

# Opisthobranchs (Mollusca: Gastropoda) from Ullŭng and Dog-do Islands, Korea

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Fifteen species in 10 families of Opisthobranchia were collected from Ullŭng and Dog-do Islands, Korea. Eight species of them, *Cadlina japonica* Baba, *Aldisa cooperi* Robilliard & Baba, *Dendrodoris denisoni* (Angas), *Tritonia festiva* (Stearns), *Notobryon wardi* Odhner, *Hermisenda crassicornis* (Eschscholtz), *Sakuraeolis modesta* (Bergh) and *Protaeolidiella atra* Baba were not recorded in Korean waters previously. In addition to these 8 species, 5 species of *Aplysia parvula* Guilding in Mörch, *Bethellina citrina* (Rüppell & Leuckart), *Pleurobranchaea japonica* Thiele, *Chromodoris tinctoria* (Rüppell & Leuckart), and *Hypselodoris festiva* (A. Adams) are new to the fauna of Ullŭng and Dog-do Islands.

**KEY WORDS:** Taxonomy, Opisthobranchs, Ullŭng and Dog-do Islands, Korea.

In the previous studies, only 2 species have been reported from Ullŭng and Dog-do Islands by Kim & Choe (1981) and Choe (1992). Specimens were collected from 14 localities of Ullŭng and Dog-do Islands (Fig. 1) from July, 1989 to March, 1993. In this report, 15 species were photographed alive and described, and the radulae of 14 species were pictured using drawing tube. All the specimens were frozen for narcotism prior to fixation in formalin solution, 10%, neutral buffered in according to Lincoln & Sheals (1979). The classification of Opisthobranchia was principally based upon Thompson (1976) and Higo & Goto (1993).

## List of opisthobranchs from Ullŭng and Dog-do Islands, Korea.

(\*: new to the fauna of Ullŭng and Dog-do Islands, \*\*: new records in Korean waters)

Phylum Mollusca 연체동물 문

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Class Gastropoda 복족 강

Subclass Opisthobranchia 후새 아강

Order Aplysiomorpha 무순 목

Family Aplysiidae 군소 과

\*1. *Aplysia parvula* Guilding in Mörch, 1863  
검은테군소

2. *Aplysia kurodai* (Baba, 1937) 군소

Order Pleurobranchomorpha 배순 목

Family Pleurobranchidae 군소불이 과

\*3. *Bethellina citrina* (Rüppell & Leuckart, 1828)  
빨강갯민달팽이

\*4. *Pleurobranchaea japonica* Thiele, 1925  
올빼미군소불이

Order Nudibranchia 나새 목

Suborder Doridacea 갯민숭달팽이 아목

Family Chromodorididae 갯민숭달팽이 과

\*5. *Chromodoris tinctoria* (Rüppell & Leuckart, 1828) 망사갯민숭달팽이

6. *Chromodoris orientalis* Rudman, 1983  
흰갯민숭달팽이

\*7. *Hypselodoris festiva* (A. Adams, 1861)  
파랑갯민숭달팽이

Family Cadlinidae 노란갯민숭달팽이 과 (신칭)

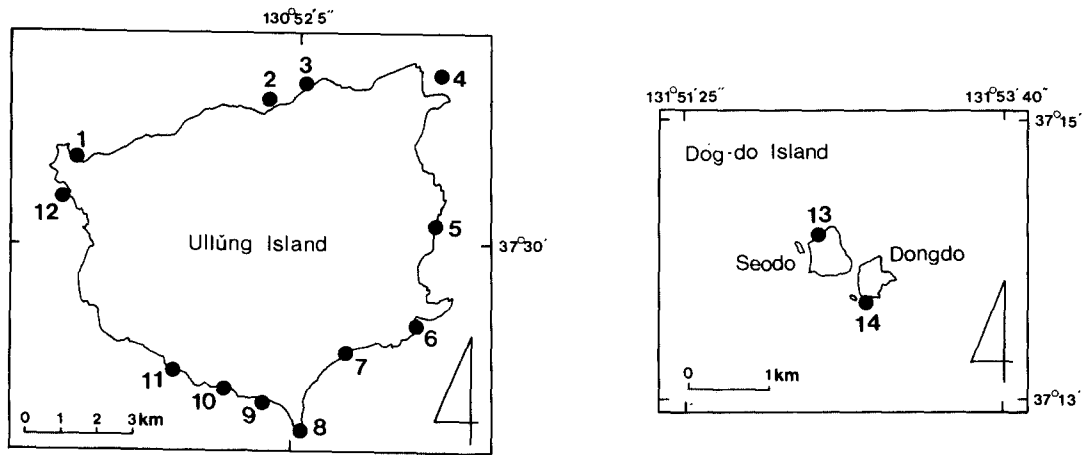


Fig. 1. Map of Ullŭng and Dog-do Islands showing sampling sites.

1. Taep'ungch'wi, 2. Hyŏlam, 3. Ch'ŏnbu, 4. Kwanŭmdo, 5. Naesujŏn, 6. To-dong, 7. Sa-dong, 8. Kadubong, 9. T'onggumi, 10. Namyang, 11. Kuam, 12. T'aeha, 13. Sŏdo, 14. Dongdo.

- \*\*8. *Cadlina japonica* Baba, 1937  
노란테갯민숭달팽이 (신칭)  
Family Aldisidae 붉은갯민숭달팽이 과 (신칭)
  - \*\*9. *Aldisa cooperi* Robilliard & Baba, 1972  
점박이붉은갯민숭달팽이  
Family Dendrodorididae  
수지갯민숭달팽이 과 (신칭)
  - \*\*10. *Dendrodoris denisoni* (Angas, 1864)  
여왕갯민숭달팽이 (신칭)  
Suborder Dendronotacea  
꽃송이갯민숭이 아목 (신칭)  
Family Tritoniidae 예쁜이갯민숭이 과 (신칭)
  - \*\*11. *Tritonia festiva* (Stearns, 1873)  
예쁜이갯민숭이 (신칭)  
Family Scyllaeidae 사슴갯민숭이 과 (신칭)
  - \*\*12. *Notobryon wardi* Odhner, 1936  
사슴갯민숭이 (신칭)  
Suborder Aeolidacea 산호갯민숭이 아목 (신칭)  
Family Facelinidae 하늘소갯민숭이 과 (신칭)
  - \*\*13. *Hermisenda crassicornis* (Eschscholtz, 1831) 하늘소갯민숭이 (신칭)
  - \*\*14. *Sakuraeolis modesta* (Bergh, 1880)  
눈송이갯민숭이 (신칭)  
Family Aeolidiidae 큰도롱이갯민숭이 과
  - \*\*15. *Protaeolidiella atra* Baba, 1955  
검정갯민숭이 (신칭)
- 
- Key to opisthobranchs of Ullŭng and Dog-do Islands, Korea**
- 1 Shell present internal ..... 2
  - Shell absent or vestigial ..... 3
  - 2(1) Mantle with aperture ..... *Aplysia parvula*
  - Mantle without aperture ..... *Aplysia kurodai*
  - 3(1) Head shield present ..... 4
  - Head shield absent ..... 5
  - 4(3) Body orange-yellow or deep orange-red ...
  - ..... *Bethellina citrina*
  - Body yellowish gray ..... 6
  - ..... *Pleurobranchaea japonica*
  - 5(3) Gills forming a circlet ..... 6
  - Gills forming cerata or papillae ..... 11
  - 6(5) Mantle with pustules ..... 7
  - ..... *Dendrodoris denisoni*
  - Mantle without pustules ..... 7
  - 7(6) Mantle with small granules ..... 8
  - Mantle without granules ..... 9
  - 8(7) Body orange-red ..... *Aldisa cooperi*
  - Body pale yellow ..... *Cadlina japonica*
  - 9(7) Ground body blue ..... *Hypselodoris festiva*
  - Ground body white ..... 10
  - 10(9) Mantle covered with small round spots ...
  - ..... *Chromodoris orientalis*
  - Mantle covered with reticulates ..... 11
  - ..... *Chromodoris tinctoria*
  - 11(5) Gills with branchial tufts ..... 12
  - Gills with simple cerata ..... 13
  - 12(11) Parapodial lobes present ..... 13
  - ..... *Notobryon wardi*
  - Parapodial lobes lack ..... *Tritonia festiva*
  - 13(11) Body deep black ..... *Protaeolidiella atra*

Body milky white .....	14
14(13) Mantle with mid line.....	
..... <i>Hermisenda crassicornis</i>	
Mantle without mid line .....	
..... <i>Sakuraeolis modesta</i>	

### Systematic Account

Order Aplysiomorpha (= Anaspidea) 무순 목

Family Aplysiidae 군소 과

Genus *Aplysia* Linné, 1767 군소 속

#### \* 1. *Aplysia parvula* Guilding in Mörch, 1863 검은테군소 [Pl. 1, Fig. 1]

*Aplysia parvula* Guilding in Mörch, 1863, p. 2; Engel, 1927, Bijdr. Dierk., Afl. 25, pp. 90-92, figs. 4-6 (cited from Baba, 1937a); Baba, 1949, Opisthobranchia of Sagamy Bay, pp. 24(J), 125 (E), pls. 2-3, fig. 78, textfig. 3 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 2; Abe, 1964, p. 22, pl. 3, fig. 10; Lance, 1971, pp. 60-63, textfigs. 1-4; Hamatani & Irie, 1984, p. 173, textfig. 42; Gosliner, 1987, p. 46, fig. 24; Lee, 1991, p. 54.

*Aplysia (Pruvotaplysia) parvula*: Engel, 1936, Capita Zoologica. vol. 8, pt. 1, pp. 15-18, textfigs. 8-14 (cited from Baba, 1937a); Okada *et al.*, 1967, p. 166, fig. 623; Thompson, 1977, pp. 110-112, fig. 14; Okutani *et al.*, 1986, p. 214; Qi *et al.*, 1986, p. 32; Cattaneo-Vietti & Thompson, 1989, p. 194; Je, 1989, p. 27; Baba, 1990a, pp. 24(J), 125(E), pls. 2-3, fig. 78, textfig. 3 (cf. p. 196); Higo & Goto, 1993, p. 416.

*Tethys parvula* Pilsbry, 1895-6, pp. 83-84, pl. 37, figs. 23-25; MacFarland, 1924, Pro. Calif. Acad. Sci., ser. 4, vol. 13, no. 25, pp. 398-404, pl. 11, figs. 1-4, pl. 12, figs. 1-11 (cited from Baba, 1937a); Baba, 1937a, pp. 208-210, pl. 4, fig. 11, textfig. 3; Baba, 1938, p. 2.

*Aplysia nigrocincta* Martens, 1880, Mollusken, p. 131, pl. 21, figs. 3, 3a-3b (cited from Baba, 1937a); Eliot, 1899, Proc. Acad. Nat. Sci. Philadelphia, p. 513 (cited from Baba, 1937a).

