

## On the genus *Elma* H. Adams, 1866 (Mollusca, Streptaxiidae)

ANDRÁS VARGA

**ABSTRACT:** The predatory genus *Elma* is comprised of 9 species occurring in Taiwan, mainland China, and northern Vietnam. The present paper provides an assessment of the literature data relevant to these species and the description of a new species, *Elma matskasii* sp. nov., from northern Vietnam (type locality: Lao Cai Province, Co Xan).

### Introduction

The species-rich carnivorous family of the Streptaxidae is widely distributed in the tropical regions of Asia and Africa (THIELE, 1931). Species of the endemic genus *Elma* H. Adams, 1866 inhabit limited ranges in Formosa, mainland China and northern Vietnam. Of the nine known taxa of this genus the last one was described from China more than 70 years ago. There is no information on the anatomy of any of the species. In the Mollusca material of the Hungarian Natural History Museum's 1971 Vietnam expedition I found two *Elma* samples, one of which proved to be a new species. The description of this species is appended with a list of the other *Elma* taxa and their known distribution data. To help the identification of the species, a figure combines the illustrations of the original descriptions, showing the depicted shells according to their size proportions.

Based on similarities of shell morphology, early authors have often used the name *Elma* for Streptaxidae species that are now classified with other genera. According to TRYON (1885), the following species belonged to the section *Streptosele* (*Elma*): *S. (E.) fastigiata* Morelet, 1848 = *Streptopele fastigiata* (EDLINGER, 1988); *S. (E.) incisa* Morelet, 1881 = *Pseudelma* – type species – (KOBELT, 1904); *S. (E.) auriculata* Morelet, 1881 = *Pseudelma (Marielma)* – type species – (ABDOU *et al.*, 2008); *S. (E.) martensiana* Morelet, 1881 = *Pseudelma (Marielma) martensiana* (ABDOU *et al.*, 2008); *S. (E.) nevillei* H. Adams, 1868 = *Streptostele (Stereostele)* – type species – (PILSBRY, 1919); *Stereostele nevillei* (GERLACH & BRUGGEN, 1999); *S. (E.) moreletiana* Dohrn, 1866 = *Streptostele (Tomostele) moreletiana* (PILSBRY, 1919); *S. (E.) swinhoei* H. Adams, 1866 = *Elma* type species (ZILCH, 1960). HAAS (1951): *Elma (Fultonelma)* (type species *Bulinus inconspicua* Morelet, 1881) = *Pseudelma (Fultonelma) inconspicua* (ABDOU *et al.*, 2008) and *Elma (Fultonelma) bisexigua* Haas, 1951 = *Pseudelma (Fultonelma) bisexigua* (ABDOU *et al.*, 2008).

The geographical distribution of the *Elma* species is as follows: In Taiwan one species: *Elma swinhoei* (H. Adams, 1866). In mainland China (YEN, 1939) four species: *Elma sinensis* (Möllendorff, 1886), *Elma oblongata* Yen, 1939, *Elma pachygyra* (Gredler, 1885), and *Elma mitis* Heude, 1890. In Vietnam (SCHYLEIKO, 2011) five species: *Elma (?) fultoni* (Bavay & Dautzenberg, 1912), *Elma mansuyi* (Dautzenberg & Fischer, 1905), *Elma messengeri* (Bavay & Dautzenberg, 1903), *Elma tonkiniana* (Bavay & Dautzenberg, 1903), and the species *Elma (?) microstoma* (Möllendorff, 1881) of uncertain systematic position, which used to be classified

(YEN, 1939) as *Synoenna microstoma*, and later (YEN, 1948) as *Ennea microstoma*. The assignment of the latter species to *Elma* appears incorrect, and it could be classified more appropriately with *Synoenna* or *Ennea*, as proposed by Yen. On the basis of its morphology, the systematic position of *Elma* (?) *fultoni* is also doubtful.

### Systematics

Order Stylommatophora Schmidt 1855

Superfamily Streptaxoidea Gray 1860

Family Streptaxidae Gray 1860

Subfamily Enneinae Bourguignat 1883

Genus *Elma* H. Adams, 1866

Type species: *Ennea (Elma) swinhoei* H. Adams, 1866, by original designation (OD)  
– *Elma swinhoei* (H. Adams), subsequent designation (SD) by ZILCH (1960, p. 567).

*Elma swinhoei* (H. Adams, 1866) (Fig. 3 )

ADAMS, 1866: p. 317, Taf. 33, Fig. 18. (*Ennea* sect.). Type species – *Ennea (Elma) swinhoei*;

OD. Loc.: (type locality): “Tamsui, Formosa”.

