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# The Melongeninae of Viet Nam

(Gastropoda, Buccinidae)

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Up to now 5 species of Melongeninae (Buccinidae) have been recorded off the coasts of Viet Nam: *Volema* (*Hemifusus*) *colossea* Lamarck, 1816, *V. (H.) ternatana* (Gmelin, 1791), *V. (H.) crassicauda* (Philippi, 1849), *V. (H.) kawamurai* (Kira, 1959), and *V. (Pugilina) cochlidium* (Linnaeus, 1758). These species partially show a variability. This has led to the introduction of many synonyms and a contradictory naming of species in literature. The authors picture and discuss the species and try to work out the valid names.

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## Introduction

The Melongeninae are a small group of gastropods which were treated as a distinct family in the past but cannot be separated clearly from the Buccinidae (Wilson 1994). The species of the Western Pacific Melongeninae all belong to the genus *Volema* Röding, 1798 with the subgenera *Hemifusus* Swainson, 1840 and *Pugilina* Schumacher, 1817 (Lindner 1994). Some authors consider *Hemifusus* a subgenus of *Pugilina* to which is given genus rank (Wenz 1938, Vaught 1989).

From Vietnamese waters up to now the following species of Melongeninae are known:

- Volema* (*Hemifusus*) *colossea* Lamarck, 1816
- Volema* (*Hemifusus*) *crassicauda* (Philippi, 1849)
- Volema* (*Hemifusus*) *kawamurai* (Kira, 1959)

- Volema* (*Hemifusus*) *ternatana* (Gmelin, 1791)
- tuba* (Gmelin, 1791)
- elongata* (Lamarck, 1816)
- carinifera* (Habe & Kosuge, 1965)
- Volema* (*Pugilina*) *cochlidium* (Linnaeus, 1758)
- tuba* (Gmelin, 1791)

The naming of *Volema crassicauda* and *ternatana* is quite contradictory in literature as can be seen in table 1.

After having checked the original literature the authors decided to redescribe and picture the species from Vietnamese waters. This especially seems to be necessary because of the great variability of some of these species. So *Volema ternatana* and *V. crassicauda* show very different forms changing clearly from northern to southern Viet Nam.

Description and discussion of the species

*Volema (Hemifusus) colosseae* (Lamarck, 1816)  
Figs 1-4

Description

Shell very large, up to about 420 mm long (Hutsell, Hutsell & Pisor 2001), slender, fusiform with a tall spire and a long siphonal canal. Thin shelled and relatively light.

Apex with densely set axial ribs, broken off in most specimens.

Teleoconch of up to 7 convex whorls with axial ribs on the first whorls becoming obsolete from the 3<sup>rd</sup> or 4<sup>th</sup> whorl. Sculpture consisting of more or less regular main spiral cords with 1 to about 5 weaker cords between. Cords crossed by irregular growth marks. Suture slightly incised. Columella hardly curved, very slightly calloused, leading into a long and almost straight siphonal canal. Anal notch very weak. No umbilicus.

Colour uniform cream, columellar callus and end of the siphonal canal sometimes white. Aperture smooth, outer lip bent slightly forward, and crenulated, same colour as the entire shell. Periostracum thick and bristle. Operculum typical for Buccinidae.

**Discussion.** The shell is not very variable but shows a clear difference between the more slender male and the broader female specimens.

These show a more or less undulated shoulder carina which may lead into broad axial ribs near the aperture.

*Volema (Hemifusus) crassicauda*  
(Philippi, 1849)  
Figs 5-24

Description

Shell very large, up to about 410 mm long (Hutsell, Hutsell & Pisor 2001), slender, fusiform. Thin to medium shelled.

Apex with fine axial ribs, broken off in most specimens.

Teleoconch of 6 to 7 convex whorls with broad axial ribs on the first whorls turning into shoulder knobs or broad spines from the 3<sup>rd</sup> or 4<sup>th</sup> whorl. Sculpture consisting of more or less regular main spiral cords with 1 to about 5 weaker cords between. Cords often crossed by fine growth striae and irregular growth marks. Suture slightly incised. Columella hardly curved, leading into a long, slightly curved to almost straight siphonal canal. Anal notch well developed to very weak. No umbilicus.

