

Ten New Records of the Korean Ovulidae species

Jun-Sang Lee, Dong-Bum Kho¹ and Duk-Ki Min²

Institute of Environmental Research, Kangwon National University, Chunchon 200-701

¹*Yeonkang Hospital Psychiatrist, Jukseongseokil 6, Jeju-shi*

²*Min Molluscan Research Institute, 771-11, Yeoksam-dong, Kangnam-gu, Seoul 135-928*

ABSTRACT

Specimens of the ten ovulid species were collected from Jeju Island, and identified as followed: *Pellasmimnia angasi* (Reeve, 1865); *Phenacovolva pseudogracilis* Cate & Azuma, 1973; *Phenacovolva rehderi* Cate, 1973; *Crenovolva leopardus* Fehse, 2002; *Diminovula coroniola* (Cate, 1973); *Diminovula stigma* (Cate, 1978); *Diminovula whitworthi* Cate, 1973; *Primovula roseomaculata* (Schepman, 1909); *Prionovolva ericae* Cossignani & Calo, 2002; *Testudovolva nebula* (Azuma & Cate, 1971). These species are new to Korean Malacofauna, and described with the illustrations for the shell morphologies.

Keywords: Ovulid, Jeju Island, *Pellasmimnia*, *Phenacovolva*, *Crenovolva*, *Diminovula*, *Primovula*, *Testudovolva*, first record, Korean Malacofauna.

INTRODUCTION

The ovulidae is belong to the superfamily Cypraeoidea. In the Cypraeoidea, the following 4 groups are reported: Cypraeidae, Ovulidae, Pediculariidae and Eocypraeidae. The members of the Ovulidae have a typical cowry-like animals with smooth or have fine striate on shell surface, with two cephalic tentacles, basal eyes, and a long proboscis. Ovulid species are found in tropical and temperate sea. Most species are found at 10 to 50 m in depth. There are more than 100 ovulid species in about 16 genera worldwide (Wilson, 1993). Recently, Lorenz & Fehse (2009) are divided into three families (Ovulidae, Pediculariidae and Eocypraeidae) and seven subfamilies (Prionovolviniae, Simniinae, Ovulinae, Aclyvolviniae, Pediculariinae,

Cypraediinae and Sulcocypraeinae).

In 2004, Lee *et al.* published the article on the Ovulidae, in which from Korea they concluded 27 species inhabit in the Korean waters. Recently, Kho *et al.* (2015) added three Ovulid species.

In this study, systematically rearrange of Korean Ovulidae species and report of the 10 ovulid species new to Korean malacofauna. The new reported species redescribed for some morphological characteristics with figures. As a result, 37 species in 16 genera of 3 subfamilies belong to Family Ovulidae have been reported from the Korean waters so far. Specimens, which have deposited in the Min Molluscan Research Institute, used for the present study were sampled with SCUBA diving in the subtidal hardbottom substrate of the Jeju Island from 2002 to 2004. Morphological characters for identification follows original articles of Cate (1973, 1978), Azuma & Cate (1971) and encyclopedias of Okutani *et al.*, (2000), Lorenz & Fehse (2009).

RESULTS

* Add to the Korean malacofauna first time.

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Corresponding author : Jun-Sang Lee
Tel: +82 (33) 250-7409, e-mail: sjun@kangwon.ac.kr
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List of Korean Ovilidae species

