

**Four new species of terrestrial gastropods from Tonkin, North Vietnam  
(Gastropoda, Diplommatinidae, Strobilopsidae and Ariophantidae)**

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Four new species of terrestrial molluscs are described from northern Vietnam, viz. *Arinia angduensis*, *A. loumboensis*, *Eostrobilops infrequens*, and *Hemiplecta esculenta*.

Key words: Gastropoda, Caenogastropoda, Diplommatinidae, Pulmonata, Strobilopsidae, Ariophantidae, taxonomy, South East Asia, Vietnam.

INTRODUCTION

Even though quite a number of molluscan species has been reported from Vietnam by now, that part of the fauna cannot yet be considered well-known. Only half the material collected during two surveys (Vermeulen & Whitten, 1998; Maassen, 2003) in northern Vietnam, and consisting of about 310 species, could be identified. This does not mean that the other half consists of species that are new to science, but quite a number of new ones may be expected, in particular amongst the minute snails. Formerly, small gastropods were described sometimes without any figures (especially by Von Moellendorff), or with illustrations at such a small scale that characteristic details are not or hardly visible. Only by studying the type specimens of all congeneric species from a particular region their identity can be verified then. These problems do not apply to the species that are described as new in this paper. Similar species are unknown from the area as could be concluded from the literature.

Abbreviations for shell characters: B, shell width; H, shell height. For collections: FMNH, Field Museum of Natural History, Chicago; IEBR, Institute of Ecology and Biological Resources, Hanoi; JV, J.J. Vermeulen, Leiden; MD, W.J.M. Maassen, Duivendrecht (material to be deposited in RMNH); RMNH, National Museum of Natural History *Naturalis* (formerly Rijksmuseum van Natuurlijke Historie), Leiden.

SYSTEMATIC PART

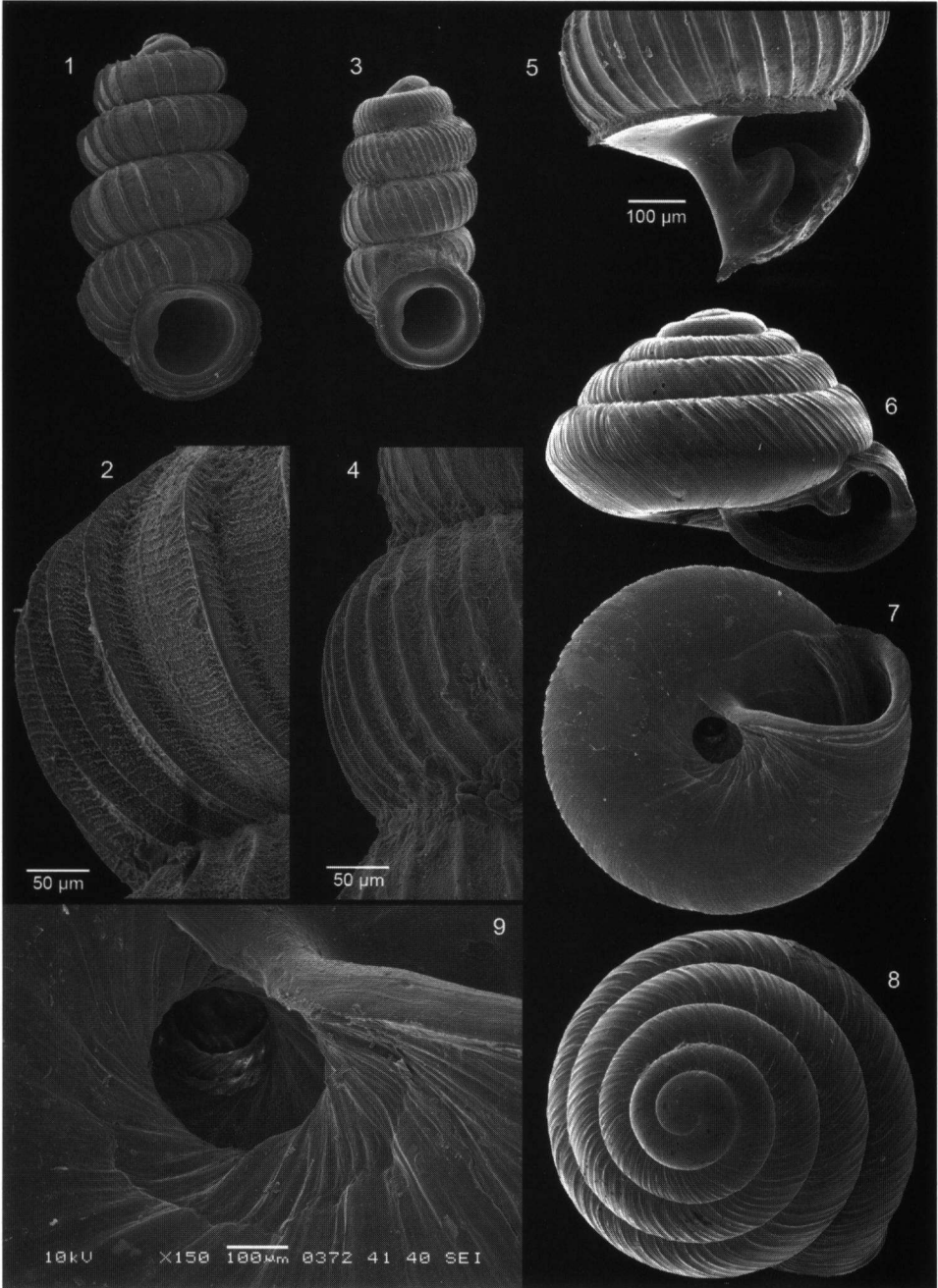
Family Diplommatinidae L. Pfeiffer, 1856