Colour uniform cream to light orange; early whorls brown in some specimens. Aperture smooth, outer lip smooth or slightly crenulated, same colour as the entire shell. Anterior end of the siphonal canal flaring in some specimens. Periostracum thick and bristle, after Kira

Tab. 1. The contradictory naming of *Volema*-species in literature.

	<i>V. crassicauda</i> (Philippi, 1849)	<i>V. ternatana</i> (Gmelin, 1791)
Gmelin 1791		<i>ternatana</i> nov. <i>tuba</i> ("Buccinum") nov. <i>elongata</i> nov.
Lamarck 1822		
Philippi 1849	<i>crassicauda</i> nov.	
Kira 1972	<i>tuba</i> Gmelin <i>ternatana</i> Gmelin	
Habe & Kosuge 1973		<i>carinifera</i> nov.
Eisenberg 1981	<i>tuba</i> Gmelin <i>colosseae</i> Lamarck	<i>ternatana</i> Gmelin
Abbott & Dance 1982	<i>crassicauda</i> Philippi	<i>ternatana</i> Gmelin <i>tuba</i> Gmelin
Springsteen & Leobrera 1986		<i>carinifera</i> Habe & Kosuge
Lindner 1994	<i>ternatana</i> Gmelin	<i>carinifera</i> Habe & Kosuge
Okutani 2000	<i>crassicauda</i> Philippi	<i>tuba</i> Gmelin



**Figs 1-4.** *Volema (Hemifusus) colosseus* Lamarck. 1-2. ♂, Nha Trang, Viet Nam, 216 mm. 3-4. ♀, Nha Trang, Viet Nam, 262 mm.

(1972) sometimes thin and yellowish brown. Operculum typical for Buccinidae.

**Discussion.** The shell is very variable and shows two extreme forms with intermediate morphs:

- “*Busycon*-form” with a broadly flaring anterior lip and an almost straight canal. These specimens have strong shoulder knobs and are of a paler colour, they are found at central Viet Nam (Figs 5-14).
  - “*Pleuroploca* (Fascioliinae)-form” with a slender and slightly curved siphonal canal. These specimens only have weak shoulder knobs and a more orangish colour, they come from northern Viet Nam (Figs 19-24).
- There also seem to exist a certain sexual dimorphism with females showing a more flared anterior lip in both morphs.

Kira (1972) gave both morphs different names (*H. tuba* Gmelin = deep water form, *H. ternatana* Gmelin = shallow water form) and accepted they might be the same species. The names given are not correct, but the opinion

that these are different forms of the same species is right as can be shown by the intermediate shells from different localities (Figs 15-18). In both forms as well thin to medium shelled specimens occur, so that both forms seem to live in deeper and shallower water. Besides from Viet Nam the two morphs also are known from China, Taiwan and Japan.