- Family Ovilidae Fleming, 1882 개오지붙이과**
Subfamily Ovilinae Fleming, 1882 개오지붙이아과
Genus Calcarovula Cate, 1973 카누두루마리고등속 (신칭)
Calcarovula longirostrata (Sowerby, 1828)
 카누두루마리고등
Genus Pellasimnia Schilder, 1939 잘린두루마리고등속 (신칭)
Pellasimnia angasi (Reeve, 1865) 양가시두루마리고등
 (신칭)*
Pellasimnia improcera (Azuma & Cate, 1971)
 잘린두루마리고등
Genus Phenacovolva Iredale, 1930 두루마리고등속
Phenacovolva birostris (Linnaeus, 1767)
 뽕족두루마리고등
Phenacovolva brevirostris (Schumacher, 1817)
 두툼파배기두루마리고등
Phenacovolva fusula Cate & Azuma, 1973
 작은구름무늬두루마리고등
Phenacovolva lahainaensis (Cate, 1969)
 구름무늬두루마리고등
Phenacovolva nectarea Iredale, 1930
 곧은부리두루마리고등
Phenacovolva pseudogracilis Cate & Azuma, 1973
 연보라두루마리고등 (신칭)*
Phenacovolva poppei Fehse, 2001
 보라파도무늬두루마리고등
Phenacovolva rehderi Cate, 1973 레데리두루마리고등
 (신칭)*
Phenacovolva rosea (A. Adams, 1854) 가시두루마리고등
Phenacovolva suberflexa (Adams & Reeve, 1848 in
 1848-50) 곶랑두루마리고등
Genus Primovula Thiele, 1925 어깨토끼고등속
Primovula frumentum (Sowerby, 1828) 어깨토끼고등
Genus Volva Röding, 1798 계란두루마리고등속
Volva volva habei Oyama, 1961 계란두루마리고등
Subfamily Prionovolviniae Fehse, 2009 토끼고등아과 (신칭)
Genus Crenavolva Cate, 1973 톱니개오지붙이속 (신칭)
Crenavolva leopardus Fehse, 2002 어깨끝갈색토끼고등
 (신칭)*
Genus Cuspivolva Cate, 1973 뽕족토끼고등속 (신칭)
Cuspivolva cuspis (Cate, 1973) 뽕족토끼고등
Cuspivolva tigris (Yamamoto, 1971) 호랑이무늬토끼고등
Genus Dentiovula Habe, 1961 무늬토끼고등속 (신칭)

- Dentiovula colobica* (Azuma & Cate, 1971)
 진한무늬토끼고등
Genus Diminovula Iredale, 1930 반점개오지붙이속 (신칭)
Diminovula coroniola (Cate, 1973) 반점개오지붙이 (신칭)*
Diminovula culmen (Cate, 1973) 쿨멘개오지붙이
Diminovula kosugei (Cate, 1973) 코수게반점개오지붙이
Diminovula stigma (Cate, 1978) 흑등반점개오지붙이
 (신칭)*
Diminovula whitworthi Cate, 1973 흐린반점개오지붙이
 (신칭)*
Genus Habuprionovolva Azuma, 1970 구슬개오지붙이속
Habuprionovolva aenigma (Azuma & Cate, 1971)
 얼룩구슬개오지붙이
Habuprionovolva basilia (Cate, 1978) 작은구슬개오지붙이
Habuprionovolva hervieri (Hedley, 1899) 구슬개오지붙이
Genus Primovula Thiele, 1925 토끼고등속
Primovula roseomaculata (Schepman, 1909)
 장미개오지붙이 (신칭)*
Primovula frumentum (Sowerby, 1828) 어깨토끼고등
Genus Prionovolva Iredale, 1930 분홍개오지붙이속
Prionovolva brevis (G.B. Sowerby I, 1828)
 흰띠분홍개오지붙이
Prionovolva bulla Adams & Reeve, 1848
 둥근흰개오지붙이
Prionovolva coarctata Adams & Reeve, 1848
 만두토끼고등
Prionovolva ericae Cossignani & Calo, 2002
 흐린분홍개오지붙이 (신칭)*
Genus Sandalia 주홍토끼고등속 (신칭)
Sandalia triticea (Lamarck, 1810) 주홍토끼고등
Genus Testudovolva 거북개오지붙이속 (신칭)
Testudovolva nebula (Azuma & Cate, 1971)
 구슬거북개오지붙이 (신칭)*
Subfamily Simniinae F.A. Schilder, 1925
꼭지토끼고등아과 (신칭)
Genus Contrasimnia 옆줄토끼고등속 (신칭)
Contrasimnia xanthochila (Kuroda, 1928)
 가는옆줄토끼고등
Genus Quasisimnia 꼭지두루마리고등속 (신칭)
Quasisimnia hirasei (Pilsbry, 1913)
 누렁꼭지두루마리고등