PFEIFFER, 1876: p. 499, *Ennea swinhoei*.

PFEIFFER & CLESSIN, 1881: p. 18, *Ennea (Elma) swinhoei*.

TRYON, 1885: p. 109, Pl. 17, Fig. 30, *Streptostele (Elma) swinhoei*.

KOBELT, 1904: p. 123, Taf. 18. Fig. 7, *Ennea (Elma) swinhoei*.

KOBELT, 1910: p. 155, *Ennea (Elma) swinhoei*.

ZILCH, 1960: p. 576, *Elma swinhoei*, SD.

Dimensions: H 16, D 5 mm.

*Elma* (?) *fultoni* (Bavay & Dautzenberg, 1912) (Fig. 4)

BAVAY & DAUTZENBERG, 1912: p. 8, Pl. I, Fig. 12–13, *Ennea (Elma) fultoni*, OD. Loc.: northern Vietnam (type locality): Tring-Tuong.

SCHILEYKO, 2011: p. 26, *Elma* (?) *fultoni*, SD.

Dimensions: H 9, D 3 mm.

*Elma mansuyi* (Dautzenberg & Fischer, 1905) (Fig. 5)

DAUTZENBERG & FISCHER, 1905: p. 345, Pl. 8, Fig. 8–9, *Ennea (Elma) mansuyi*, OD. Loc.: (type locality): Tonkin, “Ha-Giang”.

SCHILEYKO, 2011: p. 26, *Elma mansuyi*, SD.

[[http://www.discoverlife.org/mp/20q?search=Elma+mauseri&guide=Groups\\_Mollusca](http://www.discoverlife.org/mp/20q?search=Elma+mauseri&guide=Groups_Mollusca) – sic!  
*Elma mauseri* (Dautzenberg and Fischer) = *Elma mansuyi* (Dautzenberg & Fischer, 1905)].

Dimensions: H 10, D 3 mm.

*Elma matskasii* sp. nov. (Figs 1–2, 6)

**Material:** Vietnam, Lao Cai Province, Co Xan, 400 msm (Map. 1), November 27, 1971, leg. István Matskási & György Topál. [MÉSZÁROS (1973): “Lao Cai. The environs of the town are

situated on the banks of the Red River, a hilly region of woods and agricultural lands.”]. Holotype HNHM 98819/1, Paratypes HNHM 98820/7 = 3 ad., 4 juv.) (Hungarian Natural History Museum, Budapest).



**Figs 1–2.** *Elma matskasii* sp. nov., holotype (photo by L. Katona)



**Map 1.** The type locality of *Elma matskasii* n. sp. in Vietnam

**Description** (Figs 1–2, 6): The shell is elongate, conical, gradually tapering toward its tip. The 8.7 whorls are whitish, opaque, with a silky shine. The protoconch of 2.6 whorls is smooth. The suture is shallow, but well recognizable. The sculpture consist of rib-like wrinkles, which are stronger over the upper parts of the whorls toward the suture, but get smoothed downward. The navel is broad and deep. The last whorl is gradually pulled upward before reaching the peristome. The peristome of  $6 \times 4$  mm is rounded at its base, but becomes narrowed toward its upper two-thirds. The columellar and upper palatal edges are connected by a thin, transparent callus. The peristome margin at the basis and the sides is deflexed. The columella is slightly widened near the navel, and then it is continued in a rounded basal margin toward the parietal edge. Upward the parietal margin becomes thinner, bending inward to form a sinulus (Fig. 2).

Measurements (holotype): shell height: 15.25 mm; shell width: 5.5 mm; aperture height: 6 mm; aperture width: 4 mm; paratypes: shell height: 15–15,1 mm; shell width: 4.75–5 mm; aperture height: 4.75–6 mm; aperture width: 3.6–3.7 mm.

**Comments:** Compared to the new species, the shells of *E. sinensis* and *E. messengeri* are smaller, more compressed, their aperture is wider. *E. mansuyi* is smaller and more elongate. *E. mitis* has a smaller shell with wider central whorls. The shell of *E. oblongata* is larger, more robust, and its aperture is broader. *E. pachygyra* and the variable *E. tonkiniana* possess smaller, more compressed shells, with more dominant peristome and last whorl. *E. fultoni* is smaller, more slender. The shape of the last whorl and peristome raises doubts whether the classification of these species within *Elma* is justified.

**Etymology:** The new species is named after its collector, Dr. István Matskási, general director of the Hungarian Natural History Museum.