*Tethys nigrocincta* Pilsbry, 1895-6, p. 107, pl. 17, figs. 14-16; Burne, 1906, Proc. Malac. Soc. London, vol. 7, pp. 56-57, fig. 9 (cited from Baba, 1937a); Hirase, 1927, Moluskoj, p. 1466, fig. 2819 (cited from Baba, 1937a).

*Aplysia atromarginata* Bergh, 1905, Siboga-Exped., pp. 8-9, pl. 6, figs. 30-35 (cited from Baba, 1937a).

*Tethys norfolkensis* Allan, 1932, Austr. Mus. Mag., vol. 4, no. 12, p. 423, fig. ? (cited from Baba, 1937a).

**Material examined:** 2 inds. (abbreviation of individuals), Ch'önbu, Jul. 15, 1989 (J. R. Lee); 2 inds., Sa-dong, Jul. 17, 1989 (J. R. Lee); 1 ind., Namyang, Jan. 13, 1993 (J. R. Lee); 1 ind., T'onggumi, Mar. 10, 1993 (J. R. Lee); 1 ind., Södo, Mar. 20, 1993 (B. L. Choe); 12 inds., Södo, Mar. 21, 1993 (J. R. Lee); 4 inds., Södo, Mar. 23, 1993 (J. R. Lee).

**Description:** Body small, about 4-10 mm in length of fixed specimens, swollen with elongated neck and tapered metapodium. Mantle with aperture on middle of shell. Anal shipon exposed behind gills. Ground body colour bright brown, with irregularly clusters of opaque white spots except sole. Head tentacles, rhinophores, mantle aperture, and foot lined with black on margin forming deep reddish brown string in distal end. Head tentacles enrolled with outward wide opening of upper-end. Rhinophores split deeply at it's apexes toward outside. Eyes seem small black spot near anterior base of rhinophores. Gills beneath right side of shell, elongated, semi-ovoidal shaped, pale yellow. Seminal groove cut across body surfaces from dorso-anterior part of gills, where female genital orifice sited, to posterior base of rhinophore with location of male genital orifice. Opaline glands secreting milky white fluids, with multiple pore, scattered on anterior surface of gills. Shell pale brown, ovoid, slightly convex, entirely calcified with exception of narrow cuticular margin, covered by mantle, proportionately large to body size. Foot more pale brown and narrower than body, truncated in anterior part, tapered to bluntly pointed in metapodium. Parapodium small, covering mantle insufficiently, separated at anterior margin, united to posterior end to form upstanding wall around mantle cavity. Radulae with central and lateral teeth only; central tooth bears 1 strong cusp with 4 denticles on both sides, and 2 small cusps on either side; lateral teeth with unicusps leaned to left side bearing 2 denticles on left and 6 on right, and last lateral simply bar-

shaped (Fig. 2-A).

**Habitat:** Tide pool to 10 m in depth with growing of sea weeds in early spring.

**Type locality:** St. Thomas, St. Vincent in Caribbean Sea.

**Localities:** Gapa I., Mara I. in Chejudo (Lee, 1991).

**Distribution:** Korea, Japan (Hayama, Toyama Bay, Fukuiken, Sagami Bay, Osaka Bay, Kii, Misaki, Tomioka, Common almost everywhere on the Pacific coast of Japan), China, Circum-equatorial in the West Indies, Indian Ocean, Australia, East Indies and California, Hawaii, South African coast, From the Atlantic side of the Cape Peninsula to northern Natal, the Mediterranean Sea, Jamaica.

## 2. *Aplysia kurodai* (Baba, 1937) 군소 [Pl. 1, Fig. 2]

*Tethys kurodai* Baba, 1937a, pp. 213-215, textfig. 5; Baba, 1938, p. 2.

*Aplysia kurodai*: Baba, 1949, Opisthobranchia of Sagami Bay, pp. 25(J), 126(E), pl. 4, figs. 13-14, textfigs. 6-7 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 3; Lee, 1956a, p. 10; Lee, 1956b, p. 79; Abe, 1964, p. 23, pl. 4, fig. 13; Hamatani, 1965, p. 23, pl. 2, fig. 15; Kim & Rho, 1969, p. 81; Kim & Rho, 1971, p. 14; Kang *et al.*, 1971, p. 64; Higo, 1973, p. 268; Yoo, 1976, p. 90, textfig. 15-6; Okutani & Habe, 1983, pp. 32, 174; Hamatani & Irie, 1984, p. 173; Lee *et al.*, 1984, p. 123; Kim & Yoon, 1985, p. 38; Song, 1985, p. 72; Kim & Kwon, 1987, p. 298; Baba, 1990a, pp. 25-26(J), 126 (E), pl. 4, figs. 13-14, textfigs. 6-7 (cf. p. 196); Lee, 1990, p. 166; Lee, 1991, p. 54; Choe, 1992, pp. 431-432(K), 742-743(E), pl. 123, fig. 218; Choe & Lee, 1993, p. 269.

*Aplysia (Varria) kurodai*: Okada *et al.*, 1967, p. 166, fig. 624; Kim & Choe, 1981, p. 195; Okutani *et al.*, 1986, p. 214; Qi *et al.*, 1986, p. 30; Lee & Jwa, 1988, p. 20; Lee *et al.*, 1989, p. 20; Je, 1989, p. 27; Higo & Goto, 1993, p. 416; Kwon *et al.*, 1993, pp. 330, 93, fig. 57-1.

**Material examined:** 2 inds., Kuam, Jul. 11, 1989 (Scuba); 4 inds., T'onggumi, Jul. 12, 1989 (Scuba); 3 inds., Naesujön, Jul. 13, 1989 (Scuba); 1 ind., Hyölam, Jul. 14, 1989 (Scuba); 6 inds.,

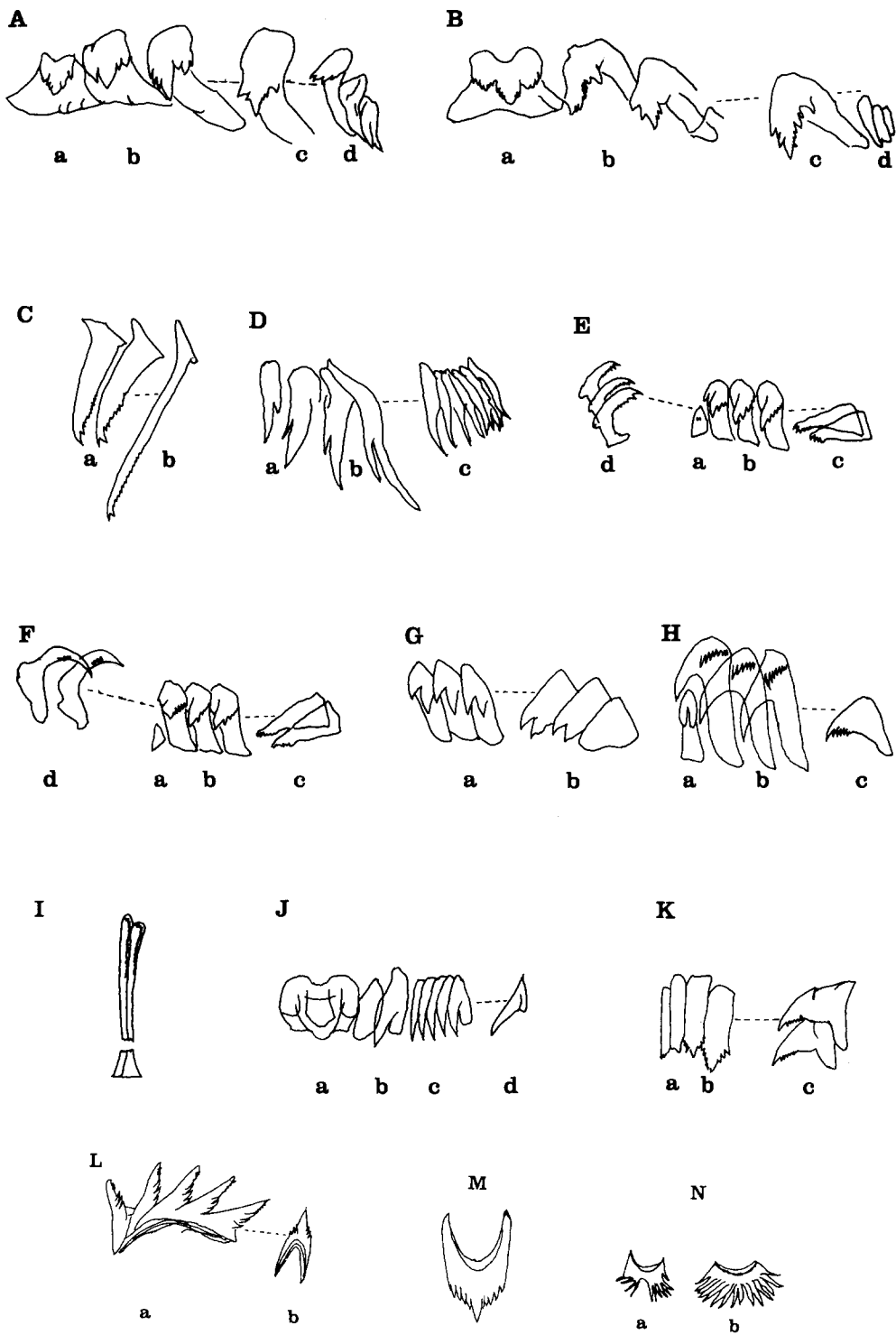
T'onggumi, Oct. 26, 1991 (Scuba); 1 ind., T'onggumi, Oct. 29, 1991 (Scuba); 1 ind., Södo, Mar. 23, 1993 (B. L. Choe).

**Description:** Body large, attaining to 400 mm in length, swollen with slender neck and tapered metapodium. Parapodium covering visceral sac and mantle; mantle ovoid with shield shell. Ground body colour dark brown, spotted irregularly with whitish clusters in variant size except sole. Mouth slit between head tentacles; head tentacles enrolled, bearing several vertical furrows inside. Rhinophores cylindrical, split at its apexes outward about one fourth of total length. Eyes sited on base of rhinophores anteriorly. Gills semi-elliptical, yellow, covered with mantle. Semianal groove located from anterior part of gills to posterior base on right side of head tentacles, where male genital orifice sited. Opaline glands secreting milky white fluids, with multiple pore, scattered on surface of anterior part of gills. Purple glands under mantle at right, deep purple, secreting purple fluids against external physical stress. Shell translucently brown, ovoid, more or less flattened, fragile; entirely calcified but narrow cuticular margin with round sinkage in right side of apex. Foot somewhat dark brown, truncated in anterior part, tapered shortly to bluntly pointed in metapodium. Parapodium stretched out, lined with discontinuous black string on margin, separated at both anterior and posterior ends. Radulae with central and lateral teeth only; central tooth bears a cusp with 2 denticles on both sides; lateral unicuspid, leaned to left with 1-2 denticles on right side (Fig. 2-B).