Syatematic Accounts

Class Gastropoda Cuvier, 1791 복족강
 Order Littorinimorpha Golikov & Starobogatov, 1975
 총알고둥목
 Superfamily Cypraeoidea Rafinesque, 1815 개오지상과
 Family Ovulidae Fleming, 1882 개오지불이과
 Subfamily Ovulinae Fleming, 1882 개오지불이아과
 Genus *Pellasmimnia* Schilder, 1939 잘린두루마리고둥속

1. *Pellasmimnia angasi* (Reeve, 1865) 양가시두루마리고둥 (Fig.1)

Ovulum angasi Reeve, 1865, pl. 10, figs. 43a, b.
Pellasmimnia angasi: Lorenz & Fehse, 2009, p. 115, pls. 155, 160, figs. 1-13.
Phenacovolva (*Phenacovolva*) *angasi*: Cate, 1973, p. 97, fig. 220; Higo *et al.*, 1999, p. 138.
Synonymy: *Ovulum haynesi* G.B. Sowerby III, 1889; *Phenacovolva exsul* Iredale, 1935; *Neosimimnia subreflexa* Allan, 1956.
Type locality: Port Curtis, Australia (Queensland).
Material examined: 2 specimens, Munseom (Jeju Island), 6 m in depth, May 2002 (D.B. Koh).
Measurements: Length 16 mm, width 6 mm.
Description: The shell is medium to large size, narrow spindle-shaped and solidly formed. The middle of the body whorl is weakly inflated and narrowing abruptly towards the terminal portion. The dorsum is weakly inflated cylinder in shape, glossy, smooth, with numerous fine transverse incised striate throughout. The anal and siphonal channels are straight and nearly similar length. The terminals taper to sharp, broad point. The aperture is fairly narrow, widening anteriorly, abruptly constricted at the siphonal channel. The columella is smooth, glossy, nearly straight, narrowing to the front. The aperture is almost straight, narrow aperture lip is smooth and glossy, thickened, acutely shouldered at the siphonal channel. The outer lip gently rounded, inner margin keeled, but does not reach the siphonal canal. Right margin is straw yellow in color. The surface is cream-white to light beige in shining color, interior a pale pinkish-grey, with siphonal canal a pale red color.
Distribution: Japan, Philippines, W. Thailand, Indonesia, all of Australia.
Remark: *Pellasmimnia angasi* is mainly found on

Melithaea spp. and *P. impocera* lives on *Antipathes* spp. (Lorenz & Fehse, 2009).

Genus *Phenacovolva* Iredale, 1930 두루마리고둥속
2. *Phenacovolva pseudogracilis* Cate & Azuma in Cate, 1973 연보라두루마리고둥 (Fig.2)

Phenacovolva (*Pellasmimnia*) *weaveri pseudogracilis* Cate & Azuma, 1973, p. 101, text figs. 228, 228c.
Phenacovolva pseudogracilis: Alain, 2008, p. 111, fig. 8; Lorenz & Fehse, 2009, p. 130, pl. 183, 160, figs. 5-13.
Type locality: off Tomida, Kii Peninsula, Japan.
Material examined: 1 specimen, Munseom (Jeju Island), 13 m in depth, May 2002 (D.B. Koh).
Measurements: Length 35 mm, width 9 mm.
Description: The shell is medium to large size, narrow spindle-shaped and solidly formed. The middle of the body whorl is inflated and narrowing abruptly towards the terminal portion. The dorsum is elongate ovate, smooth roundly formed, angularly elevated centrally, with wavy transverse striate both terminal portions. The base is narrowly ovate, glossy and smooth, with thin transparent callus, with the yellow line on left side of base. The anal and siphonal channels are straight and nearly similar length. The terminals taper to sharp, broad point. The columella is broad, smooth, glossy, round, narrowing to the front. The aperture is medium breadth, fairly narrow, widening anteriorly, abruptly constricted at the siphonal channel. Aperture lip is smooth and glossy, thickened, acutely shouldered at the siphonal channel. The outer lip is thickened, somewhat narrow. Outer lip shoulder is straw yellow in color. The surface is light brown or pale violet, with longitudinal darker brown patterns. Terminal tip dark orange-brown and yellow-orange line fills the shoulder of the outer lip.
Distribution: Japan, Philippines, Hong Kong, Indonesia.
Remark: *Phenacovolva pseudogracilis* is mainly found on *Antipathes* spp. from 10 to 50 m in depth (Lorenz & Fehse, 2009).