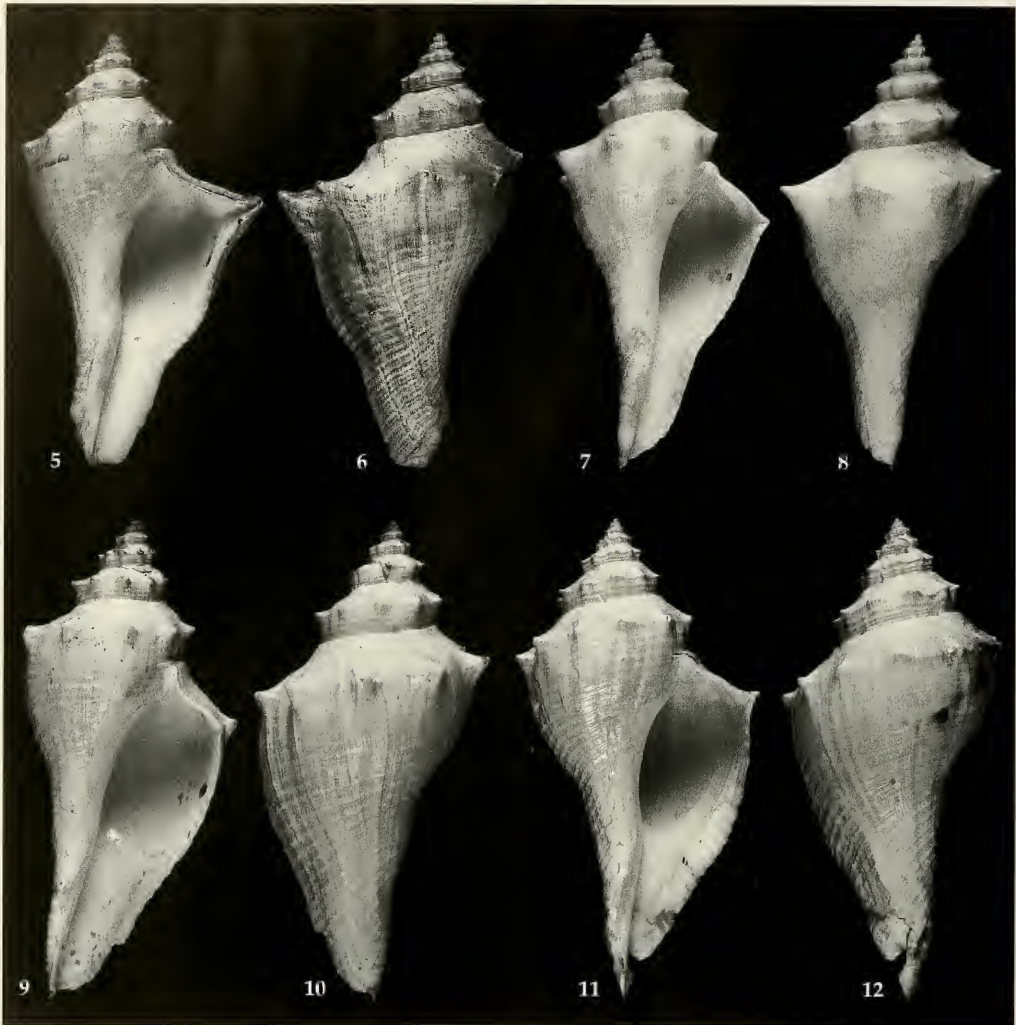
*Volema (Hemifusus) kawamurai* (Kira, 1959)  
Figs 25-28)

**Description**

Shell very large, up to 226 mm long (Thach, personal information), slender, fusiform with a relatively high spire. Thin to medium shelled and relatively light.

Apex with very fine axial ribs, broken off in most specimens.

Teleoconch of up to 7.5 convex whorls, axial ribs developping from the 3<sup>rd</sup> or 4<sup>th</sup> whorl turning into shoulder knobs on the 4<sup>th</sup> to 5<sup>th</sup> whorl. These turn into shoulder spines on the

