, brown on following ones. Shell shape low conical. Whorls 5, the first 2 whorls are smooth with fine



Map 1. Topological map of Obi Islands with type localities of new *Ditropopsis* species (prepared by ArcGIS 9). Circle: *D. obiensis* sp. nov.; rhomb: *D. perlucidula* sp. nov.

punctuation, following ones reticulated with rough and dense radial lines and spiral striae on the top side of the shell, with rough and irregular radial lines and spiral striae on the base and rough and dense spiral striae in the umbilical channel. Shell bears two strong and acute carinae: one at periphery covers the suture, the second encircling umbilical opening. Umbilicus wide (1/3 of the shell diameter). Base broad, little rounded. Aperture circular, channelled at the spiral carinae. Peristome thickened, continuous. Inner margin is distinctly broadened and concave, outer one is projecting before the inner one. Operculum cream internally, brown externally; transparent at the centre. Interior surface of operculum arched, formed by distinct concentric growth lines (fig. 5). Exterior surface with broad and short non-pubescent conchiolin process which is hollow in the middle and bears several concentric ridges inside (five in holotype); this process is trapezoidal in lateral view (Fig. 6). Median hollow of operculum is about 1/3 of the operculum diameter (Fig. 4).

Diagnosis: Similar to *Ditropopsis benthemjuttingi* Greke, 2011 (Raja Ampat: Misool Island), but clearly differs from it by rough shell sculpture (fine in *D. benthemjuttingi*), presence of two carinae (single in *D. ben-*

themjuttingi), and operculum with broad and short external conchiolin process deeply pitted medially, with concentric ridges inside the pit (with long and narrow median tubular conchiolin process in *D. benthemjuttingi*).

Ecology: This species was collected in a small patch of old growth lowland rainforest on limestone.

Distribution: Only known from locus typicus, tiny Bisa Island (Obi Islands, North Moluccas).

