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Seven Unrecorded Mesogastropodous Species (Gastropoda : Mollusca) from Korean Waters

—Superfamilies Littorinacea, Tornacea, Rissoinacea, and Cerithiacea—

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= 국문요약 =

한국 해산 중복족류 (연체동물 문 : 복족 강) 미기록 7종

—총알고둥 상과, 갑옷고둥 상과, 루소고둥 상과, 짜부락고둥 상과—

성균관대학교 이과대학 생물학과

최 병 래 · 박 중 기

한국 해산 중복족류에 대한 분류학적 연구의 일환으로 1965년 5월부터 1992년 5월까지 전국 해안 64개 지점으로부터 채집된 총알고둥 상과, 갑옷고둥 상과, 루소고둥 상과, 짜부락고둥 상과에 속하는 표본들을 동정, 분류한 결과 다음과 같은 7종의 한국 미기록종을 얻었기에 이들에 대한 도판과 함께 재기재를 하였다: *Stenotis smithi* (Pilsbry, 1895), *Peasiella infracostata* (Issel, 1869), *Pseudoliotia micans* A. Adams, 1850, *Alvania concinna* (A. Adams, 1861), *Barleeia trifasciata* (Habe, 1960), *Cerithiopsis subreticulata* (Dunker, 1861), *Cerithiopsis spongicola* Habe, 1960.

INTRODUCTION

Among the Korean Mesogastropoda, 6 species of 2 families in the superfamily Littorinacea have been sporadically reported up to now by the previous works (Nomura and Hatai, 1928; Shiba, 1934; Lee, 1956a; Kim *et al.*, 1983; Lee *et al.*, 1984). Beside them, 12 species of 4 families in the superfamily Rissoinacea (Shiba, 1934; Lee, 1956b, 1958; Yamamoto and Habe, 1962; Higo, 1973; Kim *et al.*, 1983; Choe, 1986; Choe and Yoon, 1990) and 18 species of 4 families in the superfamily Cerithiacea (Adams and Reeve, 1848; Lischke, 1869; Nomura and Hatai, 1928; Lee, 1956b, 1958; Habe, 1961, 1964; Habe and Ito, 1965; Yoo, 1976; Je, 1989; Choe and Park, in print) have been recorded in the Korean mesogastropodous fauna respectively until now.

In spite of these previous works, most of

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them were not organized taxonomically and their descriptions are not enough for identifying the specimens without any illustrations.

As a part of taxonomic studies on the Korean mesogastropods, in the present study, we identified and classified the specimens, belonging to the Littorinacea, Tornacea, Rissoinacea and Cerithiacea, collected from Korean waters. As a result of the examination, 7 species turned out to be new to Korean malacofauna are fully redescribed with illustrations.

