

Crustacean Decapods of Jindo Island, Korea

Hyun Soo Rho, Jongwoo Jung, Sung Joon Song and Won Kim*

(School of Biological Sciences, Seoul National University, Seoul 151-747, Korea)

ABSTRACT

A taxonomic survey was carried out to see the decapod fauna of Jindo Island and its adjacent islet, Korea in June 2004. The 35 species in 13 families were identified in this study and of which 12 species of caridean shrimps in three families, one thalassinidean species, two anomuran species in one family, and two crab species in two families were newly added to the decapod fauna of the study area. With the previously known 58 species in the Jindo Island and its adjacent islets, a total of 75 species are listed with some brief remarks. Distribution patterns of species are also discussed based on the composition of geographical distribution forms.

Key words: Decapoda, distribution forms, Jindo Island, Korea

INTRODUCTION

The crustacean decapod is one of the well-known coastal invertebrate groups in Korea. However, faunistic and taxonomic studies on decapod species in Korea have been conducted insufficiently. The invertebrate fauna of the Jindo Island has long been considered one of the most important elements for understanding of the marine zoogeography in Korea because the Jindo Is. is located between the Yellow Sea and the South Sea. Since Kamita (1941) first reported three crab species [*Chiromantes haematocheir* (De Haan, 1833), *Parasesarma plicatum* (Latreille, 1803), *Uca arcuata* (De Haan, 1833)] in two families from Jindo Island, Kim (1977) included one shrimp species (*Alpheus brevicristatus* De Haan, 1849) in his illustrated encyclopedia of the

*To whom correspondence should be addressed

Tel: 82-2-880-6695, Fax: 82-2-872-1993, E-mail: wonkim@plaza.snu.ac.kr

Korean shrimps. Thereafter, a series of faunal investigations for Jindo Island and its adjacent islets (Kim and Kim, 1982; Kim and Kwon, 1983) added 44 species to the decapod fauna. Later, Kim and Kim (1995) newly reported ten brachyuran crabs from this area.

In the present study, a taxonomic survey was carried out in order to see the decapod fauna of Jindo Island and its adjacent islet. As a result of the present study with the previous reports, 75 decapod species are now known to occur in this area. Of these, 17 species are new to the decapod fauna of Jindo Island and its adjacent islets. In this report, a total of 75 species are listed with some brief remarks. In addition, the zoogeographical aspects of Jindo Island and its adjacent islets are also discussed based on the composition of geographical distribution forms of decapods.

MATERIALS AND METHODS

The present study was based on the materials collected from four localities (Fig. 1) in Jindo Island