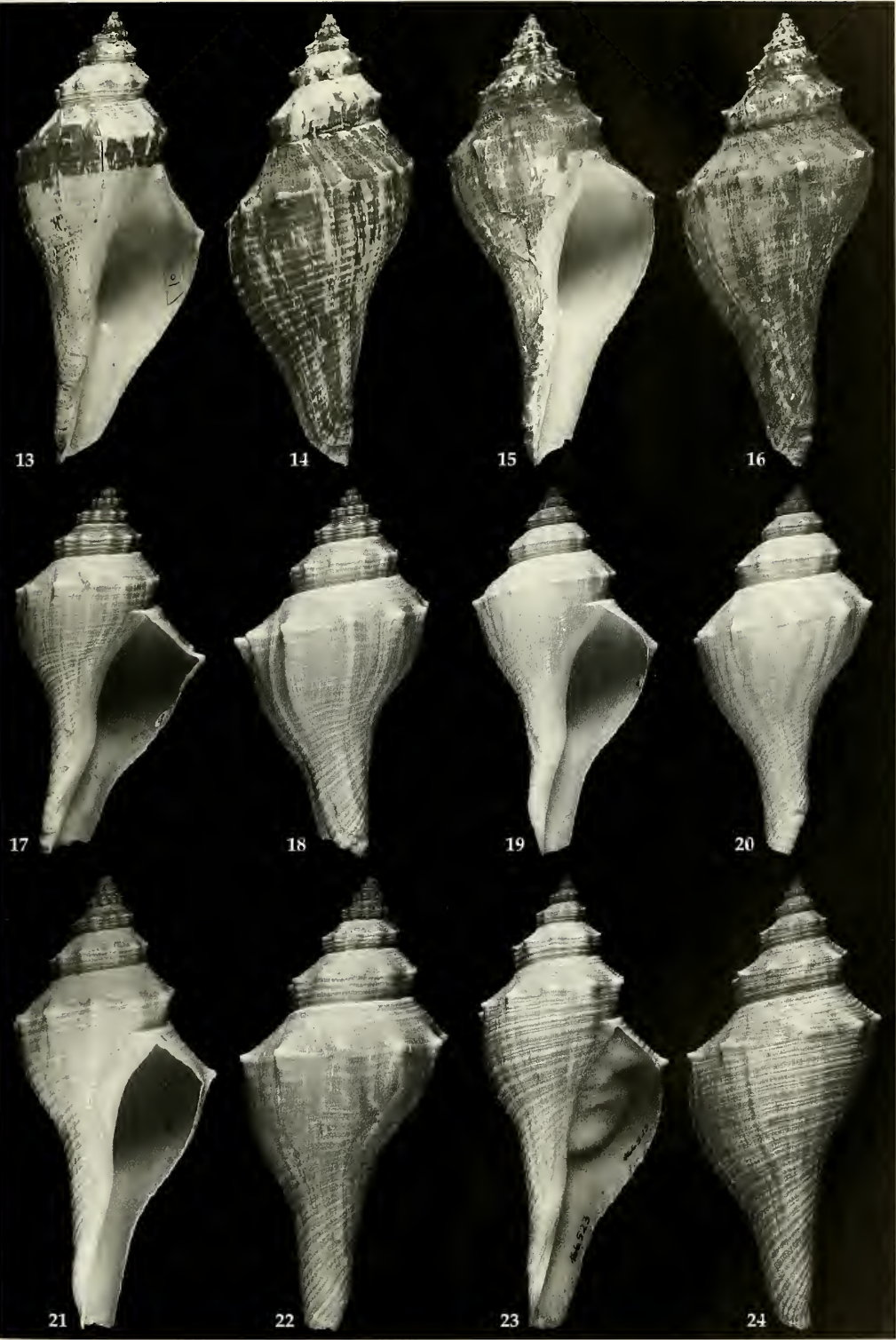


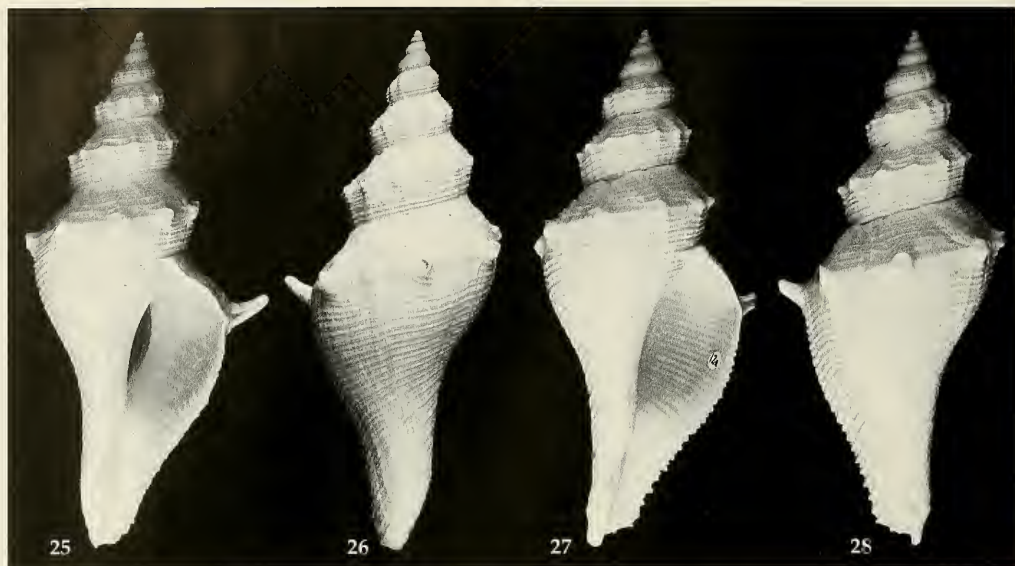
Figs 5-12. *Volema (Hemifusus) crassicauda* Philippi. 5-6. No locality, SMF ("Busycon-form"), 144 mm. 7-8. Nha Trang, Viet Nam ("Busycon-form"), 146 mm. 9-10. Taiwan ("Busycon-form"), 175 mm. 11-12. "China", SMF ("Busycon-form"), 169 mm.

body whorl. Sculpture consisting of more or less regular main spiral cords with one weaker cord between. Cords crossed by irregular growth striae. Suture slightly incised. Columella hardly curved and not calloused, leading into a short and almost straight siphonal canal. Anal notch weak. No umbilicus.

Colour uniform cream. Aperture lirate within, outer lip crenulated, same colour as the entire shell, anterior end of the siphonal canal lighter to white. Periostrakum thick and bristle. Operculum typical for Buccinidae.

Figs 13-24. *Volema (Hemifusus) crassicauda* Philippi. 13-14. Japan?, SMF ("Busycon-form"), 170 mm. 15-16. No locality, SMF, 155 mm. 17-18. Thanh Hoa, Viet Nam, 107 mm. 19-20. Thanh Hoa, Viet Nam ("Pleuroploca-form"), 148 mm. 21-22. Thanh Hoa, Viet Nam ("Pleuroploca-form"), 132 mm. 23-24. "Indian Ocean", SMF, No. 116523, ex coll. Rolle ("Pleuroploca-form"), 125 mm.