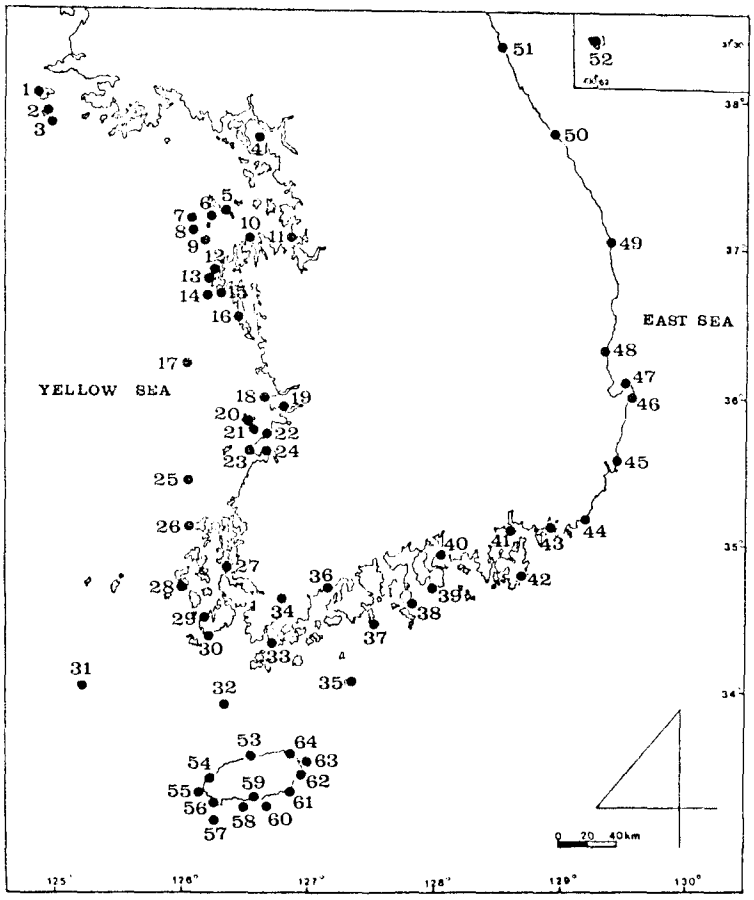


Fig. 1. Map showing the localities which materials of the present study were collected
1, Tumuchin (Paengnyŏng I.); 2, Sat'andong (Taech'ŏng I.); 3, Yedong (Soch'ŏng I.); 4, Ch'ojiri (Kanghwa I.); 5, Sŏnch'on (Soya I.); 6, Munkap I.; 7, Kulŏp I.; 8, Paega I.; 9, Ul I.; 10, Taenanchi I.; 11, Kungpyŏng; 12, Ch'ŏllip'o; 13, Mallip'o; 14, Shinjin I.; 15, Anhŭng; 16, Pangp'o (Anmyŏn I.); 17, Hoengkyŏn I. (Oeyŏn Is.); 18, Osik I.; 19, Hachae (Okku-kun); 20, Sŏnyu I.; 21, Pian I.; 22, Pyŏnsan; 23, Ch'aesŏkkang (Kyŏkp'o); 24, Komso; 25, Anma Is.; 26, Chaewon I.; 27, Mokp'o; 28, Wolp'o (Toch'o I.); 29, Sop'o (Chin I.); 30, Namdong (Chin I.); 31, Sohŭksan I.; 32, Taesŏri (Sangch'ŭja I.); 33, Chŏngdori (Wan I.); 34, Namp'o; 35, Kŏmun I.; 36, Yulp'o; 37, Ponghori (Oenaro I.); 38, Imp'o (Tolsan I.); 39, Sangju (Namhae I.); 40, Samch'onp'o; 41, Suchŏng; 42, Kuchora; 43, Myŏngji; 44, Ch'ŏngsap'o; 45, Chuchŭndong (Ulsan); 46, Kuryongp'o; 47, Kuman; 48, Kanggu; 49, Chukpyŏn; 50, Yŏngjinri (Chumunjin); 51, Hwajinp'o; 52, Ullŭng I.; 53, Cheju Harbour; 54, Hyŏpchae; 55, Ch'akwi I.; 56, Mosŭlp'o; 57, Mara I.; 58, Pŏmsŏm; 59, Sŏgwip'o; 60, Sup'sŏm; 61, Pyŏsŏn; 62, Sŏngsan; 63, U I.; 64, Sehwa.

MATERIALS AND METHODS

The present study was based on the materials collected from May 1965 to May 1992, at 64 localities of Korean sea area (fig. 1). Collections were largely preserved in 95% ethanol solution directly and some of them were narcotized with 2-phenoxyethanol.

We identified the specimens on the basis of morphological characteristics under the steroscopic dissecting microscope.