***Elma messengeri*** (Bavay & Dautzenberg, 1903) (Fig. 7)

BAVAY & DAUTZENBERG, 1903: p. 205, Pl. 8, Fig. 3–4, *Ennea (Elma) messengeri*, OD. Loc.: Tonkin (type locality): “Bac-Kan”.

DAUTZENBERG & FISCHER, 1905: p. 344, *Ennea (Elma) messengeri*. Loc.: Tonkin: Ha Giang.

KOBELT, 1910: p. 155, *Ennea (Elma) messengeri*.

ZILCH, 1961: p. 90, *Elma messengeri*, SD.

SCHILEYKO, 2011: p. 26, *Elma messengeri*. Loc: N Vietnam [Bắc Can, Phong Thô, Ha-Giang].

Dimensions: H 12, D 4 mm.

***Elma mitis*** Heude, 1890 (Fig. 8)

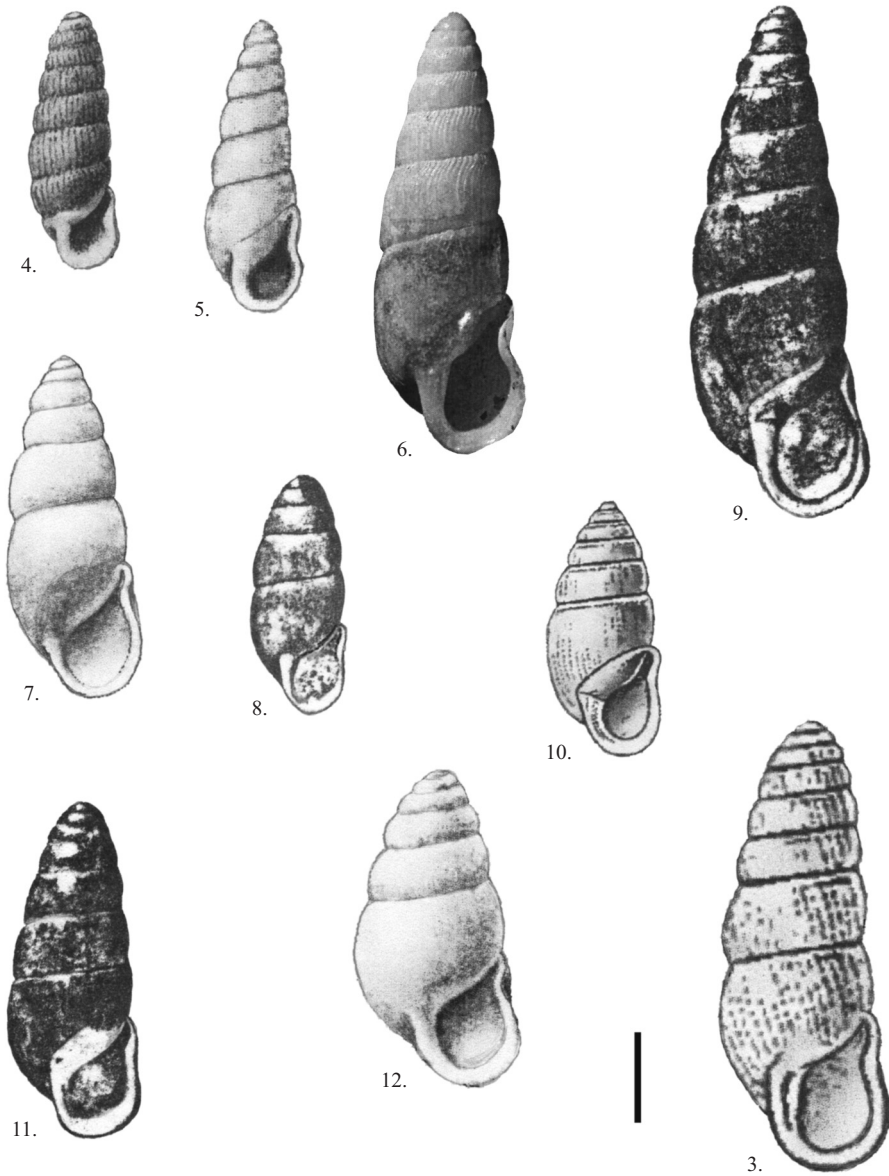
HEUDE, 1890: p. 152, Taf. 36. Fig. 16, *Elma mitis*, OD (in the figure legend: *Ennea mitis*!). Loc.: (type locality): Tchen-k'euou.

KOBELT, 1904: p. 124–125, Taf. 20, Fig. 25, *Ennea (Elma) mitis*.