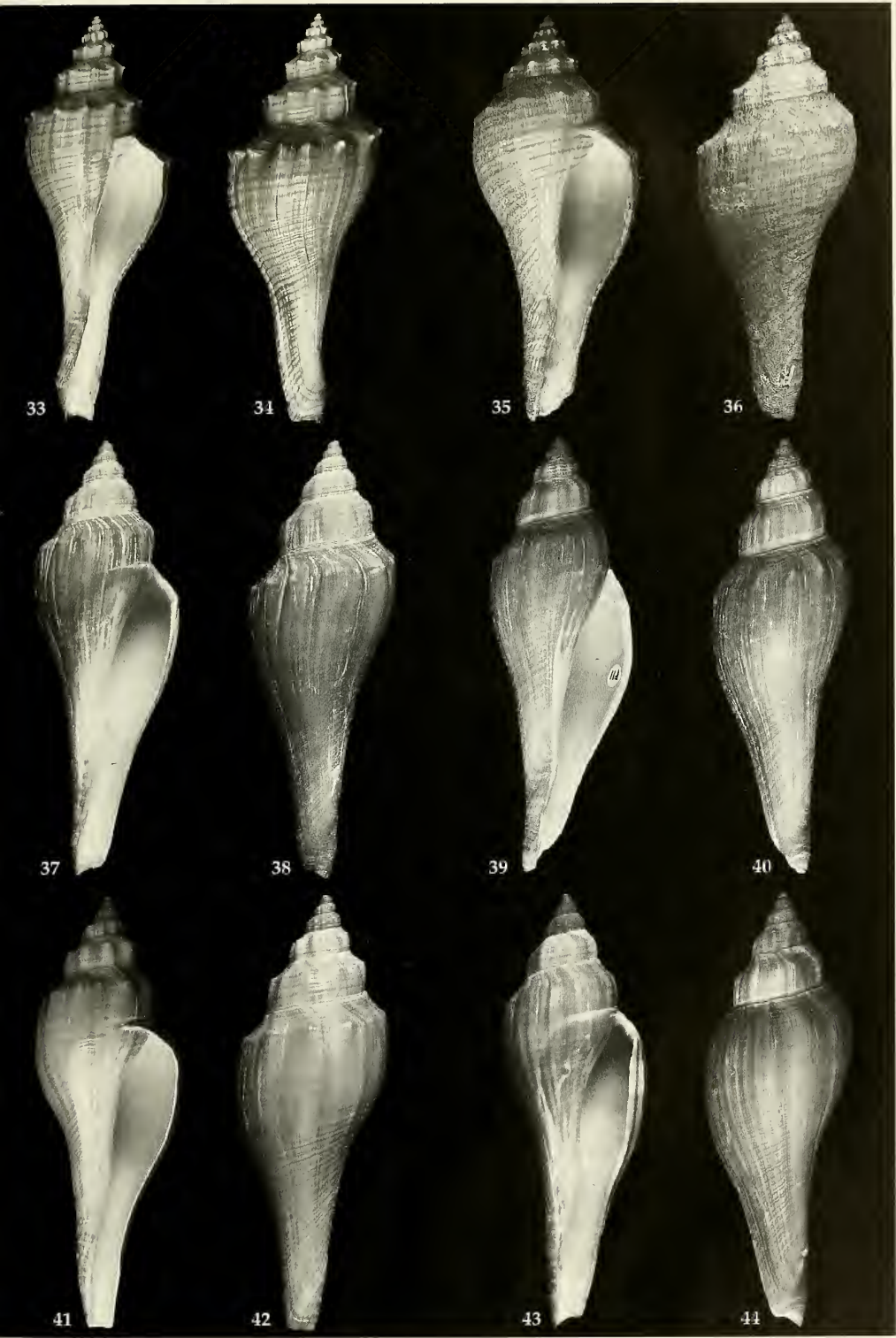


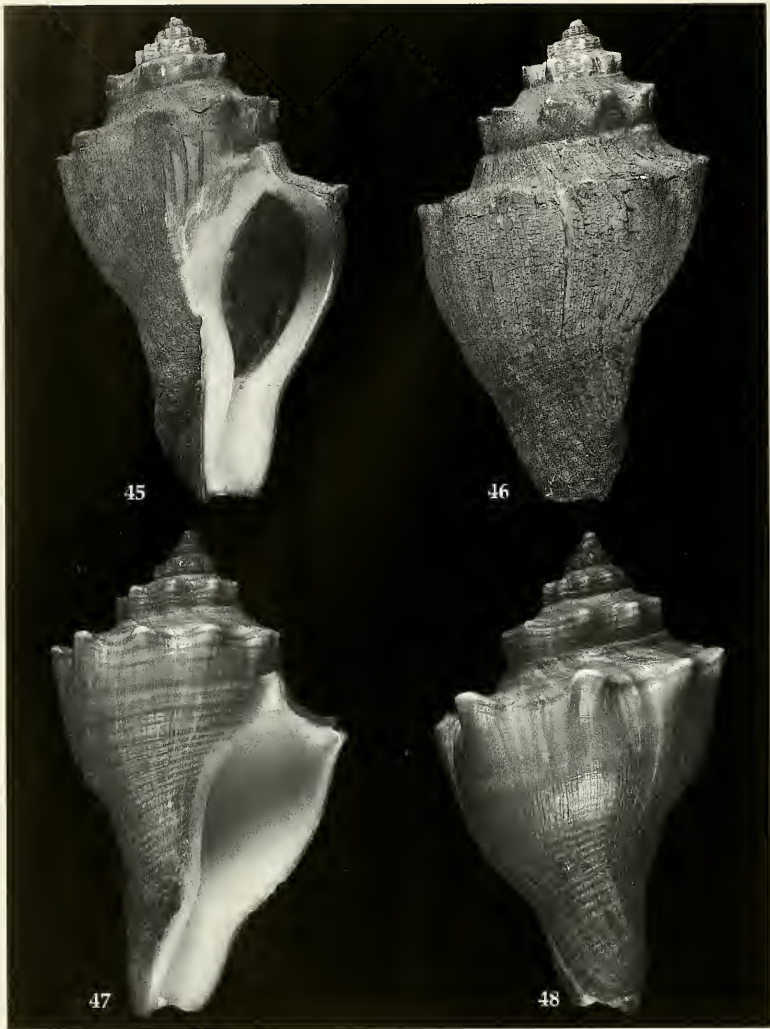
Figs 25-28. *Volema (Hemifusus) kawamurai* Kira. 25-26. Nha Trang, Viet Nam, 173 mm. 27-28. Nha Trang, Viet Nam, 147 mm.



