

Two Porcellanid Crabs (Decapoda: Anomura: Porcellanidae) Recorded First in Korea

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ABSTRACT

Two porcellanid crabs collected from Jeju Island, *Petrolisthes militaris* (Heller, 1862) and *P. coccineus* (Owen, 1839) are recorded as new to Korean fauna. Hence, the Korean porcellanid crabs consist of nine species of seven genera and the genus *Petrolisthes* now contains three described species.

Key words: New records, *porcellanid crab*, *Petrolisthes militaris*, *P. coccineus*, Korea

INTRODUCTION

In the family Porcellanidae Haworth, 1825 seven species of seven genera have been reported in Korean waters (Kim, 1973; KSSN, 1997): *Petrolisthes japonicus* (De Haan, 1849), *Pachycheles stevensii* Stimpson, 1858, *Enosteoides ornata* (Stimpson, 1858), *Porcellana pulchra* Stimpson, 1858, *Pisidia serratifrons* (Stimpson, 1858), *Raphidopus ciliatus* Stimpson, 1858, and *Polyonyx asiaticus* Shen, 1936. The genus *Petrolisthes* Stimpson, 1858 is the largest among the family Porcellanidae and comprises perhaps 40 species in the Indo-West Pacific region (Haig, 1960, 1981; Osawa, 1996). But, only one species, *P. japonicus*, has been recorded in Korea. This number is now increased to three with the description of *P. militaris* and *P. coccineus*.

The *Petrolisthes* crabs were collected by SCUBA diving from Jeju Island off the southern part of Korea. The carapace length (CL) was measured from the anterior tip of the rostrum to the median

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posterior end of the carapace. The specimens are deposited in the author's collection of Silla University, Busan.

SYSTEMATIC ACCOUNT

Infraorder Anomura H. Milne Edwards, 1832

Family Porcellanidae Haworth, 1825

Genus *Petrolisthes* Stimpson, 1858

***Petrolisthes militaris* (Heller, 1862) 가시등붉은게불이 (신칭) (Figs. 1, 3)**

Porcellana militaris Heller, 1862, p. 523.

Petrolisthes annulipes Miers, 1884, p. 270, p. 558, pl. 29, fig. B.

Petrolisthes militaris: Miyake, 1943, p. 56, figs. 1, 2; Haig, 1964, p. 357, fig. 1.

Material examined. 1 ♀, CL. 6.3 mm, Jeju Is. (Seogwipo), 14 July 1999 (Hyun Sook Ko).

Description. Carapace (Fig. 1A) weakly convex dorsally, slightly broader than long. Rostrum broadly triangular, margin crenulated, dorsal surface with numerous small flattened tubercles. Protogastric ridges moderately distinct, divided into two lobes by median groove extending nearly to rostrum. Orbits deep, orbital margin oblique or slightly concave, armed with well developed supraocular spine, outer orbital angle produced into spine with small double-pointed apices. Gastric region with weak transverse rugae. Cervical grooves well developed. Branchial margin convex, one strong epibranchial spine at margin, followed with second one on epibranchial region, mesobranchial margin with four or five spines, posterior branchial margin with strong transverse rugae. Rugae with minute setae arising from distal sides.

Telson (Fig. 1B) seven-plated.

Basal segment of antennular peduncle (Fig. 1C) transversely rugose in antero-lateral region of ventral surface, anterior margin with small tuberculate spines at mesial and strong ones at lateral corners.

Second segment of antennal peduncle (Fig. 1D) armed anteriorly with triangular crest bearing small tuberculate spines at proximal end, dorsal and ventral surfaces relatively smooth. Third segment elongated, anterior margin with tuberculate spines. Fourth segment smooth.

Ischium of third maxilliped (Fig. 1E) broad, transversely rugose on ventral surface, anterior ventro-flexor margin with a few plumose setae. Merus bearing oblique rugae, with ovate lobe slightly tuberculated on ventro-flexor margin. Carpus provided with distinct sharp projection in subproximal region of flexor margin, bearing longitudinal rugae on ventral surface, armed with long setae on extensor margin. Propodus and dactyl with simple setae on extensor margins, long plumose setae on flexor margins. Exopod inflated proximally, with distal flagellum.