Genus *Arinia* H. & A. Adams, 1897.

Type species (by original designation): *Cyclostoma minus* G.B. Sowerby, 1843 (Philippines).

*Arinia angduensis* spec. nov. (figs 1, 2)

Material examined. — Vietnam, Quang Ninh Province, Halong Bay Area, Ang Du Island, 20°47.61'N 107°08.05'E, 15.ix.2003 (RMNH 99421/holotype; paratypes: IEBR/1, MD/1).



Description. — Shell dextral, almost cylindrical with slightly convex sides, opaque and white, quite delicate, with 5 convex, somewhat angular, whorls with a very deep suture; last two whorls widest; with sharp, widely spaced and, in fresh specimens, very high thin ribs (6 ribs/0.5 mm on penultimate whorl; 8 ribs/0.5 mm above the aperture). Ribs are highest at the level of the periphery of the whorls. A very fine, distinct, spiral striation lies as a silky lustre all over the shell except for the protoconch, which is very finely pitted. Umbilicus closed. Aperture more or less rounded except for the straight columellar side, turned distinctly upwards. At the columellar side an indistinct columellaris is just visible. As only a few specimens are available the inner structure of the lamellae is not investigated. Palatal side of the peristome is not protruding beyond the penultimate whorl, columellar side not or hardly sinuous. Inner peristome distinctly protruding beyond the outer, flaring over the parietal side; angular edge without notch; an additional peristome is located between inner and outer peristome in the shape of a lamella.

Dimensions: H 1.50-1.63 mm (holotype: 1.63 mm); B 0.75-0.82 mm (holotype 0.78 mm).

Derivatio nominis. — Named after the island of Ang Du, in the Ha Long World Heritage Site, the type locality.

Remarks. — More details and further discussions are given under remarks after the following species.

*Arinia loumboensis* spec. nov. (figs 3-5)

Material examined. — Vietnam, Quang Ninh Province, Halong Bay Area, W-side Loum Bo Island, 20°50.09'N 107°04.53'E, 6.ix.2003 (RMNH 99419/holotype; paratypes: RMNH 99420/1, IEBR/1, MD/1)

Description. — Shell dextral, almost cylindrical with straight sides, opaque and white, quite delicate, with 5 convex whorls with a very deep suture; penultimate whorl unclearly widest; with low, densely spaced ribs (13 ribs/0.5 mm on penultimate whorl; 9 ribs/0.5 mm above the aperture). Spiral striation absent. Umbilicus closed. Aperture more or less rounded except for the straight columellar side, turned distinctly upwards. At the columellar side an indistinct columellaris is just visible. A heavily damaged specimen allowed study of the internal structures. The columellaris is a short, high and heavy lamella, bordered at the palatal side by a much lower lamella. The two lamellae in this way form a small, narrow channel. Palatal side of the peristome is not protruding beyond the penultimate whorl, columellar side not or hardly sinuous. Inner peristome distinctly protrudes beyond the outer, flaring over the parietal side; angular edge without notch; a number of small lamellae between inner and outer peristome.

Dimensions: H 1.49 mm; B 0.67 mm.

Derivatio nominis. — Named after the island of Loum Bo, in the Ha Long Bay World Heritage Site, the type locality.

Remarks. — With the discovery of these two species the distribution of the genus *Arinia* is extended for about a remarkable 1600 km to the north. The geographically nearest species is known from the south of Thailand (Yala province), the somewhat aberrant species *Arinia panhai* Maassen, 2001. It is known that a large number of the very small species belonging to the family Diplommatinidae are calcicole and endemic to a limestone

Figs 1-9. New species from Tonkin. 1-2, *Arinia angduensis*, holotype (actual height 1.63 mm) with (2) detail of the penultimate whorl; 3-5, *Arinia loumboensis*, holotype (actual height 1.49 mm) with (4) detail of the penultimate whorl and (5) detail of the lamellae inside the ultimate whorl; 6-9, *Strobilops infrequens* (actual shell width 2.36 mm), three views from different sides (6-8) and detail of the umbilicus (9).