3. *Phenacovolva rehderi* Cate, 1973 레데리두루마리고둥 (Fig. 3)

Phenacovolva rehderi Cate, 1973, p. 99, text figs. 224,

224a; Alain, 2008, p. 111, fig. 11; Lorenz & Fehse, 2009, p. 131, pl. 185, figs. 4-15, pl. 186 figs. 1, 2, 4.

Phenacovolva (Pellasiimnia) rehderi: Higo *et al.*, 1999, p. 138.

Synonymy: *Phenacovolva (Turbovula) kashiwajimensis* Cate & Azuma in Cate, 1973

Type locality: off Kii Peninsula, Japan.

Material examined: 2 specimens, Munseom (Jeju Island), 5 m in depth, May 2002 (D.B. Koh).

Measurements: Length 33 mm, width 9.5 mm.

Description: The shell is medium to large size, spindle-shaped and solidly formed. The middle of the body whorl is well inflated and narrowing gradually towards the terminal portion. The dorsum is elongate ovate, smooth roundly formed, angularly elevated centrally, with wavy transverse striate both terminal portions. The base is narrowly ovate, glossy and smooth, with thin yellowish white transparent callus, with the clear yellow line on left side of base. The anal and siphonal channels are straight and nearly similar length. The terminals taper to sharp, broad point. The funiculum a longitudinal series of low knobs, two or three of which are fairly prominent. The columella is broad, smooth, glossy, round angulated in middle portion, narrowing to the front. The aperture is fairly narrow, widening anteriorly, the down side wider than upper side and gradually constricted at the siphonal channel. The aperture is medium breadth. Aperture lip is smooth and glossy, thickened, acutely shouldered at the siphonal channel. The outer lip is thickened, somewhat narrow. Outer lip shoulder is straw yellow in color. The surface is light reddish brown, with transverse light broad band. Terminal tip yellow-orange in color and yellow line fills the shoulder of the outer lip.

Distribution: Western Pacific.

Remark: *Phenacovolva rehderi* is mainly found on *Antipathes* spp. from 15 to 80 m in depth (Lorenz & Fehse, 2009).

Subfamily Prionovolvinæ Fehse, 2009 토끼고둥아과

Genus *Crenavolva* Cate, 1973 톱니개오지불이속

4. *Crenavolva leopardus* Fehse, 2002 어깨끝갈색토끼고둥 (Fig. 4)

Crenavolva leopardus Fehse, 2002: p. 50, text fig. 56, 58, 60; Lorenz & Fehse, 2009, p. 70, pl. 76, figs. 1-12.

Synonymy: *Crenavolva (Crenavolva) renovata* Cate, 1973.

Type locality: Caramata Passage, near Singapore.

Material examined: 1 specimen, Munseom (Jeju Island) 5 m in depth, May 2004 (D.B. Koh).

Measurements: Length 12 mm, width 4 mm.

Description: The shell is small size, elongated and roughly cylindrical shape, solidly formed. The middle of the body whorl is carinated angle above the center and narrowing gradually towards the terminal portion. The dorsum is angularly elevated centrally, with many wavy transverse striate in the whole body. The base is angulated ovate, glossy and smooth, with thin reddish brown transparent callus. The fossula is smooth and prominent, forming a keel or columella. The anal and siphonal channels are relatively straight and nearly similar length. The terminals taper to blunt, broad point. The funiculum a longitudinal series of low knobs, two or three of which are fairly prominent. The columella is broad, smooth, glossy, depressed in middle portion, narrowing to the front. The aperture is fairly narrow, widening anteriorly, the middle side narrow than upper and down side, gradually constricted at the siphonal channel. Aperture lip is crenulate and glossy, thickened, acutely shouldered at the siphonal channel. The surface is light reddish brown, with transverse light broad band. Terminal tip is with thick marginal callus, reddish brown in color and same color in the shoulder of the outer lip.