Cheliped (Fig. 1F, G) subequal, covered with scattered long setae on dorso-extensor margin of carpus, palm and half of fixed finger. Merus transversely rugose on ventral surface, with distinct two spines on dorso-extensor region, dorso-flexor margin bearing broad distal tooth with acutely pointed apex. Carpus approximately 2.0 times as long as broad, dorsal surface rugose, dorso-flexor margin provided with four broad teeth with acutely pointed apex (first tooth largest, fourth tooth smallest), those edges slightly crenulated, dorso-extensor region with four spines along distal

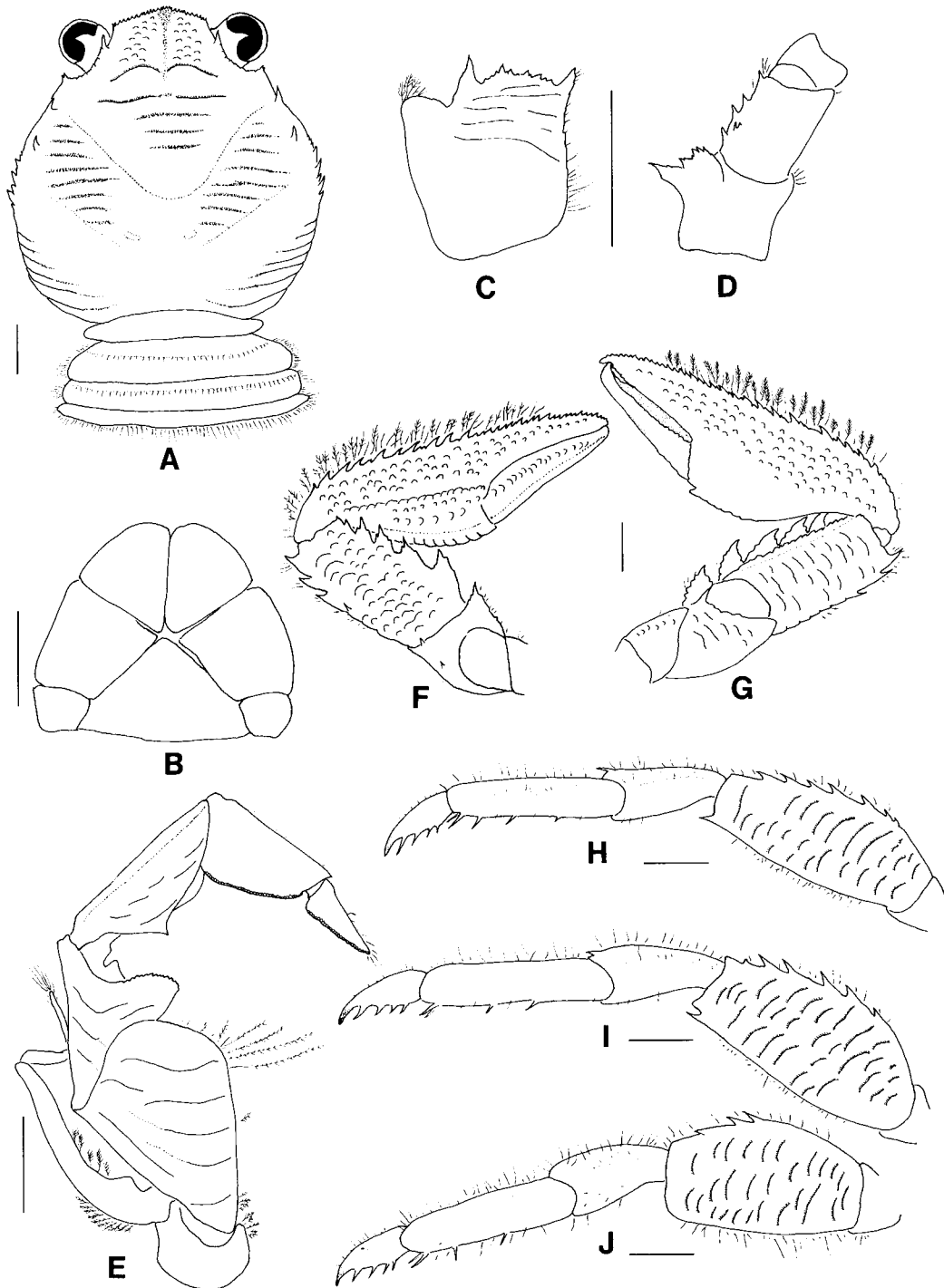


Fig. 1. *Petrolisthes militaris* (Heller). A, carapace and abdomen; B, telson; C, basal segment of antennular peduncle; D, antennular peduncle; E, third maxilliped; F, cheliped, dorsal; G, same, ventral; H, first ambulatory leg; I, second ambulatory leg; J, third ambulatory leg. Scales = 1.0 mm.