RESULTS

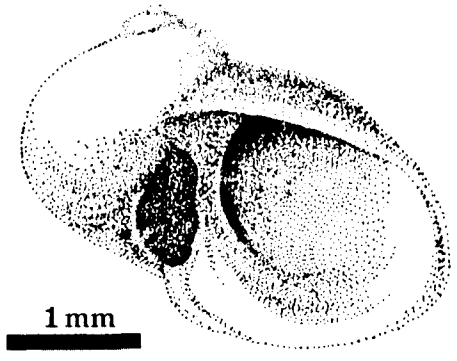
1. Description of species

Superfamily Littorinacea 총알고둥 상과
Family Lacunidae 쥐방울고둥 과
Genus *Stenotis* A. Adams, 1863 좀총알고둥 속

1) *Stenotis smithi* (Pilsbry, 1895)
좀총알고둥 (신칭)
(pl. 1, fig. 1)

Lacuna smithi Pilsbry, 1895, Cat. Mar. Moll. Japan, p. 63, pl. 8, fig. 2 (cited from Habe, 1953).

Lacuna (*Sublacuna*) *smithi:* Yokoyama, 1931, p. 26.



Textfig. 1. *Stenotis smithi* (Pilsbry, 1895).

Stenotis smithi: Habe, 1953, p. 211, text fig. 3; Higo, 1973, p. 45; Inaba, 1982, p. 82.

Type locality: Tokyo Bay (Japan).

Materials examined: 25 inds., Kuryongp'o, Aug. 10, 1982 (B.L. Choe). (inds.: abbreviation of individuals)

Description: Shell minute in size, roundly ovate and thin, semitransparently light-brown in ground color. Spire very low and conically elevated with very large body whorl. Each whorl well inflated and 3 in number, which distinguished by definite suture. Body whorl, with an obtusely angular periphery, occupies almost part of shell in both height and breadth. Whitish color band encircled around periphery. Aperture semilunate with thin, greatly rounded outer lip. Inner lip rather broaden and extend downward straightly. Umbilicus deeply open and crescent-shaped.

Measurement: 2.6 mm height, 2.9 mm breadth

Distribution: Korea, Japan(Honshn).

Family Littorinidae 총알고둥 과
Genus *Peasiella* Nevill, 1844 새끼총알고둥 속

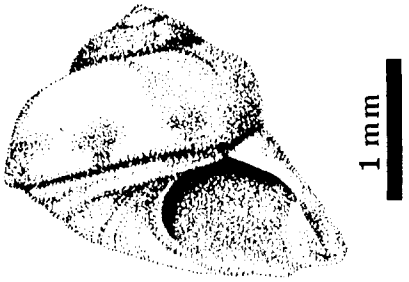
2) *Peasiella infracostata* (Issel, 1869)
새끼총알고둥 (신칭)
(pl. 1, fig. 2)

Risella infracostata Issel, 1869, Malacologia del Mar Rosso richerche zoologische e paleontologiche, p. 195 (cited from Ruhoff, 1980); Ruhoff, 1980, p. 321.

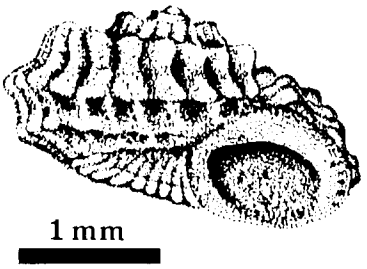
Type locality: Unknown.

Material examined: 1 ind., Taesŏri (Ch'ŭja I.), Jul. 24, 1990 (B.L. Choe).

Description: Shell minute in size, rather solid and low cone-shaped. Exterior surface somewhat smooth and maculated with black and yellow blotches alternatively along periphery. Spire very low and whorls rather convexed respectively, 4 in number. Body



Textfig. 2. *Peasiella infracostata* (Issel, 1869).



Textfig. 3. *Pseudoliotia micans* A.Adams, 1850.

whorl with sharply angulated periphery very inflated and occupies almost part of shell in height. Base evenly flat and bearing 4 strong spiral cords. Aperture, with trace of dark-brown blotches in inner part, round-shaped. Outer lip rather thin in thickness and bears sharp beak-like protrusion outwardly in lower part of it. Columellar lip thin, semicircular form and umbilicus deeply perforated.