**Habitat:** From tide pool to 10 m in depth with growing of either Chlorophytes or Phaeophytes which they feed on.

**Type locality:** Tomioka in Japan.

**Localities:** Pusan (Lee, 1956a); Pusan, Tongyöng, Ulsan (Lee, 1956b); Sasu I. in Ch'uja I. (Kim & Rho, 1969); Mostilp'o in Chejudo (Kim & Rho, 1971); Yangsan in Kyöngnam (Lee *et al.*, 1984); Dog-do I. (Kim & Choe, 1981); Wolsöng (Song, 1985); Hujin (Kim & Yoon, 1985); Taekukhül I. in Sohüksan I. (Kim & Kwon, 1987); Cheju (Lee & Jwa, 1988); Kwidök, Küml üng, Kap'a I., Hahyo, Sinch'ön, Hangwon, Hamdök in Chejudo (Lee *et al.*, 1989); Pömöm, Supsöm,



Hyöngje I. in Chejudo (Lee, 1990); Gapa I., Mara I. in Chejudo (Lee, 1991); Kuam, T'onggumi, Naesujön, Hyölam, To-dong in Ullüing I., Sangju (Choe, 1992); T'onggumi, Taeha in Ullüing I. (Choe & Lee, 1993); Ullüing I., Southeastern coast including Pusan (Kwon *et al.*, 1993).

**Distribution:** Korea, Japan (Toyama Bay, Kii, Osaka Bay, Tomioka, Misaki, Tateyama), Taiwan, China.

Order Pleurobranchomorpha (= Notaspidea) 배순목

Family Pleurobranchidae 군소불이과

Genus *Bethellina* Gardiner, 1936 빨강갯민달팽이속

\* **3. *Bethellina citrina* (Rüppell & Leuckart, 1828)** 빨강갯민달팽이 [Pl. 1, Fig. 3-5]

*Pleurobranchus citrinus* Rüppell & Leuckart, 1828, p. 20, figs. 1a, b, c.

*Pleurobranchus punctatus* Quoy & Gaimard in d'Urville, 1832, Voy. "Astrolabe", Zool. II, p. 299 (cited from Thompson, 1970; cf. Sherbon, 1929); Sherbon, 1929, p. 5268.

*Pleurobranchus delicatus* Pease, 1861, Proc. Zool. Soc. London, p. 245 (cited from Baba, 1937a); Pease, 1868, Amer. Journ. Conch., vol. 4, pp. 79-80 (cited from Baba, 1937a); Pilsbry, 1895-6, p. 202, pl. 45, figs. 7-9.

*Pleurobranchus plumula* (non Montagu, 1803) Bergh, 1893, Res. Comp. Sci., Albert I. Monaco,

Fasc. 4, pp. 19-26, pl. 2, figs. 43-50, pl. 3, figs. 51-67 (cited from MacFarland, 1966); Bergh, 1894, Bull. Mus. Comp. Zool. Harvard, 25(10), pp. 197-199, pl. 9, figs. 12-14, pl. 10, figs. 1-8 (cited from MacFarland, 1966); Bergh, 1898, Mal. Unters., 4(1, 3), pp. 122-126, pl. 9, figs. 48-50 (cited from MacFarland, 1966).

*Bethella plumula* (non Montagu, 1803) Vayssière, 1896, Ann. Sci. Nat. Zool., ser. 8, pp. 271-277, pl. 18, figs. 17-30 (cited from MacFarland, 1966); Vayssière, 1898, Anns Sci. nat., Zool. 8(4-6), p. 271 (cited from Thompson, 1976); Bergh, 1905, Mal. Unters. 6(2), pp. 58-59, pl. 6, figs. 7-12 (cited from MacFarland, 1966).

*Bethella borneensis* Bergh, 1905, Siboga-Exped., pp. 69-70, pl. 5, fig. 3, pl. 11, figs. 45-47 (cited from Baba, 1937a).

*Oscanius* sp. Hirase, 1927, Moluskoj, p. 1467, fig. 2825 (cited from Baba, 1937a).

*Bethellina engeli* Gardiner, 1936, J. Conch., Lond. 20(7), p. 196 (cited from Thompson, 1976); Odhner, 1939, Kgl. Norske Vidensk. Selsk. Skr., (1), pp. 15-21 (cited from MacFarland, 1966); MacFarland, 1966, pp. 70-75, pl. 13, figs. 14-24, pl. 16, fig. 9; Bertsch, 1973, p. 108; Behrens, 1991, p. 39, fig. 33.

*Bethella gotoi* Hirase, 1936, Zool. Mag. (Japan), vol. 48, nos. 8-10, pp. 731, 734-736, pl. 29, figs. 1-12, pl. 30, fig. 2 (cited from Baba, 1937a).

**Fig. 2.** Radula of Opisthobranchs.

- A. *Aplysia parvula* (radula formula: 13-1-13, a: central tooth, b: 1st and 2nd lateral tooth, c: 6th lateral tooth, d: last lateral teeth, ×322)  
 B. *Aplysia kurodai* (radula formula: 32-1-32, a: Central tooth, b: 1st and 2nd lateral teeth, c: 8th lateral tooth, d: last lateral teeth, ×408)  
 C. *Bethellina citrina* (a: 1st and 2nd lateral teeth, b: last lateral tooth, ×408)  
 D. *Pleurobranchaea japonica* (a: 1st lateral tooth of either sides, b: 2nd and 3rd lateral teeth, c: marginal teeth, ×58)  
 E. *Chromodoris tinctoria* (a: rachidian plate, b: 1st, 2nd, and 3rd lateral teeth, c: last tooth, d: side view of lateral teeth, ×408)  
 F. *Chromodoris orientalis* (a: rachidian plate, b: 1st, 2nd, and 3rd lateral teeth, c: last teeth, d: side view of lateral teeth, ×408)  
 G. *Hypselodoris festiva* (a: 1st, 2nd, and 3rd lateral teeth, b: last lateral teeth, ×289)  
 H. *Cadlina japonica* (a: central tooth, b: 1st, 2nd, and 3rd lateral teeth, c: last tooth, ×289)  
 I. *Aldisa cooperi* (lateral teeth, ×289)  
 J. *Tritonia festiva* (a: central tooth, b: 1st and 2nd lateral teeth, c: outer lateral teeth, d: last lateral tooth, ×289)  
 K. *Notobryon wardi* (a: 1st lateral tooth, b: lateral teeth, c: side view of lateral teeth, ×289)  
 L. *Hermisenda crassicornis* (a: side view of several continual central teeth, b: central tooth, ×128)  
 M. *Sakuraeolis modesta* (central tooth, ×124)  
 N. *Protaeolidiella atra* (central tooth, ×289)

*Bethella plumula delicata*: Baba, 1937a, pp. 227-229, pl. 4, fig. 1, textfig. 11; Baba, 1938, p. 2.

*Bethellina delicata*: Baba, 1949, Opisthobranchia of Sagamy Bay, pp. 37(J), 133(E), pl. 10, fig. 33, textfigs. 29-30 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 3; Abe, 1964, p. 35, pl. 13, fig. 47; Okada *et al.*, 1967, p. 175, fig. 658.

*Bethellina citrina*: Thompson, 1970, pp. 190-192, pl. 1 (a, b), text fig. 9; Thompson, 1976, pp. 167-169, fig. 95; Bertsch & Johnson, 1981, p. 27; Okutani *et al.*, 1986, p. 215; Gosliner, 1987, p. 60, fig. 65; Thompson, 1988, p. 84, fig. 31; Baba, 1990a, pp. 37(J), 133(E), pl. 10, fig. 33, textfigs. 29-30 (cf. p. 197); Higo & Goto, 1993, p. 418; Kwon *et al.*, 1993, pp. 331, 94, fig. 58-1.

*Umbraculum umbraculum* (non Lightfoot, 1786): Qi *et al.*, 1986, p. 57 (Description & Figure are changed with the next species).

**Material examined:** 2 inds., T'onggumi, Nov. 26, 1991 (J. R. Lee); 1 ind., Kadubong, Nov. 28, 1991 (J. R. Lee); 1 ind., Kwanūmdo, Nov. 29, 1991 (J. R. Lee); 2 inds., Sōdo, Jun. 17, 1992 (S. S. Choi); 2 inds., T'onggumi, Jan. 13, 1993 (J. R. Lee); 1 ind., Sōdo, Mar. 20, 1993 (B. L. Choe); 3 inds., Sōdo, Mar. 20, 1993 (B. L. Choe); 7 inds., Sōdo, Mar. 21, 1993 (J. R. Lee); 3 inds., Sōdo, Mar. 23, 1993 (J. R. Lee); 1 ind., Dongdo, Mar. 24, 1993 (J. R. Lee).

**Description:** Body small, about 10-40 mm in length of fixed specimens, with smooth ovoidal mantle, head bearing shield. Shell vestigial, but absent in large specimens. Gills situated posteriorly on right side under mantle. Body colour translucent, orange-yellow or deep orange-red. Mouth located transversely between foot and head shield; head shield reversely trapezoid. Rhinophores behind head shield enrolled to cylindrical shape, united only near base. Gills bipinnated about 25 pinnae; anus sited above on 15th pinna. Common genital orifices in front of gills; penis pointed, hook-shaped in fixed specimens. Shell internal, weakly calcified, equilateral triangles with narrowing down to apex and broadening up to other side. Foot square-shaped, but short in metapodium with tapering to

a bluntly point. Radulae with lateral teeth only, proportionately small root, long erect cusp bearing numerous denticles with becoming smaller than 1st and 2nd ones in size (Fig. 2-C).

**Habitat:** Tide pool to 10 m in depth within or around roots of sea weeds such as *Ecklonia cava* or *Eisenia bicyclis* in early spring.

**Remarks:** According to Thompson (1970, 1988), skin secretes defensive sulphuric acid (pH 1) if attacked.

**Type locality:** in sinu Suezensi ad littora (Coast of Suez in Panama).

**Localities:** Kōmun I. (Kwon *et al.*, 1993).

**Distribution:** Korea, Japan (Toyama Bay, Sagamy Bay, Kii, Misaki, Tomioka.), China, Polynesia, California, Galapagos, Atlantic seaboard, South-west England, Mediterranean coasts of France, Tyrrhenian Sea, Aegean Sea, Red Sea, Gulf of Aden, Australia (New South Wales, Queensland), Hawaii, Southern Africa, Palau Islands, Ceylon, New Caledonia, Indonesia, Mauritius.

Genus *Pleurobranchaea* Leue, 1813 군소불이속

\* 4. *Pleurobranchaea japonica* Thiele, 1925 올빼미군소불이 [Pl. 1, Fig. 6]

*Pleurobranchaea japonica* Thiele, 1925, Gast. Deutsch. Tiefsee-Exped., p. 249, pl. 45, fig. 8 (cited from Tsubokawa *et al.*, 1992); Okutani *et al.*, 1986, p. 215; Baba, 1990a, pp. 38(J), 133 (E), pl. 10, fig. 34, textfigs. 31-32 (cf. p. 197); Tsubokawa *et al.*, 1992, pp. 250-256, figs. 1-6; Higo & Goto, 1993, p. 418.