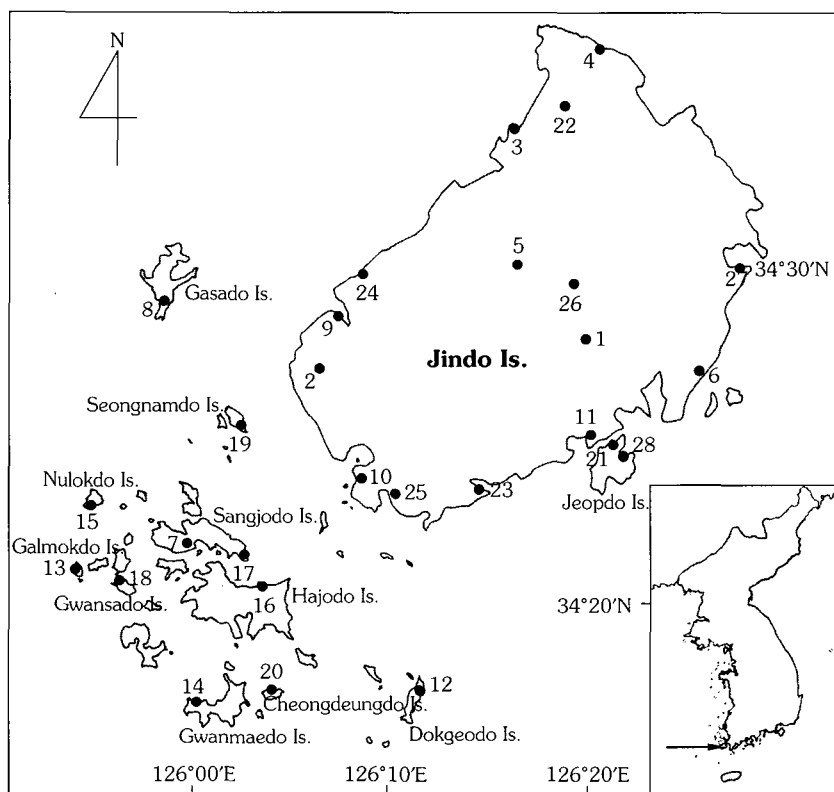


Fig. 1. A map showing the localities of the previous studies (1-25) and the present study (11, 26-28). 1, Jindo Is.; 2, Gahak; 3, Cheondu; 4, Nokjin; 5, Posanri; 6, Hoedong; 7, Yeomi; 8, Dolmok; 9, Gachi; 10, Seomang; 11, Geumgap; 12, Dokgeodo Is.; 13, Galmokdo Is.; 14, Gwanmaedo Is.; 15, Nulokdo Is.; 16, Hajodo Is.; 17, Sangjodo Is.; 18, Gwansado Is.; 19, Seongnamdo Is.; 20, Cheongdeungdo Is.; 21, Wondari; 22, Anchi; 23, Gulpo; 24, Pojeon; 25, Namdong; 26, Donggoeje; 27, Beolpo; 28, Jeopdo Is.

and its adjacent islet during the period from 29 to 30 June, 2004. The decapods were collected from several habitats in the intertidal zone such as mud flat, rocky shore, and tidal pool. The samples were also obtained from the washings of various invertebrates (oysters and sponges etc.) and sea weeds (*Sargassum* and *Enteromorpha* community) collected from the shallow intertidal zone. The invertebrate and sea weed collections were filtered in the field through a 1 mm sieve after 10% ethyl-alcohol anaesthetization. Additionally, sampling was also performed using a fishing trap. All specimens were fixed with 95% ethyl-alcohol immediately.

A stereomicroscope (Leica MZ12) and a light microscope (Olympus BX60) were used for identification of the species. Classification scheme of the family and upper categorical rank is after Martin and Davis (2001). All specimens examined are deposited in the Invertebrate Resources Bank of Korea (IRBK) Seoul National University.

SYSTEMATIC ACCOUNTS

The following systematic list consists of all the species reported in the previous literatures and newly examined in the present study. The single asterisk (*) indicates the species collected from the present survey and the double asterisk (**) indicates the species newly reported from the Jindo Island and its adjacent islets by the present study. The “Material examined” section lists all specimens examined and the “Literatures” section in each species lists the references of the species reported from Jindo Island and its adjacent islets.

Order Decapoda Latreille, 1802 십각목

Suborder Dendrobranchiata Bate, 1888 수상아목

Family Penaeidae Rafinesque, 1815 보리새우과

1. *Parapenaeopsis tenella* (Bate, 1888) 민새우

Literature. Kim and Kwon, 1983: 327 (Nulokdo Is.).

2. *Marsupenaeus japonicus* (Bate, 1888) 보리새우

Literature. Kim and Kwon, 1983: 327 (Hajodo Is.).

3. *Trachysalambria curvirostris* (Stimpson, 1860) 꽃새우

Literature. Kim and Kwon, 1983: 327 (Sangjodo Is., Nulokdo Is.).

Family Sergestidae Dana, 1852 젓새우과

4. *Acetes chinensis* Hansen, 1919 중국젓새우

Literature. Kim and Kwon, 1983: 327 (Sangjodo Is., Nulokdo Is.).

Suborder Pleocyemata Burkenroad, 1963 포란아목

Infraorder Caridea Dana, 1852 생이하목

Family Atyidae De Haan, 1849 새뱅이과

****5. *Neocaridina denticulata* (De Haan, 1844) 새뱅이**

Material examined. 8 inds., Donggoeje, 30 Jun. 2004.

Family Pasiphaeidae Dana, 1852 돛대기새우과

6. *Leptochela gracilis* Stimpson, 1860 돛대기새우

Literature. Kim and Kwon, 1983: 327 (Sangjodo Is., Nulokdo Is.).