one-half length, distal three marginal spines more distinct, ventral surface transversely rugose, flexor margin crenulated. Palm dorsoventrally thin on extensor margin, weakly arched, with a row of distally directed spines, dorsal surface with distinct, median longitudinal ridge extending from proximal end to base of dactyl, and composed of series of squamose tubercles, surface with numerous imbricated squamae, those more distinct and slightly erect between extensor margin and longitudinal ridge, dorso-flexor margin with longitudinal rugose ridge. Fixed finger with numerous imbricated squamae on dorsal surface. Dactyl with dorsal surface having longitudinal ridge composed of a row of imbricated squamae along midline, ventral surface of cutting region slightly tuberculated. Rugae and squamae on dorsal surface of merus to dactyl fringed with minute setae arising from distal sides.

Ambulatory legs (Fig. 1H-J). Merus elongatedly subrectangular to ovate in lateral view, extensor margin slightly swollen, six or seven spines on first leg, five or six spines on second leg, and three or four spines on third leg, lateral surface with numerous transverse rugae, subdisto-flexor margin with acute spines in first and second legs but lacking in third leg. Carpus with a few setae, subdisto-extensor margin with spines in first and second legs, lacking in third leg. Propodus 1.7-2.0 times as long as carpus, lateral surface bearing long setae, flexor margin with two or three movable spines in addition to distal pair. Dactyl terminating into slightly curved claw, flexor margin with four movable spines.

Color in life. Dorsal surface of carapace and ambulatory legs bright red overall, with numerous small scattered red spots.

Habitat. This species was collected under the large stone in about 10 meter depth.

Remarks. Nishimura (1995) reported that this species could be collected between the tidal marks. It only occurred below the tidal marks with *P. coccineus* and *Enosteoides ornata* in Korea.

Distribution. Japan, Philippines, Indian Ocean, Java, North Australia (Miyake, 1943), San Bernardino Strait, and Sulu Archipelago (Haig, 1964).

***Petrolisthes coccineus* (Owen, 1839) 검붉은게불이 (신칭) (Figs. 2, 4)**

Porcellana coccinea Owen, 1839, p. 87, pl. 26, figs 1, 2.

Petrolisthes coccineus: Ortmann, 1897, p. 288, p. 558; Miyake, 1943, p. 59, figs. 3, 4.

Material examined. 1 ♀, CL. 10.3 mm, Jeju Is. (Seogwipo), 14 July 1999; 1 ♀, CL. 8.9 mm, Jeju Is. (Mosulpo), 2 July 2002 (Hyun Sook Ko).

Description. Carapace (Fig. 2A) weakly convex dorsally, slightly broader than long. Rostrum slightly bent ventrally, triangular, margin tuberculate, dorsal surface with numerous small flattened tubercles. Protogastric ridges moderately distinct, divided into two lobes by median groove extending nearly to rostrum. Orbits shallowly concave, orbital margin oblique, armed with small supraorbicular spine, outer orbital angle pointed apex. Gastric region with transverse rugae. Cervical grooves well developed. Branchial margin convex, one strong epibranchial spine at margin, mesobranchial margin smooth, posterior branchial margin with strong transverse rugae. Rugae with minute setae arising from distal sides.

Telson (Fig. 2B) seven-plated.

Basal segment of antennular peduncle (Fig. 2C) transversely rugose in antero-lateral region of ventral surface, anterior margin tuberculated, with distinct spines at mesial and at lateral corners.