*Pleurobranchaea novaezealandiae* (non Cheeseman, 1878): Tchang, 1934, Contrib. Inst. Zoo. Natl. Acad. Peiping, 2(2), pp. 63-87, figs. 32-40, pl. 2, figs. 4-6, pl. 3, figs. 9-11, pl. 12, fig. 13 (cited from Tsubokawa *et al.*, 1992); Baba, 1937a, p. 229-231, fig. 12; Baba, 1938, p. 2; Baba, 1949, Opisthobranchia of Sagamy Bay, pp. 38(J), 133(E), pl. 10, fig. 34, textfigs. 31-32 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 4; Baba *et al.*, 1956, p. 217, pl. 26, fig. 3a-c (spawn); Abe, 1964, p. 36, pl. 13, fig. 45; Okada *et al.*, 1967, p. 175, fig. 657; Baba, 1969. Collecting and Breeding, 31(7), p. 191 (cited from Tsubokawa *et al.*, 1992); Kim & Rho, 1971, p.

14; Chau *et al.*, 1982, p. 77; pl. 8, figs. 7, 8; Hamatani & Irie, 1984, p. 173, textfig. 23; Qi *et al.*, 1986, p. 59; Qi *et al.*, 1989, pp. 116-117, fig. 85; Je, 1989, p. 27.

**Material examined:** 1 ind., T'onggumi, Nov. 26, 1991 (J. R. Lee); 1 ind., Kuam, Jan. 15, 1993 (J. R. Lee).

**Description:** Body medium, about 30 mm (fixed specimens), slightly swollen, ovoid. Shell absent. Body colour reticulated with minute dark brown wrinkles, being looked like pustules, on yellowish bright gray ground. Mouth circular form, sited under head shield; head shield proportionately large to body size, reversely trapezoid. Head with small projection on both dorsal and ventral sides. Rhinophores enrolled, slit on outer lateral surface. Eyes behind rhinophores observed in dissected body. Gills on right side under mantle, bipinnated into about 29 pinnae on either side, anus opened over almost between 12th and 17th pinnae; prebranchial opening produced just in front of base on rachis of pinnae; common genital orifices in front of prebranchial opening; female genital orifice sited up, male genital orifice flap down. Foot spread out, broader than mantle; metapodium developed backward, tongue-shaped. Radulae with lateral teeth only; lateral teeth constituted of bicuspid with outer cusp being larger than inner ones, decreased gradually in size as lateral tooth goes by from the 1st lateral to outward one; outmost lateral merely simple spine formed, arranged in sequence (Fig. 2-D).

**Habitat:** 10-15 m in depth.

**Remarks:** This species had been misidentified with *Pleurobranchaea novaezealandiae* till Tsubokawa *et al.* (1992)'s correction and redescription in 1992. Reports by Kim & Rho (1971) and Je (1989) need more direct confirmation of materials. However, their reports of *P. novaezealandiae* should be supposed to this species considering the result from the comparison of type locality of *P. novaezealandiae* to be New Zealand with distributions of this species through northeastern Asia.

**Type locality:** Kobe in Japan.

**Localities:** Seogwipo in Chejudo (Kim & Rho, 1971).

**Distribution:** Korea, Japan (Osaka Bay, Kii,

Shikoku, Kyushu), China (Tsintao, Huanghai, Bohai).

Order Nudibranchia 나새 목

Suborder Doridacea 갯민숭달팽이 아목

Family Chromodorididae 갯민숭달팽이 과

Genus *Chromodoris* Alder & Hancock, 1855  
갯민숭달팽이 속

\* 5. *Chromodoris tinctoria* (Rüppell & Leuckart, 1828) 망사갯민숭달팽이 [Pl. 2, Fig. 7]

*Doris tinctoria* Rüppell & Leuckart, 1828, 1831 for 1828 Mol. Atlas Rüppell Reise Nordl. Afrika, p. 32, pl. 9, fig. 4 (cited from Rudman, 1973; cf. Russell, 1971); Russell, 1971, p. 112.

*Chromodoris tinctoria*: Eliot, 1911, Proc. Zool. Sci. Lond., 1, pp. 1068-1072, pl. 61 (cited from Rudman, 1973); Gohar & Soliman, 1967, Publs. mar. biol. Stn Ghardaqa, No. 14, pp. 77-94 (cited from Rudman, 1973); Rudman, 1973, pp. 191-193; Baba, 1990a, pp. 49-50(J), 141(E), pl. 17, fig. 59, textfig. 52 (cf. p. 198); Higo & Goto, 1993, p. 427.

*Chromodoris alderi* Collingwood, 1881, p. 132, pl. 9, figs. 34-37; Russell, 1971, p. 54; Rudman, 1973, pp. 191-193; Higo, 1973, p. 276; Gosliner, 1989, p. 75, fig. 108; Je, 1989, p. 27; Baba, 1990a, pp. 49-50(J), 141(E), pl. 17, fig. 59, textfig. 52 (cf. p. 198); Choe & Lee, 1992, p. 191; Choe, 1992, pp. 433(K), 744(E), pl. 124, fig. 219.

*Glossodoris reticulata* (non Pease, 1866): Baba, 1933, p. 169 (cited from Rudman, 1973); Allan, 1947, Rec. Aust. Mus., 21(8), pp. 433-463, pls. 41-43 (cited from Rudman, 1973).

*Glossodoris alderi*: Baba, 1937b, p. 297; Baba, 1938, p. 2; Baba, 1949, Opisthobranchia of Sagami Bay, pp. 49-50(J), 141(E), pl. 17, fig. 59, textfig. 52 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 5; Baba, 1953, p. 205; Abe, 1964, p. 45, pl. 20, fig. 71; Okada *et al.*, 1967, p. 178, fig. 672; Kim & Rho, 1971, p. 15.

*Chromodoris petechialis* (non Gould, 1852): Kay & Young, 1969, pp. 204-205, figs. 44, 52.

*Chromodoris obsoleta* (non Rüppell & Leuckart, 1828): Okutani & Habe, 1983, pp. 35, 174.

*Chromodoris obsoluta* (non Rüppell &



Leuckart, 1828) (sic ?): Okutani *et al.*, 1986, p. 222; Tan *et al.*, 1987, pp. 74, 79, fig. 28.

**Material examined:** 1 ind., Naesujön, Jul. 13, 1989 (J. R. Lee); 1 ind., Hyölam, Jul. 14, 1989 (J. R. Lee); 1 ind., Namyang, Jun. 13, 1993 (J. R. Lee).

**Description:** Body about 15-40 mm in length, ovoid or slender, with ambiguous demarcation of head. Ground body colour milky white, reticulated with red on dorsal surfaces, lined with inner red spots and outer yellow string on margin. Mouth slit with short oral tentacles bilaterally, covered by mantle entirely. Rhinophores within sheaths, deep red except milky white bases, lamellate. Gills branched into 8-10 plumes, surrounding anus to a cirlet; each branchial plume bipinnated, lined with deep red band on margin. Common genital orifices sited anteriorly on right body wall. Foot narrow, with metapodium behind mantle, lined with yellow string on margin. Radulae with rachidian plate and lateral teeth; rachidian plate triangular; 1st lateral with denticles on both sides, 2nd lateral with denticles on left (Fig. 2-E).

**Habitat:** 5-15 m in depth with abundant supply of Bryozoa.

**Remarks:** Rudman (1973) proposed *Chromodoris alderi* as synonym of this species with explanation of differences between two species. Therefore, reports by Okutani & Habe (1983) and Okutani *et al.* (1986) should be supposed to synonym of this species in consideration of discussion of original description by Rüppell & Leuckart (1828; cited from Rudman, 1973). Reports by Kim & Rho (1971) and Je (1989) need more direct confirmation of materials.

**Type locality:** Tor in Egypt.

**Localities:** Hanlim in Chejudo (Kim & Rho, 1971), Ch'akwi I., Söngsanp'o in Chejudo (Choe, 1992), Ch'akwi I. in Chejudo (Choe & Lee, 1992).

**Distribution:** Korea, Japan (Toyama Bay, Kii, Coast of Jpan from the Sagami Bay southwards,) Taiwan, Indian Ocean, Southern Pacific, Natal month coast in Africa, Red Sea, Hawaii, New Caledonia, Australia (Queensland, New South Wales), Solomon Is.

## 6. *Chromodoris orientalis* Rudman, 1983 흰갯민숭달팽이 [Pl. 2, Fig. 8]

*Chromodoris pallelescens* (non Bergh, 1874): Eliot 1913, Jour. Coll. Sci., Imp. Univ. Tokyo, 35, pp. 28-29, pl. 2, fig. 8 (cited from Rudman, 1983); Higo, 1973, p. 277; Orr, 1981, Hong Kong Nudibranchs, p. 24 (cited from Rudman 1983); Lee & Jwa, 1988, p. 20; Kwon *et al.*, 1993, pp. 332, 94, fig. 59-1.

*Glossodoris pallelescens* (non Bergh, 1874): Baba, 1933, Ann. Stationes Zoologicae Japonenses, 14, p. 169 (cited from Rudman, 1983); Baba, 1935, Sci. Rep. Tohoku Imp. Univ., (Bio.), 10, pp. 340-341, pl. 6, fig. 4, textfig. 6 (cited from Rudman, 1983); Baba, 1937b, p. 297; Baba, 1938, p. 2; Baba, 1949, Opisthobranchia of Sagami Bay, pp. 50(J), 141 (E), pl. 17, fig. 60, textfig. 53 (cited from Baba, 1990a); Taki, 1951, p. ?, pl. 120, fig. 2 (cited from Lee, 1958); Baba & Hamatani, 1952, p. 5; Baba, 1953, p. 205; Baba *et al.*, 1956, p. 209, pl. 24, fig. 2 (spawn), textfig. 1; Lee, 1958, p. 21; Abe, 1964, pp. 45-46, pl. 20, fig. 72; Okada *et al.*, 1967, p. 177, fig. 668; Kim & Rho, 1969, p. 81; Kim & Rho, 1971, p. 15; Kang *et al.*, 1971, p. 65; Yoo, 1976, p. 91, textfig. 15-7; Hamatani & Irie, 1984, p. 173; Kim & Kim, 1986, p. 321; Qi *et al.*, 1986, p. 74; Lee *et al.*, 1989, p. 20; Je, 1989, p. 27; Lee, 1991, p. 54.

*Chromodoris orientalis* Rudman, 1983, pp. 161-165, figs. 26-27; Okutani & Habe, 1983, pp. 35, 223; Baba, 1985, pp. 225-227, textfigs. 2a, 3a, 4a, 5a; Okutani *et al.*, 1986, p. 223; Baba, 1990a, pp. 50(J), 141(E), pl. 17, fig. 60, textfig. 53 (cf. p. 198); Choe & Lee, 1992, p. 192; Choe, 1992, pp. 433-434(K), 744-745(E), pl. 124, fig. 220; Choe & Lee, 1993, p. 270; Higo & Goto, 1993, p. 427.