Photographs by L. van Ofwegen, Naturalis, Leiden.

mountain or even a single isolated limestone outcrop (Maassen, 2003). Undeniably, more new species are waiting to be discovered in limestone areas in especially southern Tonkin. With regard to the enormous geographical gap between the hitherto known distribution of this genus and the type localities of these two new species they without any doubt represent new species. The two species are easily recognized: *A. angduensis* possesses widely spaced high sharp ribs, while in *A. loumboensis* the ribs are densely placed and low.

#### Family Strobilopsidae Wenz, 1915

##### Genus *Eostrobilops* Pilsbry, 1927.

Type species (by original designation): *Strobilops hirasei* Pilsbry, 1927 (Korea).

##### *Eostrobilops infrequens* spec. nov. (figs 6-9)

Material examined. — Vietnam, Thanh Hoa Province, Pu Luong National Park, limestone hill near the native village Am, 20°27.39'N 105°13.65'E, 21.ix.2003 (RMNH 99422/holotype; paratypes: RMNH 99423/3, IEBR/2, JV/2, MD/2, FMNH 306492/1).

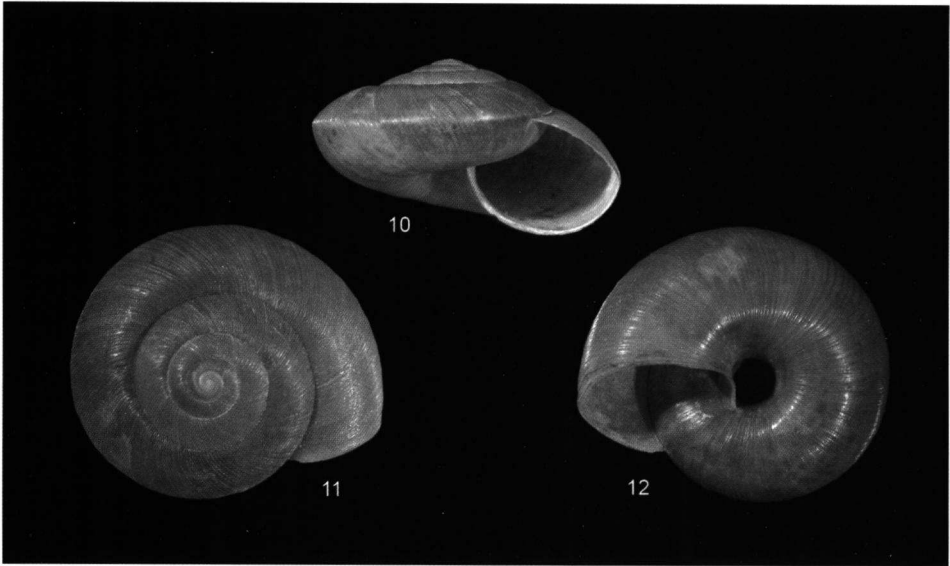
Description. — Shell brown, thick, solid, opaque or slightly translucent, low conical with convex sides and a rounded apex in frontal view. Whorls 4.75, moderately convex above and below the periphery; periphery more or less angular, not keeled; suture well impressed; protoconch very finely pitted; top whorls with irregular, very fine, densely placed radial riblets; next whorls with rather conspicuous, irregularly spaced, low but rather wide radial ribs, these ribs locally crossed by a hardly visible, inconspicuous spiral striation (50 × magnification); last whorl below the periphery with fine, irregularly spaced, curved growth lines. Umbilicus narrow (0.35 mm), approximately 1/6 of the maximum shell diameter; inner margin of the whorls irregularly crenulated. Along the suture of the last whorl near the umbilicus a shallow ridge, corresponding with the columellaris, is present. The aperture is semi-elliptic, with the parietal side somewhat concave. Peristome reflected, well rounded, somewhat sinuous in apical view. Teeth all starting at about the same level, approximately 1/3 whorl before the aperture; three short basales, of which the one on the columellar side is the shortest; one short columellaris; three lamella-like parietals, the one on the angular side continuing up to the peristome and forming a distinct lamella in the aperture, the middle only short and low, the third low, ending just short of the peristome.

Dimensions: H 1.56-1.64 mm; B 2.21-2.36 mm.

Derivatio nominis. — *infrequens*, Lat. = seldom, rare, as are most of the *Eostrobilops* species.