Distribution: Indo-Pacific.

Genus *Diminovula* Iredale, 1930 반점개오지불이속

5. *Diminovula coroniola* (Cate, 1973) 반점개오지불이

(Fig. 5)

Pseudosimnia coroniola Cate, 1973: p. 31, text fig. 60.

Pseudosimnia (Inflatovula) coroniola: Higo *et al.*, 1999, p. 133.

Diminovula coroniola: Lorenz & Fehse, 2009, pp. 57-58, pl. 53, figs. 1-9.

Type locality: off the Kii Peninsula, Japan.

Material examined: 2 specimens, Munseom (Jeju Island), 5-15 m in depth, May 2002 (D.B. Koh).

Measurements: Length 14.5 mm; width 9 mm.

Description: The shell is small, ovate-pyriform in shape, roundly humped dorsal side. Both terminals distinctly produced, nearly equal projection posterior and anterior tips. The Dorsum is glossy, smooth, roundly well inflate. The base is glossy, smooth, roundly inflate with thin yellowish brown transparent callus. The anal and siphonal channels are relatively narrow and nearly similar length. The funiculum a longitudinal series of low knobs, two of which are fairly prominent. The columella is broad, smooth, glossy, well inflated in middle portion, narrowing to the front. The aperture is fairly narrow, widening anteriorly, and gradually constricted at the siphonal channel. Aperture lip is crenulate and glossy, thickened, roundly shouldered at the siphonal channel. The surface is light brown, with discontinuity transverse reddish punctate. Terminal tip is with thick marginal callus, yellowish white in color and same color in the shoulder of the outer lip.

Distribution: Japan, Philippines, Taiwan, Indonesia.

Remark: *Diminovula coroniola* is mainly found on *Dendronephthya* spp. from 18 m to deep water (Lorenz & Fehse, 2009).

6. *Diminovula stigma* (Cate, 1978) 흑등반점개오지불이

(Fig. 6)

Pseudosimnia stigma Cate, 1978, p. 196, pl. 2, fig. 6.

Diminovula stigma: Lorenz & Fehse, 2009, p. 58, pl. 55, figs. 7-11, 10. pl. 56, figs. 1-8.

Pseudosimnia (Inflatovula) stigma: Higo *et al.*, 1999, p. 133.

Type locality: off Wakayama, Kii Channel, Japan.

Material examined: 2 specimens, Munseom (Jeju Island), 5-15 m in depth, May 2002 (D.B. Koh).

Measurements: Length 15 mm, width 8.5 mm.

Description: The shell is small, ovate-pyriform in shape, roundly humped dorsal side. Both terminals distinctly produced, nearly equal projection posterior and anterior tips. The Dorsum is glossy, smooth, roundly well inflate, with broad space transverse incised striate throughout and with the concentric dorsal striation in both terminal portion. The base is glossy, smooth, roundly inflate with thin milk-white transparent callus. The fossula is smooth and

prominent, forming a keel or columella. The anal and siphonal channels are relatively narrow and nearly similar length. The funiculum a longitudinal series of low knobs, two or three of which are fairly prominent. The columella is broad, smooth, glossy, well inflated in middle portion, narrowing to the front. The aperture is fairly narrow, widening anteriorly, and gradually constricted at the siphonal channel. Aperture lip is very well crenulate and glossy, thickened, roundly shouldered at the siphonal channel. The surface is light pink with discontinuity transverse reddish brown punctate. The adapical terminal is spatulate. The terminal tip is pale pink in color and yellow-orange line fills the shoulder of the outer lip.

Distribution: Solomon Islands, Japan, Philippines, Taiwan, Indonesia.

Remark: *Diminovula stigma* is mainly found on *Dendronephthya* spp. from 5 to 90 m in depth (Lorenz & Fehse, 2009).

7. *Diminovula whitworthi* Cate, 1973

흐린반점개오지불이 (Fig. 7)

Diminovula whitworthi Cate, 1973, p. 30, text fig. 58; Lorenz & Fehse, 2009, p. 52, pl. 44, figs. 3-9.