Measurement: 1.4 mm height, 2.4 mm breadth

Distribution: Korea

Superfamily Tornacea 갑옷고둥 상과

Family Tornidae 갑옷고둥 과

Genus *Pseudoliotia* Tate, 1898 장비고둥 속

3) *Pseudoliotia micans* A. Adams, 1850

장비고둥 (신칭)

(pl. 1, fig. 3)

Cyclostrema micans A. Adams, 1850, p. 44; A. Adams, 1863, p. 73; A. Adams, 1864, p. 250; Lischke, 1871, p. 168; Lischke, 1874, p. 60; Dunker, 1882, p. 131; Higo, 1973, p. 48.

Cyclostrema pulchellum Dunker, 1860, p. 255; Dunker, 1861, p. 20, pl. 3, fig. 5.

Pseudoliotia pulchella: Habe, 1961, p. 23, pl. 10, fig. 32; Kuroda *et al.*, 1971, 90(J), 59(E), pl. 107, fig. 3; Higo, 1973, p. 48; Inaba, 1982, p. 86.

Pseudoliotia asterisca: Habe, 1964, p. 33, pl. 10. fig. 32 (non Gould, 1861).

Type locality: Australia.

Materials examined: 3 inds., Sŏgwip'o (Cheju I.), Feb. 13, 1989 (J.R. Lee); 12 inds., Kkoch'chi (Anmyŏn I.), May 4, 1992 (S.S. Yum).

Description: Shell minute, flattened and planorbid-form in appearance. Spire very low and whorls, with impressed suture, 4 in number. Periphery of each whorl shouldered and obliquely joined with next. Shell surface coarsely sculptured with 23~24 radiating growth cords, which forming stout tubercles at intersection with shoulder. Body whorl, with 3 strong spiral ribs and flattened base, occupies almost part of shell height and breadth. Base, bearing 3 spiral cords, cancellated by many radiating cords. Aperture round and turned downward. Both lips thick in thickness. Umbilicus deeply perforated and circular form in shape. Shell solid and white in color.

Measurement: 1.2 mm height, 2.6 mm breadth

Distribution: Korea, Japan [Honshu (Boso Peninsula as north limit), Shikoku, Kyushu, Sagami Bay, Japan sea], Korea Strait.

Superfamily Rissoinacea 루소고둥 상과

Family Rissoinidae 루소고둥 과

Genus *Alvania* Risso, 1826 쌀눈고둥 속

4) *Alvania concinna* (A. Adams, 1861)
쌀눈고둥 (신칭)
(pl. 1, fig. 4)

Rissoina concinna A. Adams, 1853, p. 266.

Alvania concinna A. Adams, 1861, p. 138; Habe & Ito, 1965, p. 21; Higo, 1973, p. 51; Inaba, 1982, p. 84.

Type locality: Tsu-shima (Japan).

Materials examined: 10 inds., Pangp'o (Anmyŏn I.), Oct. 5, 1983 (B.L. Choe).

Description: Shell minute, elongated oval in shape and brown in color. Spire rather high and occupies approximately 3/5 of shell in height. Whorls 5 in number, which distinguished by deeply impressed suture. Shell surface reticulated by intersection between many strong axial and spiral ribs. Body whorl moderately inflated and longitudinally sculptured with 16-17 prominent axial ribs, which become faint towards base. Base more or less expanded and bears 9 spiral ribs. Aperture ovate in shape and without siphonal canal. Outer margin carinated owing to many spiral ribs on body whorl surface. Umbilicus faintly opened.

Measurement: 1.0 mm height, 0.8 mm breadth.

Distribution: Korea, Japan (Honshu, Shikoku, Kyushu, Hokkaido).