Family Palaemonidae Rafinesque, 1815 징거미새우과

****7. *Macrobrachium koreana* Kwon and Han, 1984 두두럭징거미새우**

Material examined. 11 inds., Donggoeje, 30 Jun. 2004.

****8. *Exopalaemon carinicauda* (Holthuis, 1950) 밀새우**

Material examined. 1 ind., Beolpo, 29 Jun. 2004.

****9. *Exopalaemon modestus* (Heller, 1862) 각시흰새우**

Material examined. 92 inds., Donggoeje, 30 Jun. 2004.

10. *Palaemon gravieri* (Yu, 1930) 그라비새우

Literature. Kim and Kwon, 1983: 327 (Nulokdo Is.).

****11. *Palaemon macrodactylus* Rathbun, 1902 붉은줄참새우**

Material examined. 72 inds., Beolpo, 29 Jun. 2004.

****12. *Palaemon paucidens* De Haan, 1844 줄새우**

Material examined. 10 inds., Donggoeje, 30 Jun. 2004.

Family Alpheidae Rafinesque, 1815 딱총새우과

***13. *Alpheus brevicristatus* De Haan, 1844 딱총새우**

Material examined. 2 inds., Beolpo, 29 Jun. 2004; 20 inds., Jeopdo Is., 30 Jun. 2004.

Literature. Kim, 1977: 238 (Jindo Is.).

****14. *Alpheus japonicus* Miers, 1879 긴발딱총새우**

Material examined. 1 ind., Beolpo, 29 Jun. 2004.

****15. *Alpheus digitalis* De Haan, 1849 큰손딱총새우**

Material examined. 3 inds., Jeopdo Is., 30 Jun. 2004.

****16. *Alpheus lobidens* De Haan, 1850 갯가딱총새우**

Material examined. 4 inds., Beolpo, 29 Jun. 2004.

Remarks. *Alpheus lobidens* De Haan, 1850 was first reported at Gadeokdo Island in Korea (Yang and Anker, 2003). This is the second report of *A. lobidens* in Korea. The present specimens were collected from the intertidal mud flat at Beolpo of Jindo Island.

****17. *Alpheus hoplocheles* Coutiere, 1897** 장갑딱총새우**Material examined.** 32 inds., Beolpo, 29 Jun. 2004.**Remarks.** *Alpheus hoplocheles* Coutiere, 1897 was first reported at Seokmo Channel near Ganghwa Island in Korea (Park and Han, 2000). During an investigation of the decapod fauna in Jindo Island, we found that *A. hoplocheles* was widely distributed in the intertidal mud flat at Beolpo as the dominant shrimp species. This is the second report of *A. hoplocheles* in Korea.****18. *Athanas japonicus* Kubo, 1936** 꼬마딱총새우**Material examined.** 9 inds., Jeopdo Is., 30 Jun. 2004.****19. *Athanas* sp.****Material examined.** 6 inds., Jeopdo Is., 30 Jun. 2004.**Remarks.** In Korea, *Athanas japonicus* Kubo, 1936 and *Athanas* sp. are found from the burrows of *Upogebia major* (De Haan, 1849) with *Stenalphheops anacanthus* Miya, 1997. *Athanas* sp. is morphologically most similar to *A. japonicus*. This species complex is currently under taxonomic revision based on the morphological and molecular characters.

Family Crangonidae Haworth, 1825 자주새우과

20. *Crangon hakodatei* Rathbun, 1902 마루자주새우**Literature.** Kim and Kwon, 1983: 327 (Nulokdo Is.).

Infraorder Thalassinidea Latreille, 1831 속하목

Family Laomediidae Borradaile, 1903 가재붙이과

****21. *Laomedia astacina* De Haan, 1841** 가재붙이**Material examined.** 2 inds., Jeopdo Is., 30 Jun. 2004.

Infraorder Anomura MacLeay, 1838 집게하목

Family Diogenidae Ortmann, 1892 넓적원손집게과

22. *Diogenes nitidimanus* Terao, 1913 긴원손집게**Literature.** Kim and Kwon, 1983: 327 (Hajodo Is.).