Figs 29-32. *Volema (Hemifusus) ternatana* Gmelin. 29-30. Long Hai, Viet Nam, 105 mm. 31-32. Long Hai, Viet Nam, 95 mm.

Figs 33-44. 33-34. Philippines, 137 mm. 35-36. Nha Trang, Viet Nam (with periostracum), 83 mm. 37-38. Phu Quoc, Viet Nam ("*elongata*" Lamarck), 106 mm. 39-40. Phu Quoc, Viet Nam ("*elongata*" Lamarck), 101 mm. *Volema (Hemifusus) ternatana* Gmelin. 41-42. Phu Quoc, Viet Nam ("*elongata*" Lamarck), 90 mm. 43-44. Phu Quoc, Viet Nam ("*elongata*" Lamarck), 79 mm.





Figs 45-48. *Volema (Pugilina) cochlidium* Linnaeus. 45-46. Philippines (with periostracum), 129 mm. 47-48. Nha Trang, Viet Nam, 65 mm.

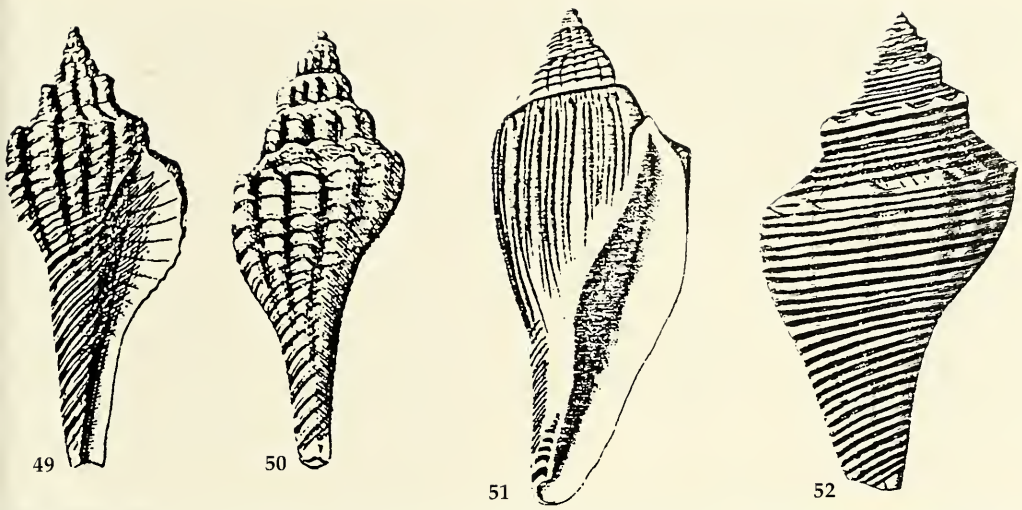
**Discussion.** The shell is not very variable but shows a difference between the more slender male and the broader female specimens. This species is endemic to Vietnamese waters.