***Ditropopsis perlucidula* sp. nov.** (Figs 7–10, map 1)

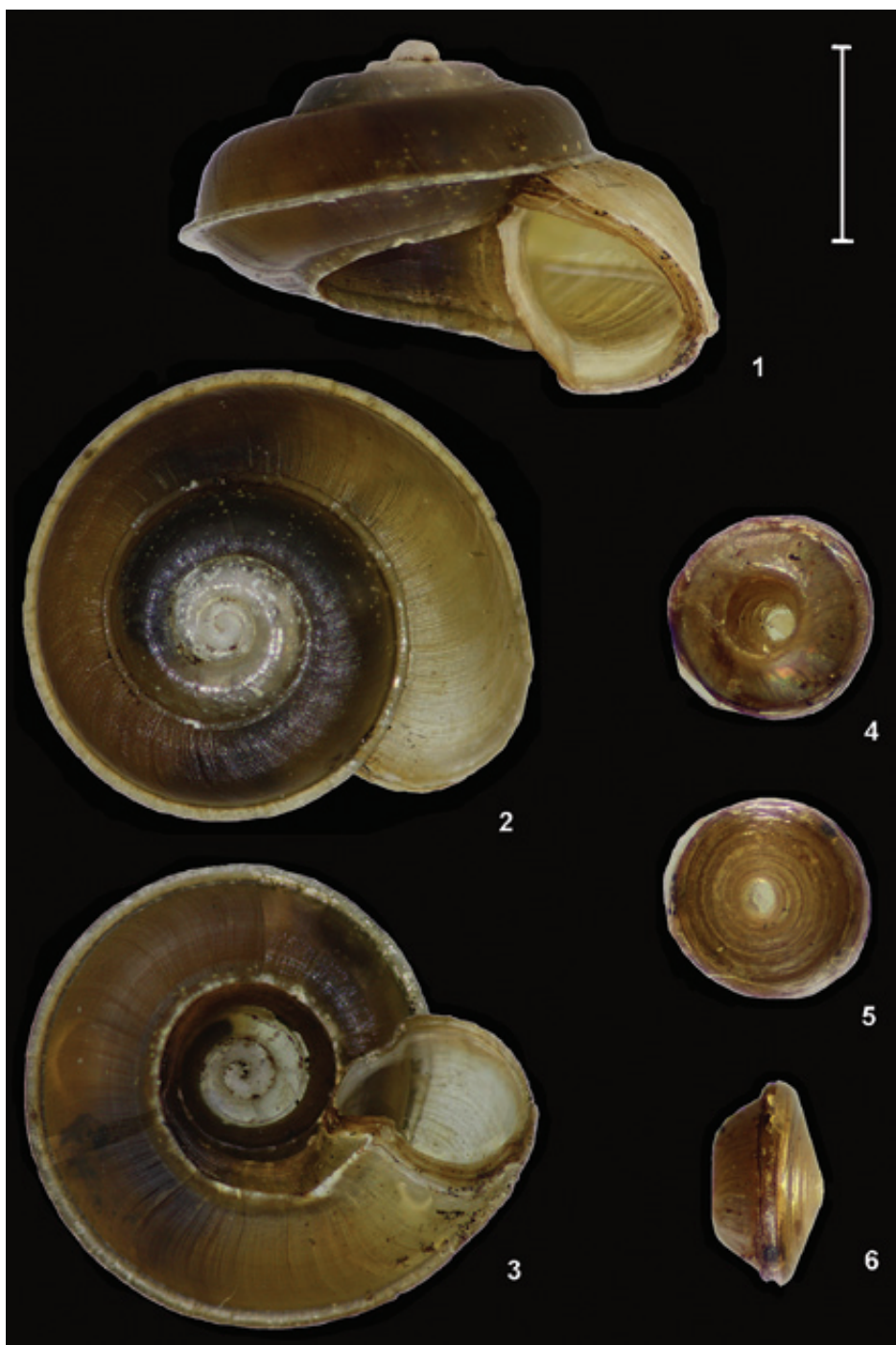
Holotype NME: INDONESIA E, Maluku Utara Prov., Obi Islands, S coast of Obira Island, Wayaloar vill. env., 05.X.2011, primeval lower montane rainforest on limestone, leg. L. Wagner.

Paratype 1 specimen (KGC): same data as holotype.

Note: Both holotype and paratype shells are not full grown.