KOBELT, 1910: p. 155, *Ennea (Elma) mitis*.

YEN, 1939: p. 160., Taf. 16. Fig. 34, *Elma mitis*. Loc.: Patung, Hupei = Fig. („Locus typicus: Tchen-kou, Szechwan.”).

Dimensions: H 8, D 3 mm.



**Figs 3–12.** 3. *Elma swinhoei* (H. Adams, 1866) (after ADAMS, 1866: Taf., 33, Fig. 18.); 4. *Elma* (?) *fultoni* (Bavay & Dautzenberg, 1912) (after BAVAY & DAUTZENBERG., 1912: Pl. I, Fig. 12.); 5. *Elma mansuyi* (Dautzenberg & Fischer, 1905) (after DAUTZENBERG & FISCHER, 1905: Pl. 8, Fig. 8.); 6. *Elma matskasii* sp. nov. (holotype); 7. *Elma messengeri* (Bavay & Dautzenberg, 1903) (after BAVAY & DAUTZENBERG, 1903: Taf. 8, Fig. 3.); 8. *Elma mitis* Heude, 1890 (after YEN, 1939: Taf. 16, Fig. 34.); 9. *Elma oblongata* Yen, 1939 (after YEN, 1939, Taf. 16, Fig. 32.); 10. *Elma pachygyra* (Gredler, 1885) (after KOBELT, 1904: Taf. 18, Fig. 8.); 11. *Elma sinensis* Möllendorff, 1886 (after YEN, 1939: Taf. 16, Fig. 31.); 12. *Elma tonkiniana* (Bavay & Dautzenberg, 1903) (after BAVAY & DAUTZENBERG, 1903: Taf. 8., Fig. 1.). Scale bar: 3 mm

***Elma oblongata*** YEN, 1939 (Fig. 9)

YEN, 1939: p. 160., Taf. 16. Fig. 32. Loc.: (Locus typicus) Lung-so-tan, Kwangtung.  
Dimensions: H 18.2, D 6.2 mm.

***Elma pachygyra*** (Gredler, 1885) (Fig. 10)

GREDLER, 1885: p. 9, *Stenogyra pachygyra*, OD. Locus typicus: Heng-shan oder Umgebung von Heng-dshou-fu, Hunan.

MÖLLENDORFF, 1886: p. 181. Taf. 5. Fig. 13 a–c, *Ennea (Elma) pachygyra*.

GREDLER, 1887: *Stenogyra pachygyra (Elma pachygyra)*.

KOBELT, 1904: p. 124, Taf. 18, Fig. 8, *Ennea (Elma) pachygyra*. Loc. “Aufenthalt in der chinesischen Provinz Hunan – Beschreibung nach Gredler, Abbildung nach Möllendorff.”

KOBELT, 1910: p. 155, *Ennea (Elma) pachygyra*.

YEN, 1939: p. 159., Taf. 16. Fig. 33, *Elma pachygyra*, SD. Loc. Heng-shan-hsien, Hunan.  
Dimensions: H 9, D 3.5 mm.

***Elma sinensis*** Möllendorff, 1886 (Fig. 11)

MÖLLENDORFF, 1886: p. 179, Taf. 5. Fig. 12, *Ennea (Elma) sinensis*, OD. Loc.: (type locality): “ad oppidum Dau-dshou province sinensis Hunan”.

KOBELT, 1904: p. 123–124, Taf. 18, Fig. 9, *Ennea (Elma) sinensis*.

KOBELT, 1910: p. 155, *Ennea (Elma) sinensis*.

YEN, 1939: p. 159, Taf. 16. Fig. 31, *Elma sinensis*, SD. Loc.: Dau-dshou, Hunan = Fig. (Locus typicus), Pe-shang, Hunan; Lung-so-tan, Kwangtung.

Dimensions: H 11.5, D 4.75 mm.