**Material examined:** 2 inds., Kuam, Jul. 11, 1989 (Scuba); 5 inds., T'onggumi, Jul. 12, 1989 (Scuba); 2 inds., Hyölam, Jul. 14, 1989 (Scuba); 1 ind., Taep'ungch'wi, Jul. 15, 1989 (Scuba); 1 ind., T'onggumi, Nov. 26, 1991 (Scuba); 1 ind., To-dong, Nov. 27, 1991 (Scuba); 1 ind., T'onggumi, Nov. 26, 1991 (Scuba); 1 ind., Södo, Jun. 17 (S. S. Choi); 5 inds., Naesujön, Aug. 7, 1992 (J. R. Lee); 2 inds., Taeha, Aug. 10, 1992 (J. R. Lee); 4

inds., Namyang, Jan. 13, 1993 (J. R. Lee); 2 inds., Kuam, Jan. 16, 1993 (J. R. Lee).

**Description:** Body to 15-30 mm, slender, with ambiguous demarcation of head. Ground body colour white, arranged irregularly with small round black spots except sole, lined with deep yellow on margin of mantle and foot. Mouth slit with short oral tentacles, covered by mantle entirely. Rhinophores within sheaths, deep yellow except white base, bipinnated; base of rhinophores smooth, cylindrical. Gills branched into 12-18 plumes, surrounding anus to a circlet; each branch bipinnated, lined with deep yellow on margin. Common genital orifices sited anteriorly on right body wall; male genital orifice conical in fixed specimens. Foot narrow, with metapodium behind mantle, lined with yellow on margin. Radulae with rachidian plate and lateral teeth; rachidian plate triangular; 1st lateral with denticles on both sides, 2nd lateral with denticles on left (Fig. 2-F).

**Habitat:** 5-20 m in depth with abundant supply of Cnidaria such as Hydroids.

**Remarks:** This species had been misidentified with *Chromodoris pallescens* Bergh, 1874 [= *Chromodoris aspersa* (Gould, 1852)] by Eliot (1913; cited from Rudman, 1983). Reports by Kim & Rho (1969, 1971), Kang *et al.* (1971), Kim & Kim (1986), Lee & Jwa (1988), Lee *et al.* (1989), Je (1989), Lee (1991) need more direct confirmation of materials.

**Type locality:** Bullf Is., Shelter Is. in Hong Kong.

**Localities:** Hoengkan I. in Ch'uja I. (Kim & Rho, 1969); Söngsapp'o in Chejudo (Kim & Rho, 1971); Sangch'uja I. (Kim & Kim, 1986); Cheju (Lee & Jwa, 1988); Kosan, Sinch'on, Haengwon in Chejudo (Lee *et al.*, 1989); Gapa I., Mara I. in Chejudo (Lee, 1991); Pömsöm, Ch'akwi I., Mara I. in Chejudo (Choe & Lee, 1992); Hoengkan I. in Sangch'uja I., Taesöri, Dolsan I. Imp'o, Kuhül I. in Sohüksan I., Pyösön, Sökwi-p'o, Supsöm, Munsöm, Pömsöm, Mara I. in Chejudo, Kuam, T'onggumi, Hyölam, To-dong in Ullung I. (Choe, 1992); Southern coast (Kwon *et al.*, 1993); T'onggumi, Taeha in Ullung I. (Choe & Lee, 1993).

**Distribution:** Korea, Japan (Toyama Bay, Sagami Bay, Suruga Bay, Echizen Coast, Kii, Osaka Bay, Pacific coasts of Japan from Asamushi southwards), China, Tahiti.

Genus *Hypselodoris* Stimpson, 1855 파랑갯민숭달팽이 속

\* **7. *Hypselodoris festiva* (A. Adams, 1861)** 파랑갯민숭달팽이 [Pl. 2, Fig. 9]

*Doriprismatica festiva* A. Adams, 1861, p. 140; Russell, 1971, p. 73.

*Chromodoris iris* Collingwood, 1881, pp. 127-128, pl. 9, figs. 9-14.

*Chromodoris marenzelleri* Bergh, 1882, Verhandl. der k. k. zool.-bot. Gesell. Wien 31, pp. 219-222, pl. 6, figs. 1-10 (cited from Baba, 1990a; cf. Russell, 1971); Russell, 1971, p. 87.

*Glossodoris (estiva)* (sic): Baba, 1935, pp. 338-340, pl. 6, fig. 1, textfig. 5 (cited from Lee, 1958); Taki, 1951, p. ?, pl. 120, fig. 6 (cited from Lee, 1958); Uchinomi, 1956, p. 98, pl. 49, fig. 8 (cited from Lee, 1958).

*Glossodoris festiva*: Baba, 1937b, p. 279; Baba, 1938, p. 2; Baba, 1949, Opisthobranchia of Sagami Bay, pp. 51(J), 142(E), pl. 18, fig. 63, textfig. 56 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 5; Baba, 1953, p. 205; Baba *et al.*, 1956, pp. 210-211, pl. 24, fig. 3a-3b (spawn), textfig. 2; Abe, 1964, pp. 47-48, pl. 21, fig. 76, textfig. 16; Okada *et al.*, 1967, p. 178, fig. 669; Kim & Rho, 1969, p. 81; Kim & Rho, 1971, p. 15; Kang *et al.*, 1971, p. 65; Hamatani & Irie, 1984, p. 173; Lee *et al.*, 1989, p. 20; Lee, 1991, p. 54.

*Hypselodoris festiva*: Higo, 1973, p. 277; Okutani & Habe, 1983, pp. 36, 171; Baba, 1985, pp. 226-228, textfigs. 2-5; Okutani *et al.*, 1986, p. 223; Tan *et al.*, 1987, pp. 74, 81, fig. 44; Baba, 1990a, pp. 51(J), 142(E), pl. 18, fig. 63, textfig. 56 (cf. p. 198); Choe & Lee, 1992, p. 125, fig. 221; Higo & Goto, 1993, p. 428; Kwon *et al.*, 1993, pp. 332, 94, fig. 59-2.

*Chromodoris festiva*: Yoo, 1976, p. 91, textfig. 15-8; Lee & Jwa, 1988, p. 20; Je, 1989, p. 27.

*Hypselodoris festive* (sic): Qi *et al.*, 1989, p. 125, pl. 3, fig. 10.

**Material examined:** 1 ind., Taep'ungh'wi, Jun. 15, 1989 (J. R. Lee); 1 ind., T'onggumi, Jan. 13, 1993 (J. R. Lee); 1 ind., Namyang, Jan. 13, 1993 (J. R. Lee); 2 inds., T'onggumi, Mar. 10, 1993 (J. R. Lee); 2 inds., Södo, Mar. 23, 1993 (J. R. Lee).

**Description:** Body small, about 10-25 mm, slender, with ambiguous demarcation of head. Ground body colour deep blue, lined with three deep yellow strings from rhinophores to gills on mantle, lined with deep yellow on margin of mantle and foot, too. Mouth slit with short oral tentacles on both sides, covered entirely by mantle. Rhinophores within sheaths, deep orange-red except milky white bases, bipinnated; bases of rhinophores smooth, cylindrical. Gills branched into about 12 plumes, surrounding anus to a circlet; each branchial plume bipinnated, lined with deep orange-red on margin. Common genital orifices sited anteriorly on right body wall. Foot narrow, notched in front, with metapodium behind mantle, lined with yellow on margin. Radulae with lateral teeth only; 1st lateral with 3 cusps; from 2nd lateral to outmost one with 2 cusps (Fig. 2-G).

**Habitat:** 5-15 m in depth with abundant supply of Bryozoa and Hydroids.

**Remarks:** Reports by Kim & Rho (1969), Kim & Rho (1971), Kang *et al.* (1971), Lee *et al.* (1989), Lee (1991), Lee & Jwa (1988), Je (1989) need more direct confirmation of materials.

**Type locality:** Tsu-Sima in Japan.

**Localities:** Cheju I. (Lee, 1958); Hoengkan I. in Ch'uja I. (Kim & Rho, 1969); Söngsa-np'ö in Chejudo (Kim & Rho, 1971); Cheju (Lee & Jwa, 1988); Kosan, Hwasun in Chejudo (Lee *et al.*, 1989); Gapa I., Mara I. in Chejudodo (Lee, 1991); Pömsöm, Ch'akwi I., Söngsanp'ö, Mara I. in Chejudo (Choe & Lee, 1992); Pömsöm, Ch'akwi I. in Chejudo (Choe, 1992); Southeastern coast (Kwon *et al.*, 1993).

**Distribution:** Korea, Japan (Toyama Bay, Sagami Bay, Kii, Osaka Bay, West coast of Noto Peninsula, Very common on the Pacific coast of Japan from Asamushi southwards), China (Huanghai, Bohai).

Family Cadlinidae 노란갯민숭달팽이 과 (신칭)

Genus *Cadlina* Bergh, 1878 노란갯민숭달팽이 속 (신칭)

**\*\* 8. *Cadlina japonica* Baba, 1937** 노란테갯민숭달팽이 (신칭) [Pl. 2, Fig. 10-11]

*Cadlina japonica* Baba, 1937c, pp. 76-78, textfig. 1; Baba, 1937b, p. 299; Baba, 1938, p.

2; Baba, 1949, Opisthobranchia of Sagami Bay, pp. 57(J), 146(E), pl. 21, figs. 75-77, textfig. 76 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 6; Russell, 1971, p. 82; Qi *et al.*, 1986, p. 77; Qi *et al.*, 1989, p. 128, pl. 3, fig. 6; Baba, 1990a, pp. 57(J), 146(E), pl. 21, figs. 75-77, textfig. 76; Higo & Goto, 1993, p. 427.

**Material examined:** 1 ind., T'onggumi, Nov. 26, 1991 (J. R. Lee); 1 ind., Kadubong, Nov. 28, 1991 (J. R. Lee); 2 inds., T'onggumi, Jan. 13, 1993 (J. R. Lee); 8 inds., T'onggumi, Mar. 10, 1993 (J. R. Lee).

**Description:** Body medium, about 50-70 mm in fixed, elliptical, with ambiguous demarcation of head. Mantle with scattered small yellow tubercles. Ground body colour whitish pale yellow, lined with yellow on margin of mantle. Mouth slit into two lobules with short oral tentacles on both sides. Rhinophores conical, within sheaths, bipinnated; sheaths lined with yellow on margin. Gills branched into 6 plumes, surrounding anus to a circlet; each plume tripinnated, lined with yellow on margin. Body wall and underside of mantle reticulated with delicate white markings. Common genital orifices sited anteriorly on right body wall; penis cone-shaped in fixed specimens, covered with genital flap. Foot narrow, lined with yellow on margin; metapodium short, came out from mantle during locomotion. Radulae with central and lateral teeth; central with bicusps, lateral with denticles on left (Fig. 2-H).