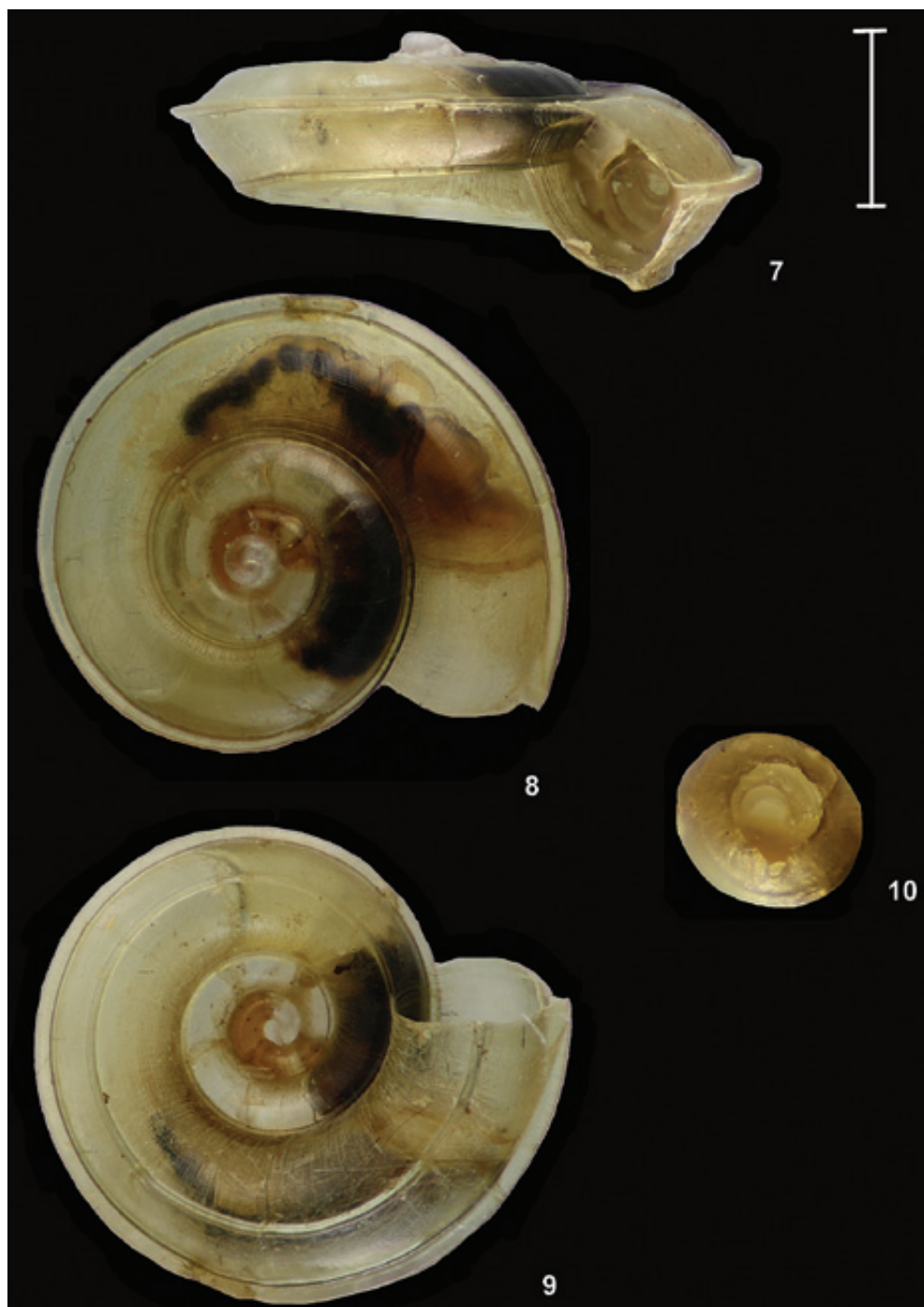
Derivatio nominis: Named from Latin ‘perlucidulus’ (means quite transparent), because of translucent, shiny shell.

Measurements, holotype: Height 1.3 mm, width 3.2 mm, operculum diameter 0.7 mm.



Figures 1–6. *Ditropopsis obiensis* sp. nov. (1–3 holotype, 4–6 paratype).

1: shell (lateral view with aperture); 2: shell (top view); 3: shell (bottom view); 4–6: operculum (externally, internally, laterally). Scale bar: 1 mm.



Figures 7–10. *Ditropopsis perlucidula* sp. nov. (holotype).

7: shell (lateral view with aperture); 8: shell (top view); 9: shell (bottom view); 10: operculum (externally). Scale bar: 1 mm.

Description: Shell shiny, transparent, colourless on the first 1½–2 whorls, yellowish to very light brown on following ones. Shell shape discoid with bulging apical whorls. Whorls almost 5, the first 1½–2 whorls are smooth, following ones reticulated with fine and dense radial lines and spiral striae. Shell bears two carinae: one acute and strong at periphery, the second acute on underside. Suture covered with peripheral carina. Umbilicus wide (more than 1/3 of the shell diameter). Base rounded. Aperture circular, channelled at the spiral carinae. Peristome not developed, since neither specimen is full-grown. Operculum cream and transparent. Interior surface of operculum arched, formed by distinct con-

centric growth lines. Exterior surface shortly straight and then converged toward centre of operculum; median area of operculum is hollow and bears several irregular concentric calcareous sheets inside (Fig. 10).

Diagnosis: This species is unique in the genus due to its low spire (shell looks discoid), and also by structure of operculum which consists of large externally-medial hollow with irregular concentric calcareous sheets inside.

Ecology: Specimens were collected in a patch of old growth lower montane rainforest on limestone.