5) *Barleeia trifasciata* Habe, 1960
깨고둥 (신칭)
(pl. 1, fig. 5)

Barleeia trifasciata Habe, 1960, Publ. Seto Mar. Biol. Lab., 8(2), p. 295 (cited from Habe, 1977); Habe, 1977, p. 126, pl. 2, fig. 8; Inaba, 1982, p. 85; Ckutani, 1986, p. 75

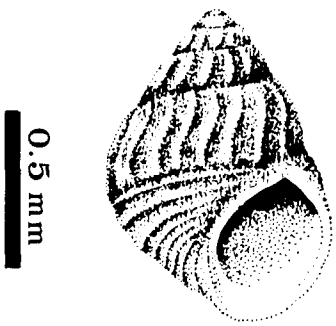
Type locality: Tomioka, Amakusa, Kumamoto Pref., Kyushu (Japan).

Materials examined: 21 inds., Hoengkando (Ch'ŭja I.), Jul. 23, 1990 (SCUBA).

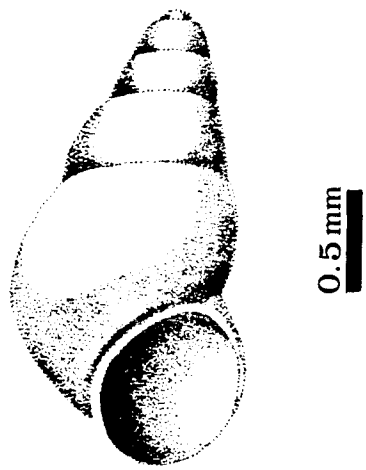
Description: Shell minute, high conical shape and brown or chestnut brown in color. Exterior surface of shell smooth, devoid of any particular sculptures. Spire, with obtusely rounded apex, high and cone-shaped. Whorls 5 in number and somewhat inflated respectively. Body whorl with round periphery occupies 3/5 of shell in height. Base smooth, devoiding any spiral or longitudinal ribs. Aperture ovoid shape and outer lip thin in thickness. No umbilicus and siphonal canal.

Measurement: 2.2 mm height, 1.2 mm breadth

Distribution: Korea, Japan



Textfig. 4. *Alvania concinna* (A. Adams, 1861).



Textfig. 5. *Barleeia trifasciata* Habe, 1960.

Superfamily Cerithiacea 짜부락고둥 상과
Family Cerithiopsidae 갯고둥붙이 과
Genus *Cerithiopsis* Forbes and Hanley, 1851
갯고둥붙이 속

6) *Cerithiopsis subreticulata* (Dunker, 1861)
날씬이갯고둥붙이 (신칭)
(pl. 1, fig. 6)

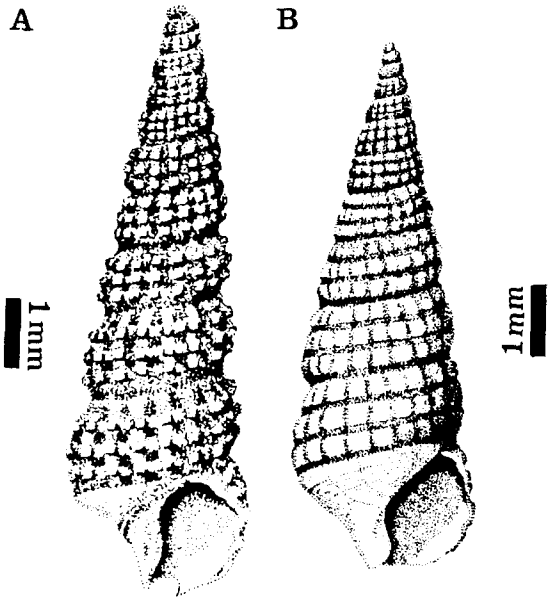
Cerithium subreticulatum Dunker, 1861, p. 9, pl. 2, fig. 10; Grabau & King, 1928, Shells Peit., p. 221, no. 92, pl. 9, fig. 92 (cited from Qi *et al.*, 1989).