**Figs 13–14.** *Elma tonkiniana* (7.5 mm), Co Xan (photo by L. Katona)

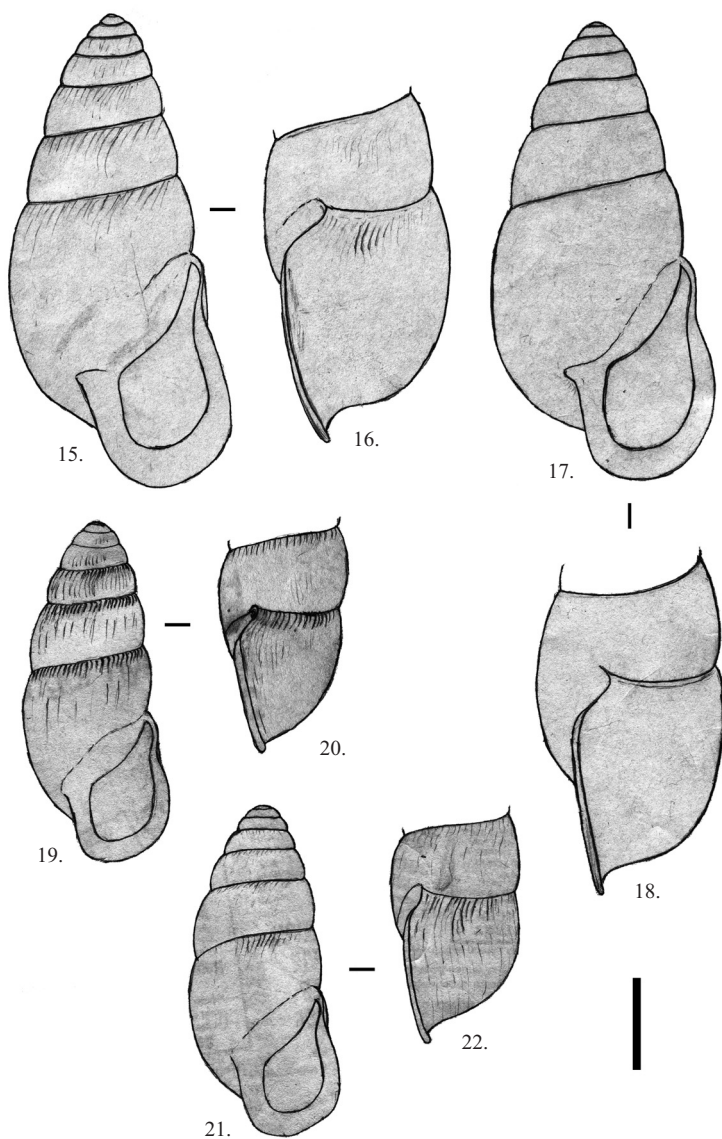
***Elma tonkiniana*** (Bavay & Dautzenberg, 1903) (Figs 12–22)

BAVAY & DAUTZENBERG, 1903: p. 204, Pl. 8, Fig. 1–2, *Ennea (Elma) tonkiniana*, OD. Loc.: Tonkin (type locality): “Bac-Kan et Cho-Moi”.

DAUTZENBERG & FISCHER, 1905: p. 344, *Ennea (Elma) tonkiniana*. Loc.: “Tonkin: Ha Giang”.

DAUTZENBERG & FISCHER, 1908: p. 171, *Ennea (Elma) tonkiniana*. Loc.: Quang-Huyen.

KOBELT, 1910: p. 155, *Ennea (Elma) tonkiniana*.



**Figs 15–22.** *Elma tonkiniana*. 15–18. Phong-Tho, NHMW; 19–22. Ha Giang, NHMW. Scale bar: 3 mm

BAVAY & DAUTZENBERG, 1912: p. 11, *Ennea (Elma) tonkiniana*.

ZILCH, 1961: p. 91. *Elma tonkiniana*, SD.

SCHILEYKO, 2011: p. 26, *Elma tonkiniana*. Loc: “N Vietnam [Bắc Can, Cho Mõi, Quang Uyen, Ny Nham, Nui Moc (=Than Hoa), Ha Giang]. Type locality – “Bac-Kan et Cho-Moi”.

Dimensions: Type material H 11, D 5.5 mm. Valiability, BAVAY & DAUTZENBERG (1912), p. 11.: H 7–20, D 3–7.5 mm.

**Material:** Vietnam, Lao Cai Prov., Co Xan, 400 msm, November 27, 1971, leg. István Matskási & György Topál, HNHM 98817/2, Figs 13–14; Vietnam, Tonkin, Phong-Tho, NHMW (Naturhistorisches Museum Wien) (ex coll. W. Klemm no. 30558/2) Figs 15–18; Vietnam, Tonkin, Ha Giang, NHMW (ex coll. W. Klemm “*Ennea mansuyi*” no. 30553/2) Figs 19–22.

Future anatomical studies of *Elma* may alter the taxonomic status of the species that are currently classified within this genus. Shell morphologies of some Chinese species are considerably different from those of the group of the type species, indicating that a subgeneric division of the genus may be appropriate.

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András VARGA  
 Mátra Museum  
 H-3200 GYÖNGYÖS, Hungary  
 Kossuth Lajos u. 40.  
 E-mail: avarga46@freemail.hu