Family Paguridae Latreille, 1802 집게과

23. *Pagurus brachiomastus* (Thallwitz, 1892) 털손참집게**Literature.** Kim and Kwon, 1983: 328 (Hajodo Is.).***24. *Pagurus dubius* (Ortmann, 1892)** 긴발가락참집게**Material examined.** 3 inds., Beolpo, 29 Jun. 2004; 3 inds., Jeopdo Is., 30 Jun. 2004.**Literature.** Kim and Kwon, 1983: 327 (Hajodo Is.).**25. *Pagurus geminus* McLaughlin, 1976** 참집게**Literature.** Kim and Kwon, 1983: 327 (Gwansado Is.).

26. *Pagurus lanuginosus* De Haan, 1849 털다리참집게

Literature. Kim and Kwon, 1983: 328 (Hajodo Is., Cheongdeungdo Is., Gwansado Is., Nulokdo Is.).

Family Porcellanidae Haworth, 1825 게불이과

****27. *Petrolisthes japonicus* (De Haan, 1849)** 갯가게불이

Material examined. 1♂, Geumgap Beach, 30 Jun. 2004.

****28. *Raphidopus ciliatus* Stimpson, 1858** 털다리게불이

Material examined. 4♂♂, 2♀♀, Beolpo, 29 Jun. 2004.

Infraorder Brachyura 게하목

Family Dorippidae MacLeay, 1838 조개치레과

29. *Heikea japonica* (Von Siebold, 1824) 조개치레

Literature. Kim and Kim, 1995: 498 (Jindo Is.).

30. *Paradorippe granulata* (De Haan, 1841) 움조개치레

Literature. Kim and Kim, 1995: 498 (Jindo Is.).

Family Matutidae De Haan, 1841 금게과

31. *Matuta planipes* Fabricius, 1798 그물무늬금게

Literature. Kim and Kim, 1982: 137 (Gahak).

Family Leucosiidae Samouelle, 1819 밤게과

****32. *Philyra kanekoi* Sakai, 1934** 두드러기밤게

Material examined. 2♂♂, Geumgap Beach, 30 Jun. 2004.

Remarks. This species has been collected in Jeju Island and Samcheonpo of the South Sea and is newly reported from Jindo Island. This species lives mostly in the sand bottom of intertidal zone, but was discovered in the tide pool of the rocky shore at this survey.

***33. *Philyra pisum* De Hann, 1841** 밤게

Material examined. 3♂♂, Beolpo, 29 Jun. 2004.

Literatures. Kim and Kim, 1982: 137 (Cheondu, Nokjin, Hoedong); Kim and Kwon, 1983: 328 (Hajodo Is.); Kim and Kim, 1995: 498 (Anchi).

Family Inachidae Macheay, 1838 거미다리게과 (신칭)

34. *Achaeus tuberculatus* Miers, 1879 가는다리아케우스게

Literature. Kim and Kim, 1995: 498 (Jindo Is.).

Family Epialtidae MacLeay, 1838 물맞이게과

35. *Pugettia quadridens* (De Haan, 1837) 빨물맞이게

Literatures. Kim and Kim, 1982: 146 (Hoedong, Yeomi); Kim and Kwon, 1983: 328 (Hajodo

Is., Cheongdeungdo Is.); Kim and Kim, 1995: 499 (Hoedong, Pojeon).

Family Hymenosomatidae MacLeay, 1838 말랑게과

36. *Halicarcinus messor* (Stimpson, 1858) 주걱말랑게

Literatures. Kim and Kim, 1982: 146 (Hoedong, Yeomi); Kim and Kim, 1995: 499 (Hoedong).

Family Parthenopidae MacLeay, 1838 자게과

37. *Parthenope validus* De Haan, 1839 자게

Literature. Kim and Kim, 1995: 499 (Hoedong).

Family Portunidae Rafinesque, 1815 꽃게과

38. *Charybdis bimaculata* (Miers, 1886) 두점박이민꽃게

Literatures. Kim and Kwon, 1983: 328 (Sangjodo Is., Nulokdo Is.); Kim and Kim, 1995: 499 (Jindo Is.).

***39. *Charybdis japonica* (A. Milne Edwards, 1861)** 민꽃게

Material examined. 1♂, Beolpo, 29 Jun. 2004.

Literatures. Kim and Kim, 1982: 138 (Gahak, Geumgap); Kim and Kim, 1995: 499 (Geumgap, Namdong, Gulpo, Hoedong).