Cerithiopsis subreticulata: Kuroda & Habe, 1952, p. 44; Higo, 1973, p. 66; Inaba, 1982, p. 90.

Cerithiella subreticulata: Qi *et al.*, 1989, p. 42, textfig. 35.

Type locality: Not mentioned by the author.

Material examined: 1 ind., Kuryongp'o, Aug. 11, 1982 (B.L. Choe).



Textfig. 6. A, *Cerithiopsis subreticulata* (Dunker, 1861)
B, *Cerithiopsis spongicola* Habe, 1960.

Description: Shell small, high turret form and yellowish brown in color. Spire very high and occupies more than 5/6 of shell in height. Whorls 11 in number, which definitely distinguished by prominent suture line. Rather inflated each whorl reticulated with 3 coarse spiral ribs and many longitudinal ribs, and forming 3 bead-like granule lines spirally at intersecting between them. Base obliquely flattened and smooth, without any ribs. Aperture subquadrately ovate with shortly opened canal and outer margin crenated owing to granules of outer surface. No umbilicus.

Measurement: 8.7 mm height, 2.5 mm breadth

Distribution: Korea, Japan (Shikoku, Kyushu, Amami, Okinawa, Japan sea), China.

7) *Cerithiopsis spongicola* Habe, 1960
날씬이갯고둥사촌 (신칭)
(pl. 1, fig. 7)

Cerithiopsis spongicola Habe, 1960, Publ. Seto Mar. Biol. Lab., 8(2), p. 286 (cited from Kuroda *et al.*, 1971); Okada *et al.*, 1967, p. 64; Higo, 1973, p. 66; Inaba, 1982, p. 91.

Sythopsis spongicola: Habe, 1961, p. 28, pl. 12, fig. 28; Habe, 1964, p. 42, pl. 12, fig. 13; Kuroda *et al.*, 1971, 114(J), 75(E), pl. 107, fig. 20.

Type locality: Tomioka, Amakusa, Kyushu (Japan).

Material examined: 1 ind., Kuryongp'o, Aug. 11, 1982 (B.L. Choe).

Description: Shell small, high turret form and yellowish brown in color. Spire high conical shape, sharply attenuating towards apex. Whorls 11 in number. Each whorl slightly convex with impressed suture. Checker-like sculpture ornamented on outer surface of each whorl owing to intercrossing between many stout axial ribs and 3 spiral grooves. Body whorl, with round periphery, somewhat inflated. Rather convexed base densely com-

pacted with many spiral lines. Aperture ovate in shape and bears short siphonal canal. No umbilicus.

Measurement: 7.5 mm height, 2.4 mm breadth

Distribution: Korea, Japan [Honshu (Boso Peninsula as north limit), Shikoku, Kyushu, Sagami Bay].

CONCLUSION

The taxonomic study on the Korean Mesogastropoda was performed with the materials, belonging to the Littorinacea, Tornacea, Rissoinacea and Cerithiacea, collected from 64 localities in Korean sea coast. As a result of present study, 43 species in 12 families were recognized (including the species confirmed by references), and of which following 7 species were new to the Korean fauna: *Stenotis smithi* (Lacunidae), *Peasiella infracostata* (Littorinidae), *Pseudoliotia micans* (Tornidae), *Alvania concinna*, *Barleeia trifasciata* (Rissoinidae), *Cerithiopsis subreticulata*, and *Cerithiopsis spongicola* (Cerithiopsidae).