*Volema (Hemifusus) ternatana*  
(Gmelin, 1791)  
(Figs 29-44, 49-51)

Synonyms. *V. tuba* (Gmelin, 1791), *V. elongata* (Lamarck, 1816), *V. carinifera* (Habe & Kosuge, 1965).

#### Description

Shell very large, up to about 271 mm long (Hutsell, Hutsell & Pisor 2001), slender, fusiform with a tall spire and a long siphonal canal. Thin to medium shelled and so quite different in weight.



Figs 49-52. Reference figures from Martini and Chemnitz on which Gmelin's descriptions are based (taken from Richardson, Abbott & Davis 1979). 49-50. *Murex ternatanus* Gmelin, 1791 (= *Volema ternatana*). 51. *Buccinum tuba* Gmelin, 1791 (= *Volema ternatana*). 52. *Murex tuba* Gmelin, 1791 (= *Volema cochlidium*).

Apex with very fine, densely set axial ribs, broken off in most specimens.

Teleoconch of about 6 convex whorls with a shoulder carina and axial ribs on the first whorls getting obsolete from the 3<sup>rd</sup> or 4<sup>th</sup> whorl in some specimens; most shells showing knobs or ribs on the shoulder. Sculpture of the first whorls consisting of relatively regular spiral cords, on the last whorl with 1 or 2 weaker cords between these, cords are crossed by fine growth marks. Some specimens more or less smooth, showing only growth striae ("elongata" Lamarck). Suture slightly incised. Columella hardly curved, very slightly calloused, leading into a long and almost straight siphonal canal. Anal notch weak to quite well developed. No umbilicus.

Colour light to dark brown, spiral cords often darker; columellar callus and end of the siphonal canal lighter in some specimens. Aperture smooth, outer lip slightly bent forward, and very weakly crenulated, light cream to whitish. Periostrakum thick and bristle. Operculum typical for Buccinidae.

**Discussion.** The species shows a high degree of geographical variation: shells from North and Central Viet Nam show a strong sculpture and are darker (Figs 29-32, 35, 36), while those from the Gulf of Thailand (Phu Quoc Island) are more or less smooth and lighter in colour

(Figs 37-44). This form was described 1791 by Gmelin as *Buccinum tuba* (see fig. 51) and 1822 by Lamarck as *Pyrula elongata*. There are intergrades between the northern and the southern forms (see figs 33-38).

The pictures in Martini & Chemnitz (1769-95) on which Gmelin's description of *Murex ternatana* is based (Figs 49, 50) show the strongly sculptured form (Richardson, Abbott & Davis 1979).

***Volema (Pugilina) cochlidium*  
(Linnaeus, 1758)  
Figs 45-48, 52)**

Synonym. *V. tuba* (Gmelin, 1791).

**Description**

Shell large to very large, up to about 15 cm long, broad, pyriform. Thin to medium shelled.

Apex with axial ribs, broken off in most specimens.

Teleoconch of up to 6 shouldered whorls with axial ribs on the first whorls which turn to shoulder knobs or broad spines from the 3<sup>rd</sup> or 4<sup>th</sup> whorl. Sculpture consisting of more or less regular spiral cords on the first whorls getting minute; body whorl relatively smooth, spiral cords only on the siphonal canal. Axial sculpture consisting of very fine irregular growth

striae and growth marks. Suture slightly to deeply incised. Columella hardly curved, leading into a short and straight siphonal canal. Anal notch weak. No umbilicus.

Colour uniform dark or light brown, cream, yellowish, rarely pure white, aperture and columella yellowish brown. Aperture smooth inside, outer lip crenulated. Periostracum thick and bristle. Operculum typical for Buccinidae.

**Discussion.** The shell is not very variable in shape but in colour: there are forms from pure whitish to dark brown with all intermediate shades of brown. There is little difference between male and female specimens.

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