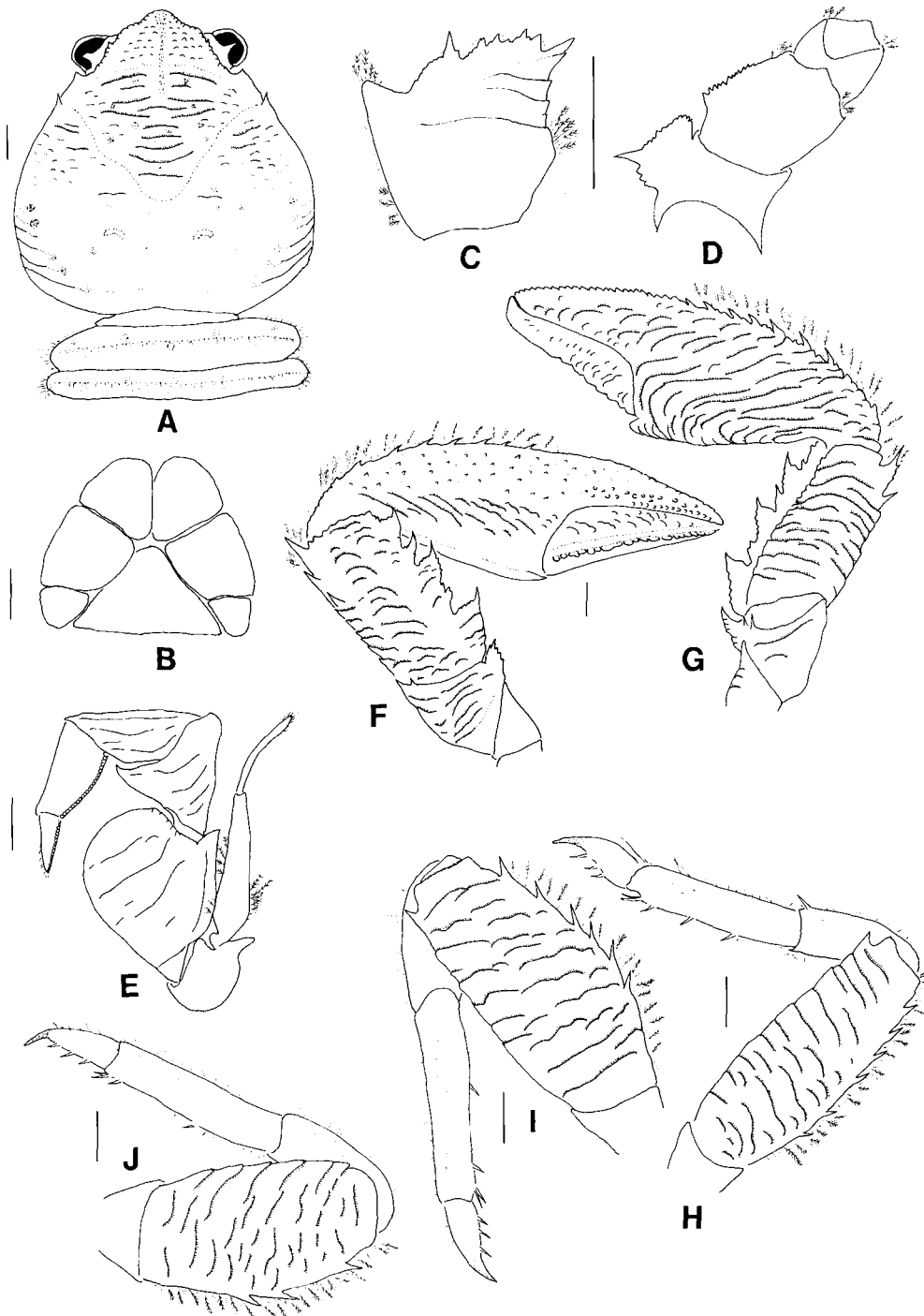


Fig. 2. *Petrolisthes coccineus* (Owen). A, carapace and abdomen; B, telson; C, basal segment of antennular peduncle; D, antennular peduncle; E, third maxilliped; F, cheliped, dorsal; G, same, ventral; H, first ambulatory leg; I, second ambulatory leg; J, third ambulatory leg. Scales = 1.0 mm.

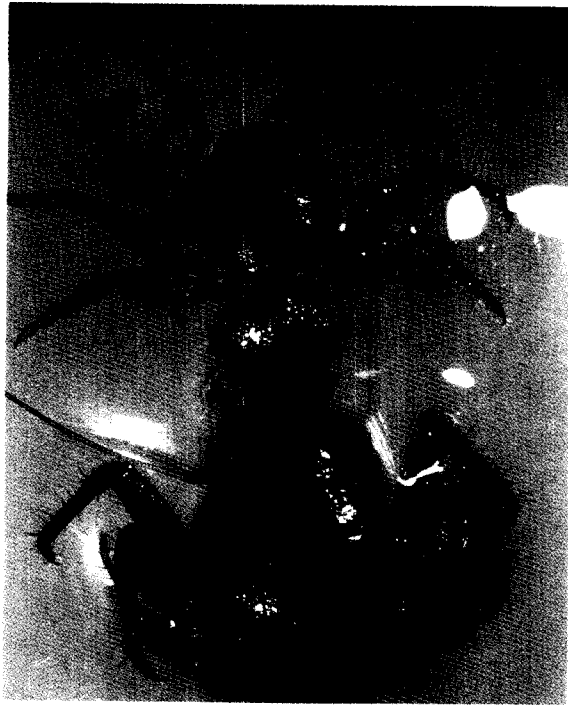


Fig. 3. *Petrolisthes militaris* (Heller). Dorsal view and exuvia.