40. *Ovalipes punctatus* (De Haan, 1883) 깨다시꽃게

Literature. Kim and Kim, 1982: 138 (Gahak).

41. *Portunus trituberculatus* (Miers, 1876) 꽃게

Literature. Kim and Kim, 1982: 138 (Gahak, Geumgap).

Family Goneplacidae MacLeay, 1838 원숭이게과

42. *Carcinoplax vestita* (De Haan, 1835) 털보원숭이게

Literature. Kim and Kim, 1995: 499 (Jindo Is.).

43. *Eucrate crenata* De Haan, 1835 무던이빨게

Literature. Kim and Kim, 1995: 499 (Jindo Is.).

Family Xanthidae MacLeay, 1838 부채게과

44. *Macromedaeus distinguendus* (De Haan, 1835) 꽃부채게

Literatures. Kim and Kim, 1982: 139 (Hoedong); Kim and Kim, 1995: 500 (Hoedong).

Family Pilumnidae Samouelle, 1819 애기털보부채게과 (신칭)

***45. *Pilumnopus makianus* (Rathbun, 1929)** 두드러기네톱니부채게

Material examined. 10♂♂, 6♀♀, Beolpo, 29 Jun. 2004.

Literatures. Kim and Kim, 1982: 140 (Hoedong); Kim and Kim, 1995: 500 (Gulpo).

46. *Pilumnus minutus* De Haan, 1833 애기털보부채게

Literature. Kim and Kim, 1995: 500 (Wondari).

Family Menippidae Ortmann, 1839 비단부채게과 (신칭)

47. *Sphaerozius nitidus* Stimpson, 1858 비단부채게

Literatures. Kim and Kim, 1982: 140 (Yeomi); Kim and Kim, 1995: 500 (Hoedong).

Family Grapsidae MacLeay, 1838 바위게과

48. *Pachygrapsus crassipes* Randall, 1840 바위게

Literatures. Kim and Kim, 1982: 143 (Yeomi); Kim and Kwon, 1983: 328 (Dokgeodo Is., Cheongdeungdo Is., Galmokdo Is., Nulok Is.); Kim and Kim, 1995: 500 (Pojeon).

Family Varunidae H. Milne Edwards, 1853 참게과

49. *Eriocheir japonicus* De Haan, 1835 동남참게

Literature. Kim and Kim, 1982: 143 (Gahak).

***50. *Gaetice depressus* (De Haan, 1833)** 납작게

Material examined. 1♂, Geumgap Beach, 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 144 (Hoedong, Yeomi, Dolmok); Kim and Kwon, 1983: 329 (Hajodo Is.); Kim and Kim, 1995: 503 (Geumgap, Pojeon, Namdong, Gulpo).

51. *Hemigrapsus longitarsis* (Miers, 1879) 긴종아리풀게

Literatures. Kim and Kwon, 1983: 328 (Hajodo Is.); Kim and Kim, 1995: 501 (Hoedong).

***52. *Hemigrapsus penicillatus* (De Haan, 1835)** 풀게

Material examined. 3♂♂, Jeopdo Is., 30 Jun. 2004; 30♂♂, 25♀♀, Beolpo, 29 Jun. 2004; 2♂♂, Geumgap Beach, 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 143 (Cheondu, Nokjin, Hoedong, Seomang, Gahak, Dolmok); Kim and Kwon, 1983: 328 (Sangjodo Is., Hajodo Is., Gwansado Is., Gwanmaedo Is., Dokgeodo Is.); Kim and Kim, 1995: 500 (Geumgap, Anchi, Pojeon, Namdong, Gulpo, Hoedong).

***53. *Hemigrapsus sanguineus* (De Haan, 1835)** 무늬발게

Material examined. 2♂♂, 2♀♀, Beolpo, 29 Jun. 2004; 2♂♂, 3♀♀, Jeopdo Is., 30 Jun. 2004; 3♂♂, 3♀♀, Geumgap Beach., 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 143 (Cheondu, Nokjin, Hoedong, Dolmok); Kim and Kwon, 1983: 328 (Hajodo Is., Cheongdeungdo Is., Galmokdo Is., Gwansado Is., Nulokdo Is.); Kim and Kim, 1995: 500 (Geumgap, Pojeon, Namdong, Gulpo, Hoedong).