Pseudosimnia (Diminovula) whitworthi: Higo *et al.*, 1999, p. 132.

Synonymy: *Labiovula nubila* Cate & Azuma in Cate, 1973.

Type locality: Ogokuda Beach in Shionomisaki, Cape Shio, Kii Peninsula, Japan.

Material examined: 1 specimen, Munseom (Jeju Island), 5-15 m in depth May 2002 (D.B. Koh).

Measurements: Length 14 mm, width 8 mm.

Description: The shell is small, ovate-pyriform in shape, roundly humped dorsal side. Both terminals produced, nearly equal projection posterior and anterior tips. The Dorsum is glossy, smooth, roundly well inflate, with close longitudinal incised striate throughout and without the concentric dorsal striation in both terminal portion. The base is glossy, smooth, roundly inflate with thin light pink transparent callus. The fossula is smooth and prominent, forming a keel or columella. The anal and siphonal channels are relatively narrow and nearly similar length. The

funiculum is a longitudinal low knobs, one or two of which are fairly prominent. The columella is broad, smooth, glossy, well inflated in middle portion, narrowing to the front. The aperture is fairly narrow, widening anteriorly, and gradually constricted at the siphonal channel. Aperture lip is very well crenulated and glossy, thickened, roundly shouldered at the siphonal channel. The surface is light pink with discontinuity transverse brown punctate. The terminal tip is light pink in color.

Distribution: Japan, Philippines, Indonesia, Queensland.

Remark: *Diminovula whitworthi* is mainly found on *Dendronephthya* spp. from 20 to 35 m in depth (Lorenz & Fehse, 2009).

Genus *Primovula* Thiele, 1925 토끼고둥속

8. *Primovula roseomaculata* (Schepman, 1909)

장미개오지불이 (Fig. 8)

Amphipera roseomaculata Schepman, 1909: p. 142. pl. 11, fig. 10.

Primovula roseomaculata: Alain, 2008, p. 109, fig. 15; Lorenz & Fehse, 2009, p. 77, pl. 89, figs. 1-10.

Primovula (Amphipera) roseomaculata roseomaculata: Cate, 1973, pp. 45-46, fig. 92.

Synonymy: *Pseudosimnia (Diminovula) florida* Kuroda, 1958; *Primovula (Adamantia) sinomaris* Cate, 1973; *Primovula (Adamantia) kurodai* Cate & Azuma in Cate, 1973.

Type locality: Sibigae Station, Sulu Sea.

Material examined: 1 specimen, Munseom (Jeju Island), 18 m in depth, May 2002 (D.B. Koh).

Measurements: Length 12 mm, width 5.5 mm.

Description: The shell is small size, elongated and roughly cylindrical shape, solidly formed. The middle of the body whorl is roundly carinated angle above the center and narrowing gradually towards the terminal portion. The dorsum is angularly elevated centrally, with many fine wavy transverse striate in the whole body. The base is angulated ovate, glossy, smooth, with thin yellowish white transparent callus. The fossula is smooth and prominent, forming a keel or columella. The anal and siphonal channels are relatively straight and nearly similar length. The

terminals taper to blunt, broad point. The funiculum a longitudinal low single knob. The columella is broad, smooth and glossy, with adaxial longitudinal carinal ridge, narrowing to the front. The aperture is fairly narrow, widening anteriorly, the middle side narrow than upper and down side, gradually constricted at the siphonal channel. Aperture lip is crenulated and glossy, thickened, acutely shouldered at the siphonal channel. The surface is yellowish white, with transverse light broad band. Terminal tip is with thick marginal callus, white in color and yellow color in the shoulder of the outer lip.

Distribution: Western Pacific.

Remark: *Primovula roseomaculata* is mainly found on *Alcyonium* sp. from 12 to 350 m in depth (Lorenz & Fehse, 2009).