Distribution: Only known from locus typicus, Obira Island (Obi Islands, North Moluccas).

Updated identification key to *Ditropopsis* from the Papuan region

- 1 Shell cornucopia-like with whorls (except 1.5–2 embryonic ones) more of less distinctly free 2
- Shell not cornucopia-like, whorls connected one with another along suture (in some species, a gap is presented between the embryonic whorls and the rest of spire) 4
- 2 Shell high conical, last and penultimate whorls diverging by about 30°; non-embryonic whorls with 3 spiral carinae; operculum externally with median tubular process which is not pubescent *D. mirabilis* Greke, 2011
- Shell low conical, last and penultimate whorls diverging by much less than 30°, often almost subparallel; non-embryonic whorls with 3 or 4 spiral carinae; operculum externally with median tubular process which is pubescent or not pubescent 3
- 3 Shell whorls with 4 spiral carinae; operculum externally with bristle of long hairs covering the median tubular process from outside *D. biroi* (Soós, 1911)
- Shell whorls with 3 spiral carinae; operculum not pubescent externally [this character was not controlled by the author] *D. spiralis* (O. Boettger, 1891)
- 4 Embryonic whorls are not detached from the shell (no gap between the embryonic whorls and the rest of spire). Shell very low conical to discoid 5
- Embryonic whorls are detached from the shell (a gap is presented between the embryonic whorls and the rest of spire). Shell more or less high conical, in *D. aenigmatica* low conical 9
- 5 Shell discoid. Operculum externally with large medial hollow inside covered with irregular concentric calcareous sheets *D. perlucidula* sp. nov.
- Shell low conical but not discoid. Operculum different in species where it is known 6
- 6 Shell with only one (peripheral) carina. Operculum externally with long and narrow median tubular non-pubescent process which is hollow in the middle, slightly widened and not straight distally *D. benthemjuttingi* Greke, 2011
- Shell with more than one carina. Operculum different in species where it is known 7
- 7 Shell tricarinate, with two peripheral and one basal carina *D. moellendorffi* (O. Boettger, 1891)
- Shell bicarinate, with one peripheral and one basal carina 8
- 8 Shell reticulated with rough and dense radial lines and spiral striae. Umbilicus broad, but not wider than 1/3 of the shell diameter. Operculum externally shortly prolongate and broadly pitted in the centre *D. obiensis* sp. nov.
- Shell delicately striated by radial lines. Umbilicus very broad, more than 1/3 of the shell diameter. Operculum different, externally with conical median process *D. papuana* E. A. Smith, 1897¹

1 In my review of *Ditropopsis* of the Papuan region (GREKE 2011: 72) I've incorrectly re-described *D. papuana* as shell with '3 acute spiral carinae'. In fact, only two carinae (one peripheral, second around-umbilical) are presented in this species, what was correctly stated in my species key on page 73 in same work.

- 9 Last whorl with distinct and dense spiral striation, especially on its underside. Peristome with duplicate and distinctly thickened margin *D. heterospirifera* (Van Benthem Jutting, 1958)
- Last whorl without distinct and dense striation. Peristome with simple or duplicate margin 10
- 10 Last whorl with three or more spiral ridges in umbilical channel. Shell low conical, embryonic whorls more or less depressed and can be invisible in lateral view 11
- Last whorl with less than three spiral ridges in umbilical channel. Shell higher conical, embryonic whorls not depressed and always visible in lateral view 12
- 11 Last whorl with distinctly visible additional carina between suture and peripheral carina. Shell flatter *D. aenigmatica* (Van Benthem Jutting, 1963)
- Last whorl without additional carina between suture and peripheral carina. Shell comparatively high *D. ingenua* (O. Boettger, 1891)
- 12 Operculum externally with narrow median tubular process. Last whorl with one spiral ridge in umbilical channel *D. tritonensis* Greke, 2011
- Operculum externally concave, simple. Last whorl without ridges in umbilical channel *D. fultoni* E. A. Smith, 1897

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