Remarks. — Dr. J. Gerber (Field Museum of Natural History, Chicago) was so kind as to compare a syntype of *Strobilops diodontina* Heude, 1880, with the new species. *S. diodontina* is larger (B 2.875 mm), and higher (H 1.75 mm). The umbilicus of *S. diodontina* is much larger (0.6 mm) and distinctly eccentric while in *E. infrequens* the umbilicus is not eccentric at all. Further *S. diodontina* possesses two distinct lamellae in the aperture, while in *E. infrequens* the lower one does not even reach the peristome.

The conchologically most similar species is *Eostrobilops triptychus* Vermeulen, 1992, from Borneo. The two species are separated by the following differentiating features: in *E. triptychus* the shell possesses a smooth protoconch (in *E. infrequens* distinctly pitted), a more or less visible spiral striation (almost absent in *E. infrequens*), and fewer whorls (*E. triptychus* 3.375–3.75 whorls, *E. infrequens* 4.75 whorls) and the inside of the umbilicus is regularly rounded without a furrow as in *E. infrequens*.



Figs 10-12. *Hemiplecta esculenta*, holotype (actual shell width 32 mm). Photo J. Goud, Naturalis, Leiden.

Family Ariophantidae Godwin-Austen, 1888

Genus *Hemiplecta* Albers, 1850.

Type species (designated by Von Martens in Albers, 1860): *Helix humphreysiana* Lea, 1841 (Indonesia).

*Hemiplecta esculenta* spec. nov. (figs 10-12)

Material examined. — Vietnam, Thanh Hoa Province, NW-point Pu Luong National Park, limestone area near village Hang, 20°31.84'N 105°04.76'E, 19.ix.2003 (RMNH 99424/holotype; paratypes: RMNH 99425/1, IEBR/2, JV/1, MD/2).

Description. — Shell rather thin, dextral, low-conical, dark reddish-brown. Embryonic whorl is finely pitted, the following apical whorl with closely-set small and fine ribs; the rest of the shell finely striated by densely placed, quite high and sharp ribs. These ribs are crossed by equally fine spirals, giving the shell a silky lustre. The surface between the ribs is smooth, without any spiral striation. Thus only the ribs are spirally interrupted. On the base of the whorls the sculpture is weaker than above the periphery. Fresh shells are more or less transparent and show this silky lustre. Whorls 5-5 ¼, regularly increasing in size, the last whorl is about 2 x as broad as the preceding one. The whorls of the spire are more or less flattened, with shallow sutures. The underside of the last whorl is well rounded. Periphery is distinctly angular in full grown as well as in young specimens. Top obtuse, base rounded. Umbilicus is wide open, showing all preceding whorls. Aperture is oblique, broadly lunar. Peristome not continuous, not or hardly thickened, not reflected. The two extremities of the peristome converge slightly; they are connected by a very thin filmy callus against the penultimate whorl. Columellar side a little reflected exteriorly at the junction with the umbilical region and covering the umbilicus here for a small part.

Dimensions: H 16.8-18 mm, average 17.5 mm [n = 5]; B 29.9-32.1 mm, average 31.1 mm [n = 5].

Derivatio nominis. — *esculentus*, Lat. = edible. The shells were collected between kitchen rubbish together with numerous *Cyclophorus cambodgensis* Morlet, 1884, and a few *Cyclophorus malayanus* (Benson, 1852). It is known from Thailand (Panha, 1994) that *Hemiplecta* species are frequently eaten by man in some remote areas.

Remarks. — It is with some hesitation that this species is classified with the genus *Hemiplecta*. Most of the conchological features are shared with this genus, only the width of the umbilicus is unique as all other known species of this genus possess a much narrower umbilicus. An alternative could be the genus *Elaphroconcha* Gude, 1911, but all members of this genus possess a half hidden umbilicus, a multicoloured shell, and not such a perfectly conical shell. Another solution could be to create a new genus for this species but without knowledge of its anatomy this is not advisable. So, for the time being, this species should remain in the genus *Hemiplecta* until living specimens become available for dissection.

#### ACKNOWLEDGEMENTS

Thanks are due to Dr J. Gerber (Field Museum, Chicago) for comparing *Strobilops didontina* with *Eostrobilops infrequens* spec. nov., and Dr J.J. Vermeulen (Leiden) for useful discussions on Asiatic molluscs for more than ten years. Thanks are also due to Mr Jady Smith (Hanoi), project manager for the Vietnam Programme of FFI (Flora and Fauna International), and responsible for funding the 2003 survey in the Halong Bay World Heritage Site and Pu Luong National Park; to Mr Duong Ngoc Cuong (Hanoi), biologist at IEBR and personal counterpart for a month in a superb manner; and to Mr Le Thien Duc (Hanoi), project biologist for FFI, great entertainer, with his knowledge of the terrain he showed us several interesting collecting localities in Pu Luong National Park.

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