**Habitat:** 5-15 m in depth.

**Type locality:** Amadaiba, Sagami Bay in Japan.

**Distribution:** Korea, Japan (Akkeshi, Sagami Bay, Toba, Kii, Pacific coast of Japan), China (Huanghai, Bohai).

Family Aldisidae 붉은갯민숭달팽이 과 (신칭)  
Genus *Aldisa* Bergh, 1878 붉은갯민숭달팽이 속 (신칭)

**\*\* 9. *Aldisa cooperi* Robilliard & Baba, 1972** 점박이붉은갯민숭달팽이 (신칭) [Pl. 2, Fig. 12]

*Aldisa sanguinea* (non Cooper, 1863): Baba, 1940, Bull. Biogergr. Soc. Japan, 10(6), pp. 103-104, textfigs. 1-2 (cited from Robilliard & Baba, 1972); Baba, 1949, Opisthobranchia of Sagami Bay, pp. 62-63(J), 150(E), pl. 24, fig. 86, textfig.

76 (cited from Baba, 1990a); Baba *et al.*, 1956, p. 211, pl. 24, fig. 6 (spawn); Baba, 1957, Journ. Fac. Sci. Hokkaido Univ., ser. 6, Zool., 13(1-4), p. 9 (list) (cited from Robilliard & Baba, 1972); McDonald & Nybakken, 1980, p. 50, fig. 42; Hamatani & Irie, 1984, p. 173.

*Aldisa sanguinea cooperi* Robilliard & Baba, 1972, pp. 409-414, textfigs. 1-4; Higo & Goto, 1993, p. 430.

*Aldisa cooperi*: Baba, 1990a, pp. 62-63(J), 150(E), pl. 24, fig. 86, textfig. 76 (cf. p. 199); Behrens, 1991, p. 63, fig. 104; Millen, 1983, p. 384.

**Material examined:** 8 inds., T'onggumi, Mar. 1993 (J. R. Lee).

**Description:** Body small, 10-30 mm in length, elliptical. Mantle with variant size of tubercles scattered on irregularly. Body colour entirely dark red with 3-4 black spots through the middle on mantle; each black spot composed of finely minute points, 4th spot most large and deep in colour. Mouth transverse, with short vestigial oral tentacles on both sides. Rhinophores within tuberculate sheaths, lamellate, perfoliate except cylindrical base. Gills branched into 7 plumes, surrounding anus to a cirlet; each branchial plume bipinnated; gill sheath denticulated. Common genital orifices sited anteriorly on right body wall. Foot reversely equilateral triangle-shaped; metapodium short, tapered bluntly to a point. Radulae just like numerous simple spine-shaped with denticles on its apex area (Fig. 2-I).

**Habitat:** 5-10 m in depth in winter; Robilliard & Baba (1972) reported this species to feed and lay eggs on red Demospongiae.

**Type locality:** Umatilla Reef, Washington in U. S. A.

**Distribution:** Korea, Japan (Hayama, Sagami Bay, Osaka Bay, Asamushi, Bôshû, Amakusa, On the Pacific coast of Japan), USA (Umatilla Reef, Washington, Anguilar Point, Barkley Sound, British Columbia, California, Alaska).

Family Dendroborididae 수지갯민숭달팽이 과 (신칭)

Genus *Dendroboris* Ehrenberg, 1831 수지갯민숭달팽이 속 (신칭)

**\*\* 10. *Dendroboris denisoni* (Angas, 1864) 여왕갯민숭달팽이 (신칭) [Pl. 3, Fig. 13-14]**

*Doris denisoni* Angas, 1864, p. 45, pl. 4, fig. 2; Russell, 1971, p. 67.

*Doridopsis gemmacea* Alder & Hancock, 1864, Trans. Zool. Soc. London, 5, pp. 126-127, pl. 31, figs. 4-7 (cited from Thompson, 1975; cf. Russell, 1971); Russell, 1971, p. 75.

*Doridopsis clavulata* Alder & Hancock, 1864, Trans. Zool. Soc. London 5, p. 127, pl. 31, figs. 10-12 (cited from Thompson, 1975; cf. Russell, 1971); Russell, 1971, p. 64.

*Doridopsis mammosa* Abraham, 1877, Proc. Zool. Soc. London, p. 266, pl. 29, figs. 20-21 (cited from Thompson, 1975; cf. Russell, 1971); Russell, 1971, p. 87.

*Dendroboris gunnamatta* Allan, 1932, Australian Zoologist, 7(2), pp. 97-98, pl. 5, figs. 4-7 (cited from Thompson, 1975; cf. Russell, 1971); Russell, 1971, p. 78.

*Doridopsis arenosa* Risbec, 1930, Ann. Inst. Oceanogr. (Monaco) Paris (N.S.), 7(7), pp. 266-271, pl. 1, fig. 1, textfigs. 1-10 (cited from Thompson, 1975); Russell, 1971, p. 56.

*Dendroboris (Dendroboris) gemmacea*: Baba, 1937b, p. 309, pl. 1, fig. 4; Baba, 1938, p. 3; Baba, 1949, Opisthobranchia of Sagami Bay, pp. 69-70(J), 155(E), pl. 27, figs. 100-101 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 7; Baba *et al.*, 1956, p. 212, pl. 24, fig. 9 (spawn); Hamatani & Irie, 1984, p. 173; Qi *et al.*, 1986, p. 83.

*Dendroboris (Dendroboris) denisoni*: Abe, 1964, p. 56, pl. 27, fig. 93.

*Dendroboris denisoni*: Thompson, 1975, pp. 500-502, fig. 5a-c; Gosliner, 1987, p. 88, fig. 146; Tan *et al.*, 1987, pp. 73, 76; Coleman, 1989, p. 45; Baba, 1990a, pp. 69-70(J), 155(E), pl. 27, figs. 100-101 (cf. p. 199); Higo & Goto, 1993, p. 433.

**Material examined:** 3 inds., T'onggumi, Nov. 26, 1991 (J. R. Lee); 1 ind., To-dong, Nov. 27,

1991 (J. R. Lee); 2 inds., Kwanūmdo, Nov. 29, 1991 (J. R. Lee); 1 ind., Namyang, Jan. 16, 1993 (J. R. Lee).

**Description:** Body medium, about 25-70 mm in fixed specimens, elliptical, swollen. Mantle with 3 large pustules arranged through both sides of middle of body, another small one posteriorly sited between rhinophores; each pustule surrounded by a circle of small tubercles at base, pale blue ocelli gleamed between them. Mouth slit, encircled by short oral tentacles. Rhinophores within sheaths, dark brown, lamellate, perfoliate; rhinophore sheaths more produced up than mantle. Pustules more pale maroon than ground body colour, bearing dark brown blobs at their summits. Gills branched into 4-5 plumes, surrounding anus to a circlet; each branchial plume tripinnated. Common genital orifices anteriorly sited on one third of right body wall; male genital orifice on underside, female genital pore on upside. No radulae; all species of this genus suck tissue of sponges (Gosliner, 1987).

**Habitat:** 5-15 m in depth.

**Remarks:** Pustulous secretions tasted to human tongue peppery and most unpleasant, obviously defensive in function (Thompson, 1975).

**Type locality:** Port Jackson in Australia.

**Distribution:** Korea, Japan (Kii, Osaka Bay, Common on the Pacific coasts of Japan from the Sagami Bay southwards), China, Taiwan, Indian Ocean, Australia (South Pacific coasts, New South Wales, Queensland, Western Australia), Southern Africa, Hawaii.

Suborder Dendronotacea 꽃송이갯민숭이 아목 (신칭)

Family Tritoniidae 예쁜이갯민숭이 과 (신칭)

Genus *Tritonia* Cuvier, 1798 예쁜이갯민숭이 속 (신칭)

**\*\* 11. *Tritonia festiva* (Stearns, 1873) 예쁜이갯민숭이 (신칭) [Pl. 3, Fig. 15]**

*Lateribranchaea festiva* Stearns, 1873, Proc. Calif. Acad. Sci., 5, pp. 77-78, textfig. 1 (cited from MacFarland, 1966); Russell, 1971, p. 73.

*Tritonia reticulata* Bergh, 1882, Beiträge zur Kenntnis der Japanischen Nudibranchien II. Verh. k. k. Zool. - Bot. Gesellsch. Wien, pp. 239-250, pl. 8, figs. 1-12, pl. 10, figs. 1-10 (cited from

MacFarland, 1966); Russell, 1971, p. 104.

*Sphaerostoma undulata* O'Donoghue, 1924, Trans. Roy. Can. Inst., Toronto, 15, pt. 1, pp. 3-6, pl. 1, figs. 1-4 (cited from MacFarland, 1966); O'Donoghue, 1926, Trans. Roy. Canad. Inst. 15 (2), pp. 199-247 (list) (cited from Baba, 1969); Russell, 1971, p. 114.

*Duvaucelia undulata* var. *muroranica* Baba, 1940, Bull. Biogeogr. Soc. Japan 10(6), pp. 106-107 (cited from Baba, 1969); Baba, 1957, Journ. Fac. Sci. Hokkaido Univ. 6, Zool. 13(1-4), pp. 8-14 (cited from Baba, 1969).

*Duvaucelia (Duvaucelia) undulata muroranica*: Russell, 1971, p. 91.

*Tritonia festiva*: Johnson & Snook, 1927, Seashore Animals of the Pacific Coast, p. 491, pl. 7, fig. 5 (cited from MacFarland, 1966); Marcus, 1961, The Veliger 3 (Supp. pt. 1), pp. 1-84, pls. 1-10 (cited from Baba, 1969); Marcus & Marcus, 1967, American opisthobranch mollusks. Stud. tropical Ocenograph. no. 6 (cited from Roller, 1969); Baba, 1969, pp. 132-134, textfig. 1; Roller & Long, 1969, p. 428; Ling, 1969, p. 232; Roller, 1969, p. 372; Gosliner & Williams, 1970, p. 180; Thompson, 1971, p. 337, textfig. 3; Williams, 1972, p. 308; Sphon, 1972, p. 156; Gomez, 1973, pp. 163-164, pl. 1, fig. 1; Thompson, 1976, p. 17, fig. 11(b); McDonald & Nybakken, 1978, p. 113; McDonald & Nybakken, 1980, p. 54, fig. 61; Beeman & Williams, 1980, pp. 331-332, pl. 107, fig. 14-50; Okutani *et al.*, 1986, p. 229; Behrens, 1991, p. 74, fig. 137; Higo & Goto, 1993, p. 434.

*Duvaucelia (Duvaucelia) reticulata*: Baba, 1937b, p. 310.

*Duvaucelia festiva*: MacFarland, 1966, pp. 218-226, pl. 39, figs. 1-6, pl. 43, figs. 10-19, pl. 44, fig. 2, pl. 45, figs. 7-8.