Genus *Prionovolva* Iredale, 1930 분홍개오지불이속

9. *Prionovolva ericae* Cossignani & Calo, 2002

흐린분홍개오지불이 (Fig. 9)

Prionovolva ericae Cossignani & Calo, 2002, pp. 6, 3, unnumb. text fig.; Lorenz & Fehse, 2009, p. 40, pl. 16, figs. 1-7; Alain, 2008, p. 109, fig. 3.

Type locality: Cebu, Philippines.

Material examined: 2 specimens, Munseom (Jeju Island), 10 m in depth, May 12, 2002 (D.B. Koh).

Measurements: Length 12 mm, width 6 mm.

Description: The shell is small, ovate-pyriform in shape, roundly humped dorsal side. Both terminals produced, nearly equal projection posterior and anterior tips. The Dorsum is glossy, smooth, roundly well inflate, without incised striate throughout. The base is glossy, smooth, roundly inflate with thin light pink transparent callus. The fossula is smooth and plain. The anal and siphonal channels are relatively narrow and nearly similar length. The funiculum is a longitudinal low single knob. The columella is broad, smooth, glossy, inflated in middle portion, narrowing to the front. The aperture is fairly narrow, widening anteriorly, and gradually constricted at the siphonal channel. Aperture lip is very well crenulated and glossy, thickened, roundly shouldered at the siphonal channel. The surface is only light pink in color. The terminal tip is white in color.

Distribution: Philippines, Indonesia, Malaysia,

Queensland, New Caledonia.

Remark: *Primovula roseomaculata* is mainly found on *Dendronephthya* spp. from 5 to 45 m in depth (Lorenz & Fehse, 2009).

Genus *Testudovolva* Cate, 1973 거북개오지불이속

10. *Testudovolva nebula* (Azuma & Cate, 1971)

구슬거북개오지불이 (Fig. 10)

Prionovolva nebula Azuma & Cate, 1971: p. 262. text fig. 2.

Testudovolva nebula: Higo *et al.*, 1999, p. 130; Lorenz & Fehse, 2009, pp. 35-36, pl. 5, figs. 6-9, pl. 6, figs. 1-2, 11.

Type locality: off Kirimezaki, Kii Peninsula, Japan.

Material examined: 1 specimen, Munseom (Jeju Island), 4 m in depth, May 2002 (D.B. Koh).

Measurements: Length 12 mm, width 8 mm.

Description: The shell is small, ovate-pyriform in shape, roundly humped dorsal side. Both terminals produced, nearly equal projection posterior and anterior tips. The Dorsum is glossy, smooth, roundly well inflate, with broad space longitudinal incised striate throughout and with the concentric dorsal striation in both terminal portion. The base is glossy, smooth, roundly inflate with thin milk-white transparent callus. The fossula is smooth and prominent, forming a keel or columella. The anal and siphonal channels are relatively narrow and nearly similar length. The funiculum is a prominent longitudinal low knob. The columella is broad, smooth, glossy, well inflated in middle portion, narrowing to the front. The aperture is fairly narrow, widening anteriorly, and gradually constricted at the siphonal channel. Aperture lip is very well crenulated and glossy, thickened, roundly shouldered at the siphonal channel. The surface is light brown with reddish brown cloudy band. The terminal tip is pale yellow in color.

Distribution: Japan, Philippines, Indonesia.

Remark: *Testudovolva nebula* is mainly found on *Dendronephthya* spp. from 160 m in depth (Lorenz & Fehse, 2009).

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Fig. 1. *Pellasmimnia angasi* (Reeve, 1865). Scale: 3 mm. **Fig. 2.** *Phenacovolva pseudogracilis* Cate & Azuma, 1973. Scale: 4 mm. **Fig. 3.** *Phenacovolva rehderi* Cate, 1973. Scale: 5 mm. **Fig. 4.** *Crenavolva leopardus* Fehse, 2002. Scale: 2 mm. **Fig. 5.** *Diminovula coroniola* (Cate, 1973). Scale: 5 mm. **Fig. 6.** *Diminovula stigma* (Cate, 1978). Scale: 4 mm. **Fig. 7.** *Diminovula whitworthi* Cate, 1973. Scale: 4 mm.