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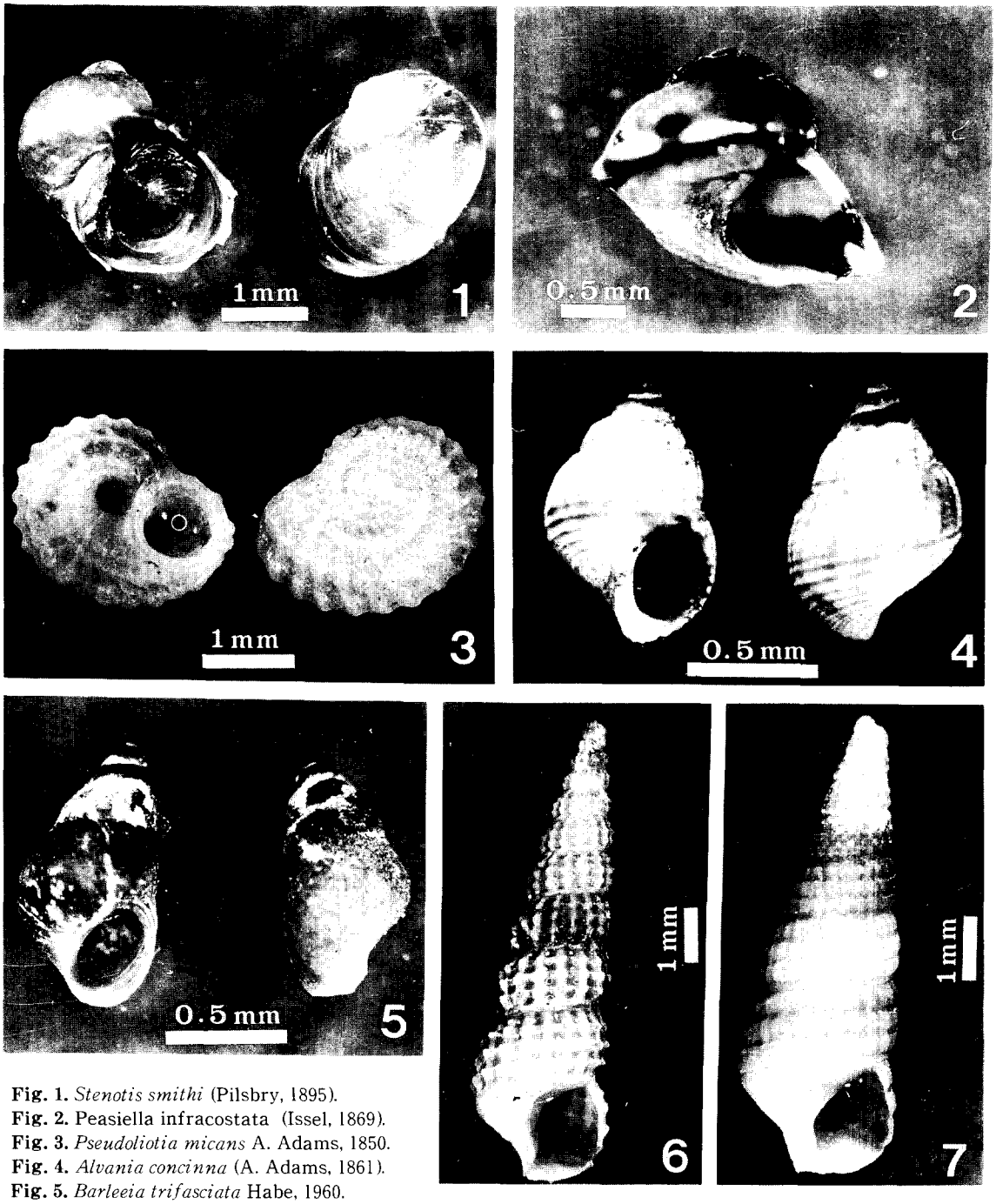

Fig. 1. *Stenotis smithi* (Pilsbry, 1895).
Fig. 2. Peasiella infracostata (Issel, 1869).
Fig. 3. *Pseudoliotia micans* A. Adams, 1850.
Fig. 4. *Alvania concinna* (A. Adams, 1861).
Fig. 5. *Barleeia trifasciata* Habe, 1960.
Fig. 6. *Cerithiopsis subreticulata* (Dunker, 1861).
Fig. 7. *Cerithiopsis spongicola* Habe, 1960.