**Material examined:** 1 ind., Dongdo, Jun. 19, 1992 (S. S. Choi); 6 inds., Sōdo, Mar. 23, 1993 (J. R. Lee).

**Description:** Body about 20-30 mm in fixed specimens, slender, streamlined. Gills arranged through margin of mantle on both sides to metapodium. Ground body colour pale purple, lined with chalk white on mantle, gills and oral veil whitish gray. Oral veil covering mouth, thin, transparent, wavy in margin. Rhinophores club

like shaped, its apex tapered to point, with short and thick base, retractile, buried in well developed sheaths; rhinophore sheaths with undulating margin, connected by white line each other. Gills composed of 8-9 pairs of cerata; each ceras dendritic, arranged with alternation between small and large ones. Anus anteriorly sited on right body wall, where common genital orifices located above anus. Foot narrow, translucent white, with tapered metapodium. Radulae with a central and numerous lateral teeth; the central with three cusps; the lateral sickle shaped (Fig. 2-J).

**Habitat:** 5-20 m in depth with abundant supply of Cnidaria.

**Remarks:** There are variable patterns of colour (Baba, 1967) and they feed on Anthozoa, Stolonifera, Alcyonacea, Gorgonacea, Pennatulacea, and so on (Gomez, 1973; Nybakken & McDonald, 1978). This species is able to swim by dorso-ventral flexions if alarmed (Thompson, 1971).

**Type locality:** Point Pinos, Monterey Bay, California in U. S. A.

**Distribution:** Korea, Japan (Hokkaido, Sagami Bay, Muroan); North American Pacific Coast (Monterey Bay, Vancouver Island, San Luis Obispo County, San Juan Islands, Mateo County).

Family Scyllaeidae 사슴갯민숭이 과 (신칭)

Genus *Notobryon* Odhner, 1936 사슴갯민숭이 속 (신칭)

**\*\* 12. *Notobryon wardi* Odhner, 1936 사슴갯민숭이 (신칭) [Pl. 3, Fig. 16-17]**

*Notobryon wardi* Odhner, 1936, Mem. Mus. Roy. Hist. Nat. Belgique 2(3), pp. 1099-1103, pl. 1, figs. 1-3, textfigs. 31-38 (cited from Baba, 1937b); Baba, 1937b, pp. 321-324, pl. 2, fig. 3, textfig. 14; Baba, 1938, p. 3; Baba, 1949, Opisthobranchia of Sagami Bay, pp. 90(J), 169 (E), pl. 36, figs. 31-32, textfig. 115 (cited from Baba, 1990a); Baba & Hamatani, 1952, p. 8; Abe, 1964, pp. 58-59, pl. 27, fig. 97; Okada *et al.*, 1967, p. 184, fig. 693; Russell, 1971, p. 116; Thompson & Brown, 1981, pp. 438-441, figs. 1-2; Hamatani & Irie, 1984, p. 173; Qi *et al.*, 1986, p. 94; Qi *et al.*, 1989, pp. 135-136, textfig. 104; Baba, 1990a, pp. 90(J), 169(E), pl. 36, figs. 31-32, textfig. 115; Higo & Goto, 1993,

p. 435.

**Material examined:** 1 ind., Dongdo, Jun. 17, 1992 (S. S. Choe); 1 ind., Kuam, Jul. 11, 1989 (Scuba); 1 ind., Tonggumi, Mar. 10, 1993 (J. R. Lee).

**Description:** Body about 20-40 mm, slender, with two pair of parapodial lobes where gills sited, deep brown in colour, lined with deep maroon on margin of mantle, scattered irregularly with gleamingly bright brown or white of small pointed tubercles both on dorsal and lateral sides. Mouth slit in front of oral veil; oral veil looked like separated two lobules. Rhinophores lamellate, perfoliate, deeply buried in slim sheaths; sheaths looked like crater, notched in both anterior and posterior ends of summit, with crests along posterior ridges. Gills arranged into semi-circle, with 4 tufts through margin of each lobe and another 1 tuft on rear end of mantle; each tuft dendritic. Each parapodial lobe with hilly spot on far ends of margin. Anal opening produced in front of right posterior lobe; Common genital orifices on right body wall between rhinophore and anterior lobe. Foot slender; metapodium long, characteristically lower than mantle. Radulae with numerous lateral teeth only; 1st lateral small and reduced, 2nd lateral with unicus and many denticles on both sides (Fig. 2-K).

**Habitat:** 5-10 m in depth.

**Type locality:** Gotcombe Head, Port Curtis, Queensland in Australia.

**Distribution:** Korea, Japan (Sagami Bay, Kii, Osaka Bay, Amakusa, Common on the Pacific coasts of Japan), China, Australia.

Suborder Aeolidacea 산호갯민숭이 아목 (신칭)

Family Facelinidae 하늘소갯민숭이 과 (신칭)

Genus *Hermisenda* Bergh, 1878 하늘소갯민숭이 속 (신칭)

**\*\* 13. *Hermisenda crassicornis* (Eschscholtz, 1831) 하늘소갯민숭이 (신칭) [Pl. 3, Fig. 18; Pl. 4, Fig. 19]**

*Caolina crassicornis* Eschscholtz, 1831, p. 15, pl. 19, fig. 2; Russell, 1971, p. 66.

*Aeolis (Flabellina?) opalescens* (sic) Cooper, 1862, Proc. Calif. Acad. Nat. Sci., 2, p. 205 (cited from MacFarland, 1966); Russell, 1971, p.

95.

*Flabellina opalescens* Cooper, 1863, Proc. Calif. Acad. Nat. Sci., 3, p. 60 (cited from MacFarland, 1966).

*Hermissenda opalescens*: Bergh, 1878, pp. 573-574; Bergh, 1879, Proc. Acad. Nat. Sci. Philadelphia, 31, pp. 81-85, pl. 1, figs. 9-12, pl. 2, figs. 1-6 (cited from MacFarland, 1966); Guernsey, 1912, First Annual Report Laguna Marine Laboratory, p. 78, fig. 39J (cited from MacFarland, 1966).

*Hermissenda crassicornis*: O'Donoghue, 1922, Proc. Mal. Soc. London, 15, pts. 2, 3, pp. 133-135 (cited from MacFarland, 1966); Lance, 1966, pp. 79-80; MacFarland, 1966, pp. 358-365, pl. 55, fig. 1, pl. 70, figs. 13-14, pl. 71, figs. 1-14; Hurst, 1967, p. 266, pl. 31, fig. 22, textfig. 4a (spawn); Roller & Long, 1969a, p. 427; Gosliner & Williams, 1970, p. 178; Holleman, 1972, p. 60; Williams, 1972, pp. 306-307; Sphon, 1972, p. 155; Zack, 1975, pp. 271-275; Behrens & Tuel, 1977, pp. 33, 35, fig. 2; McDonald & Nybakken, 1978, p. 115; Beeman & Williams, 1980, p. 339, pl. 110, fig. 14-66; Longley & Longley, 1982, pp. 230-231; Okutani *et al.*, 1986, p. 231; Behrens, 1991, p. 97, fig. 207; Higo & Goto, 1993, p. 441.

*Cuthona (Hervia) emurai* Baba, 1937b, pp. 329-331, textfig. 16; Russell, 1971, p. 71; Qi *et al.*, 1989, p. 139, pl. 2, fig. 5.

*Dondice emurai*: Abe, 1964, pp. 70(J), 89(E), pl. 35, fig. 125.

*Phidiana crassicornis*: McDonald & Nybakken, 1980, p. 64, figs. 101-102.

**Material examined:** 1 ind., T'onggumi, Mar. 10, 1993 (J. R. Lee); 5 inds. Södo, Mar. 23 (J. R. Lee).

**Description:** Body about 10-25 mm in fixed specimens, slender. Ground colour translucent whitish gray, lined with orange-yellow, being guarded by bluish milky white outlines, from head to metapodium on mantle; orange-yellow line composed of central deep orange-yellow string with peripheral pale one; the central alternated between thick and narrow lines, and bluish milky white outline connected from head tentacles through mantle to metapodium. Mouth slit without oral tentacles. Head tentacles flexible.

Rhinophores erected dorsally, annulated with 8-10 annuli, eyes posteriorly on base of rhinophores with black point. Gills grouped into 5-6 pairs of ceratal groups on notum at intervals; each cerata differed in size, orange-yellow, translucent, bearing deep orange-red coloured core within center; it's apexes milky white, bearing nematocysts within [Edmonds, 1966; Nicol, 1967 (cited from Zack, 1975)], arranged on a roughly horseshoe-shaped base opening outward; horseshoe-shaped structures formed merely oblique rows in posterior parts. 1st ceratal group compose of about 52 cerata, becoming smaller than following ones in number, aperted from 2nd; the rest becoming more close to each other with succeeding cerata. Common genital orifices sited under 1st ceratal group of right body wall; male genital orifices gimlet-shaped in fixed specimens, nephroproct on margin between 1st and 2nd ceratal groups, anus between 2nd and 3rd. Foot transparent, milky white, slender, arched in anterior part, tapered to point in tail. Radulae with central tooth only; unicusps in middle with 3-4 denticles on both sides (Fig. 2-L).

**Habitat:** Sublittoral to 10 m in depth.

**Remarks:** There are variable patterns of colour by habitat (Bürgin, 1964; cited from Behrens & Tuel, 1977). They feed on dead limpet, other opisthobranchs (Williams, 1972), Hydroids (Turner *et al.*, 1969; cited from Williams, 1972), or same species (MacFarland, 1966).

**Type locality:** Sitka, Alaska in U. S. A.

**Distribution:** Korea, Japan (Niigata, Hokkaido, Toyama Bay, ), Oregon, South San Francisco Bay, California (Baja, San Luis Obispo County, Mateo County, Marin County), Alaska to Punta Eugenia, Mexico.

Genus *Sakuraeolis* Baba, 1965 눈송이갯민숭이 속(신칭)

**\*\* 14. *Sakuraeolis modesta* (Bergh, 1880)**  
눈송이갯민숭이 (신칭) [Pl. 4, Fig. 20]

*Rizzolia modesta* Bergh, 1880, Verhandl. der k. k. zool.-bot. Gesell. Wien 30, pp. 156-160, pl. 1, figs. 1-11 (cited from Baba, 1937b; cf. Russell, 1971); ?Eliot, 1905, Proc. Malac. Soc. London, 6, pt. 4, pp. 230-231 (cited from Baba, 1937b); Russell, 1971, p. 90.

*Cuthona (Hervia) japonica* Baba, 1937b, p. 329; Russell, 1971, p. 82.

*Hervia japonica*: Baba, 1949, Opisthobranchia of Sagamy Bay, pp. 105(J), 178-179(E), pl. 45, fig. 155, textfigs. 140-141 (cited from Baba, 1990a).

*Dondice modesta*: Abe, 1964, p. 70, pl. 34, fig. 120.

*Sakuraeolis modesta*: Baba, 1990a, pp. 105 (J), 178-179(E), pl. 45, fig. 155, textfigs. 140-141 (cf. p. 202); Higo & Goto, 1993, p. 442.