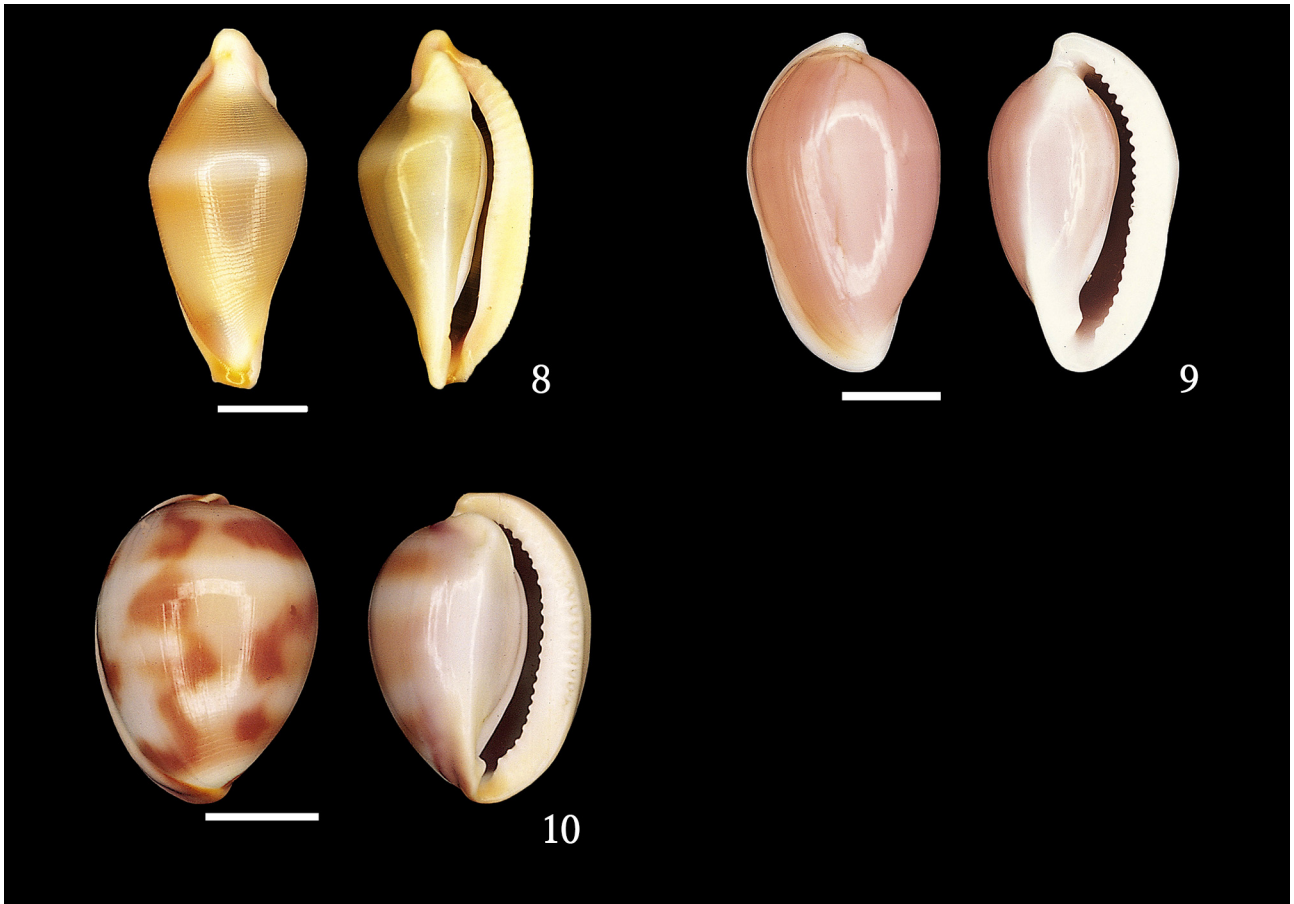


Fig. 8. *Primovula roseomaculata* (Schepman, 1909). Scale: 3 mm. **Fig. 9.** *Prionovolva ericae* Cossignani & Calo, 2002. Scale: 3 mm. **Fig. 10.** *Testudovolva nebula* (Azuma & Cate, 1971). Scale: 4 mm.