Fig. 4. *Petrolisthes coccineus* (Owen).

Second segment of antennal peduncle (Fig. 2D) armed anteriorly with triangular crest bearing spine and with tuberculated margin, dorsal and ventral surfaces relatively smooth. Third segment elongated, anterior margin tuberculated and slightly swollen. Fourth segment smooth.

Ischium of third maxilliped (Fig. 2E) broad, transversely rugose on ventral surface, anterior ventro-flexor margin without setae. Merus bearing oblique rugae, distal ventro-flexor angle pointed apex. Carpus bearing longitudinal rugae on ventral surface, slightly arched in flexor margin. Propodus and dactyl with long plumose setae on flexor margins. Exopod inflated proximally, with distal flagellum.

Cheliped (Fig. 2F, G) subequal, covered with long setae on dorso-extensor margins of palm and half of fixed finger. Merus transversely rugose on dorsal surface, dorso-flexor margin with broad tooth with acutely pointed apex, tooth margin tuberculated, spine on distal dorso-extensor margin. Carpus approximately 2.0 times as long as broad, dorsal surface rugose, dorso-flexor margin provided with four broad teeth with acutely pointed apices (first tooth largest and third tooth smallest), those edges slightly crenulated, dorso-extensor region with three spines along distal one-half length, ventral surface transversely rugose. Palm dorsoventrally thin on extensor margin, weakly arched, with a row of distally directed spines, dorso-extensor surface composed of series of squamose tubercles and with numerous short setae, dorso-flexor surface with transversely rugae, margin with longitudinal ridge. Fixed finger and cutting edge dorsally tuberculated. Dactyl with dorsal surface having longitudinal ridge, a row of imbricated squamae along midline. Rugae and squamae on dorsal surface of merus to dactyl fringed with minute setae arising from distal sides.

Ambulatory legs (Fig. 2H-J). Merus elongatedly subrectangular to ovate in lateral view, extensor margin slightly swollen, with long plumose setae, six or seven spines on first leg, six or seven spines on second leg, and three spines on third leg, lateral surface with numerous transverse rugae, bearing simple setae, subdisto-flexor margin with acute spines in first and second legs but lacking in third leg. Carpus with a few setae, subdisto-extensor margin with spine in first leg, lacking in second and third legs. Propodus 1.4-1.5 times as long as carpus, lateral surface bearing simple setae, flexor margin with two or three movable spines in addition to distal pair. Dactyl terminating in slightly curved claw, flexor margin with three movable spines.

Color in life. Dorsal surface of carapace and ambulatory legs dark red overall, with numerous small scattered dark red spots.

Habitat. This species was collected under the large stones in about 10 meter depth.

Remarks. *Petrolisthes coccineus* resembles *P. militaris*. These two species share the following characters: 1) the color in life is red, 2) the carapace has pairs of supraocular and epibranchial spines, 3) the surface of carapace is transversely rugose, and 4) the dorso-extensor margin of palm of cheliped is with long plumose setae and a row of spines. But, the former can be distinguished from the latter by the following characters: 1) the margin of rostrum is not crenulated, 2) the supraocular spine is not prominent, 3) the mesobranchial spine is absent, 4) the branchial marginal spines are absent, and 5) the flexor margin of dactyl of ambulatory leg is with three movable spines.

Accordingly, a key to the Korean *Petrolisthes* species is provided below.

1. Branchial region of carapace armed with spines 2
 – Branchial region of carapace unarmed *P. japonicus*

2. Branchial marginal spines present *P. militaris*
 – Branchial marginal spines absent *P. coccineus*

Distribution. Seychelles, Nicobars, Christmas Is., Tahiti Is., Paumotu Is., Sandwich Is., Japan and Taiwan (Miyake, 1943).

ACKNOWLEDGEMENTS

I am grateful to Dr. Masayuki Osawa (Department of Zoology, National Science Museum, Japan) for identifying porcellanid crab and providing some references. This work was supported by a grant from Silla University in 2002.

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RECEIVED: 4 December 2002

ACCEPTED: 4 February 2003

한국 미기록 게불이류 (십각목: 집게하목: 게불이과) 2종

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요 약

제주도에서 채집된 게불이류 2종, 가시등붉은게불이 (*Petrolisthes militaris*)와 검붉은게불이 (*P. coccineus*)가 한국 미기록종으로 판명되어 재기재하고 보고한다. 지금까지 기록된 한국산 게불이류는 모두 7속 9종이 되며 갯가게불이속 (*Petrolisthes*)은 이제 3종이 기재되었다.