**Material examined:** 3 inds., T'onggumi, Nov. 29, 1991 (Scuba); 1 ind., Södo, Jun. 17, 1992 (S. S. Choi); 14 inds., Södo, Mar. 23, 1993 (J. R. Lee).

**Description:** Body about 10-25 mm in fixed specimens, slender. Ground body colour milky white with pale pink on area between head tentacles and rhinophores. Mouth slit without oral tentacles. Head tentacles flexible. Rhinophores erected dorsally. Gills with 7-8 pairs of ceratal groups on mantle at intervals; 1st ceratal group aparted from the following; the rest becoming more close to each other and smaller in size and number with succeeding next cerata. Each ceratal group bright brown, it's apexes milky white, arranged on a roughly horseshoe-shape base opening outward, formed merely oblique rows. Common genital orifices between 1st and 2nd ceratal groups; nephroproct sited dorsally beside posterior part of 2nd ceratal group, anus on inner part of horse-shaped arrangement of 2nd ceratal group. Foot slender, arched in anterior part being looked like oral tentacles; notched in front. Radulae with central tooth only; unicusps with 4-5 denticles on both sides (Fig. 2-M).

**Habitat:** 10-20 m in depth. They feed and lay on Hydroids such as *Solanderia* colony.

**Type locality:** Eno Island in Japan.

**Distribution:** Korea, Japan (Toyama Bay, Sagami Bay).

Family Aeolidiidae 큰도롱이갯민숭이과

Genus *Protoaeolidiella* Baba, 1955 검정갯민숭이 속 (신칭)

**\*\* 15. *Protoaeolidiella atra* Baba, 1955** 검정갯민숭이 (신칭) [Pl. 4, Fig. 21]

*Protoaeolidiella atra* Baba, 1955,

Opisthobranchia of Sagamy Bay, Suppl., pp. 31-32(J), 53-54(E), pl. 16, fig. 44a-b, 45, textfigs. 52-54 (cited from Baba, 1990b); Abe, 1964, pp. 73(J), 89(E), pl. 35, fig. 127; Russell, 1971, p. 57; Baba, 1990b, pp. 31-32(J), 53-54(E), pl. 16, figs. 44a-b, 45, textfigs. 52-54; Rudman, 1990, pp. 505-514, figs. 1-9.

*Pleurolidia juliae* Burn, 1966, Jour. Malacol. Soc. Australia, 10, pp. 22-25, 34, figs. 1-6 (cited from Rudman, 1990); Willan & Coleman, 1984, Australasian Marnine Photographic Index, p. 42, fig. 136 (cited from Rudman, 1990).

*Protoaeolidiella atrata* (sic): Higo & Goto, 1993, p. 439.

**Material examined:** 3 inds., Hyölam, Jul. 14, 1989 (J. R. Lee); 3 inds., Taep'ungch'wi, Jul. 15, 1989 (J. R. Lee); 1 ind., To-dong, Nov. 27, 1991 (J. R. Lee); 2 inds., Kadubong, Nov. 28, 1991 (J. R. Lee); 2 inds., T'onggumi, Nov. 29, 1991 (J. R. Lee).

**Description:** Body about 15-43 mm in fixed specimens, slender. Body colour deep black except sole; apexes of gills, rhinophores, and head tentacles white. Mouth slit without oral tentacles. Head tentacles flexible. Rhinophores erected dorsally. Gill on either side arranged with 1-3 lines, composed of 70-75 cerata; each ceras bore digestive gland, it's apexes white, with nematocysts. Common genital orifices sited on right body wall in front of beginning of cerata, anus under about 20th ceras with variable location for each individual, nephroproct located in front of anus between under 16-18th cerata. Radulae with only central tooth bearing 10-16 denticles with variation (Fig. 2-N).

**Habitat:** 5-20 m in depth. They feed and lay on Hydroids such as *Solanderia* colony.

**Type locality:** Kasajima, Sagami Bay; Near Hayama, Sagami Bay in Japan.

**Distribution:** Korea, Japan (Toyama Bay, Sagami Bay), Australia ('The Brook' Lord Howe Is., Queensland, New South Wales), Papua New Guinea, New Caledonia, Tanzania.

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1989년 7월 부터 1993년 3월 까지 울릉도 및 독도의 14개 지점에서 채집된 후새류 표본을 동정. 정리 한 결과 총 10과 15종으로 밝혀졌으며 전 종에 대한 원색 사진과 14종에 대한 치설의 도판을 포함하여 종의 기재를 하였다. 이 중에서 *Cadlina japonica* Baba, *Aldisa cooperi* Robilliard & Baba, *Dendrodoris denisoni* (Angas), *Tritonia festiva* (Stearns), *Notobryon wardi* Odhner, *Hermisenda crassicornis* (Eschscholtz), *Sakuraeolis modesta* (Bergh), *Protaeolidiella atra* Baba 등 8종은 한국 미기록 종이며 *Aplysia parvula* Guilding in Mörch, *Bethellina citrina* (Rüppell & Leuckart) *Pleurobranchaea japonica* Thiele, *Chromodoris tinctoria* (Rüppell & Leuckart), *Hypselodoris festiva* (A. Adams) 등 5종은 전술한 한국 미기록 8종과 함께 울릉도 및 독도 미기록종이다.

## Explanation of figures

### PLATE 1.

**Fig. 1.** *Aplysia parvula* Guilding in Mörch, 1863 (Ullung I., Aug. 1992, Photo by J.R. Lee)

**Fig. 2.** *Aplysia kurodai* (Baba, 1937) (Ullung I., Aug. 1992, Photo by J.R. Lee)

**Fig. 3, 4, 5.** *Bethellina citrina* (Rüppell & Leuckart, 1828) (Fig. 3: Dog-do I., Mar. 24, 1993, Photo by J.R. Lee; Fig. 4: Ullung I., Aug. 1992, Photo by J.R. Lee; Fig. 5: Gills & everted penis on right body wall, Ullung I., Aug. 1992, Photo by J.R. Lee)

**Fig. 6.** *Pleurobranchaea japonica* Thiele, 1925. (Kuam, Jan. 15, 1993, Photo by J.R. Lee)

### PLATE 2.

**Fig. 7.** *Chromodoris tinctoria* (Rüppell & Leuckart, 1828) (Ullung I., Aug. 1992, Photo by J.R. Lee)

**Fig. 8.** *Chromodoris orientalis* Rudman, 1983 (T'onggumi, Jan. 13, 1993, Photo by J.R. Lee)

**Fig. 9.** *Hypselodoris festiva* (A. Adams, 1861) (Ullung I., Aug. 1992, Photo by J.R. Lee)

**Fig. 10, 11.** *Cadlina japonica* Baba, 1937 (Fig. 10: T'onggumi, Jan. 13, 1993, Photo by J.R. Lee; Fig. 11: Ventral side of view, T'onggumi, Jan. 13, 1993, Photo by J.R. Lee)

**Fig. 12.** *Aldisa cooperi* Robilliard & Baba, 1972 (T'onggumi, Jan. 13, 1993, Photo by J.R. Lee)

### PLATE 3.

**Fig. 13, 14.** *Dendrodoris denisoni* (Angas, 1864) (Fig. 13: Namyang, Jan. 16, 1993, Photo by J.R. Lee; Fig. 14: Branchial plumes, Ullung I., Aug. 1990, Photo by J.R. Lee)

**Fig. 15.** *Tritonia festiva* (Stearns, 1873) (Dog-do I., Mar. 23, 1993, Photo by J.R. Lee)

**Fig. 16, 17.** *Notobryon wardi* Odhner, 1936 (T'onggumi, Mar. 10, 1993, Photo by J.R. Lee)

**Fig. 18.** *Hermisenda crassicornis* (Eschscholtz, 1831) (T'onggumi, Mar. 10, 1993, Photo by J.R. Lee)

### PLATE 4.

**Fig. 19.** *Hermisenda crassicornis* (Eschscholtz, 1831) (Dog-do I., Mar. 23, 1993, Photo by J.R. Lee)

**Fig. 20.** *Sakuraeolis modesta* (Bergh, 1880) (Dog-do I., Mar. 23, 1993, Photo by J.R. Lee)

**Fig. 21.** *Protaeolidiella atra* Baba, 1955 (Ullung I., Jul. 1989, Photo by J.G. Park)

# Plate 1



Fig. 1

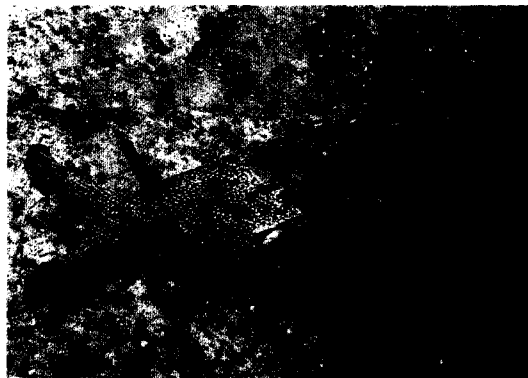


Fig. 2

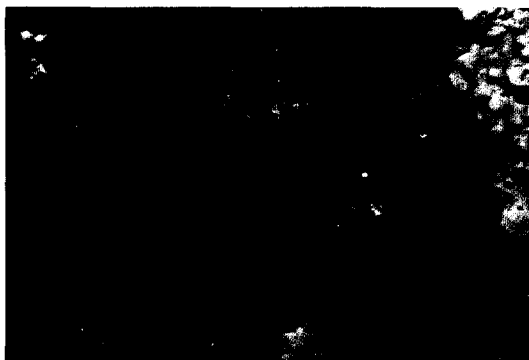


Fig. 3



Fig. 4



Fig. 5



Fig. 6

# Plate 2

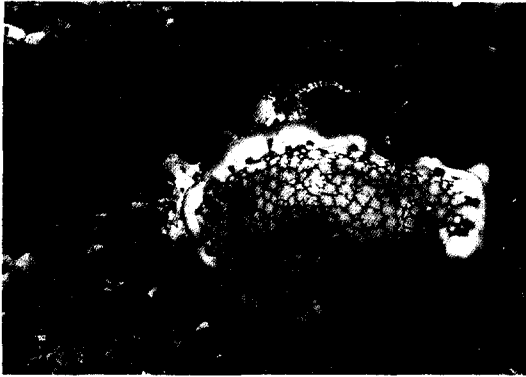


Fig. 7



Fig. 8



Fig. 9



Fig. 10



Fig. 11

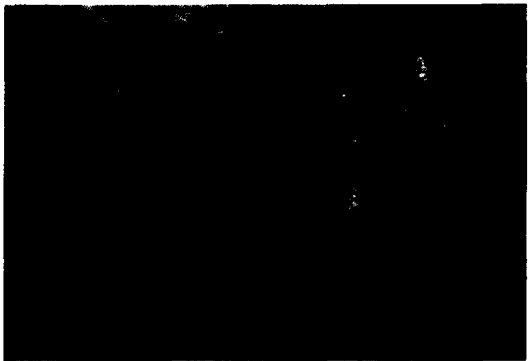


Fig. 12