***54. *Hemigrapsus sinensis* Rathbun, 1931** 털보꼬마풀게

Material examined. 10♂♂, 6♀♀, Beolpo, 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 144 (Hoedong); Kim and Kwon, 1983: 329 (Hajodo Is.); Kim and Kim, 1995: 503 (Anchi, Hoedong).

Family Sesarmidae Dana, 1851 사각게과

55. *Helice tientsinensis* Rathbun, 1931 갈게

Helice tridens tientsinensis Rathbun, 1931, p. 92, pl. 7, fig. 9; Shen, 1932, p. 210, text-figs. 130, 131, pl. 8, fig. 5; Kim, 1973, p. 501, pl. 48, fig. 176 (cited from Sakai, 2004).

Helice (Helice) tientsinensis: Sakai and Yatsuzuka, 1980, p. 398, fig. 4.

Helice tientsinensis: Sakai, 2004, CD-ROM.

Literatures. Kim and Kim, 1982: 145 (Nokjin); Kim and Kwon, 1983: 329 (Sangjodo Is.).

56. *Helice tridens* (De Haan, 1835) 방게

Ocypode (Helice) tridens De Haan, 1835, p. 57, pl. 11, fig. 2.

Helice tridens: Stimpson, 1907, p. 133.

Helice tridens tridens: Rathbun, 1929, p. 90, pl. 7, figs. 6, 7; Kim, 1973, 496, pl. 47, fig. 173 (cited from Sakai, 2004).

Helice (Helice) tridens tridens: Sakai and Yatsuzuka, 1980, p. 395, figs. 1, 3, 9.

Helice tridens: Sakai, 2004, CD-ROM.

Literature. Kim and Kim, 1982: 145 (Gachi).

***57. *Helicana japonica* (Sakai and Yatsuzuka, 1980)** 수동방게

Helice tridens wuana: Shen, 1932, p. 208, text-figs. 128, 129, pl. 8, figs. 3, 4; Kim, 1973, p. 499, pl. 48, fig. 175 (not *Helice tridens wuana* Rathbun, 1931).

Helice (Helicana) japonica Sakai and Yatsuzuka, 1980, p. 408, figs. 2, 8, 17, 19.

Helicana japonica: Sakai, 2004, CD-ROM.

Material examined. 4♂♂, 2♀♀, Jeopdo Is., 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 145 (Gachi, Nokjin, Dolmok).

Habitat. This species is found in burrows on sandy-mud flats.

Remarks. Until now, five species and/or subspecies of the genus *Helice* De Haan, 1835 have been recognized in Korea (*Helice tridens tridens* De Haan, 1835, *H. tridens tientsinensis* Rathbun, 1931, *H. tridens sheni* Sakai, 1939, *H. tridens wuana* Rathbun, 1931, and *H. leachi* Hess, 1865) (Kim, 1973). Sakai and Yatsuzuka (1980) synonymized the Korean specimens of *H. tridens wuana* of Kamita (1936) with *Helice (Helicana) japonica* on the basis of the shape of stridulating ridge and first pleopod in their revision of the genus *Helice*. The genus *Helice* is currently divided into two genera, *Helice* and *Helicana* (K. Sakai, 2004). We carefully re-examined the specimens known as *H. tridens wuana* in Korea and the specimens of Japanese *Helicana japonica*, and agreed to the revision of Sakai and Yatsuzuka (1980). The comprehensive taxonomic studies on the Korean *Helice* and *Helicana* species are in progress based on the morphological and molecular characters.

58. *Nanosesarma gordonii* (Shen, 1935) 꼬마사각게

Literature. Kim and Kim, 1995: 503 (Hoedong).

59. *Chiromantes dehaani* (H. Milne Edwards, 1853) 말뚝게

Literature. Kim and Kim, 1982: 145 (Posanri, Dolmok).

60. *Chiromantes haematocheir* (De Haan, 1833) 도독게

Literatures. Kamita, 1941: 214 (Jindo Is.); Kim and Kim, 1982: 145 (Gachi, Nokjin, Hoedong, Dolmok); Kim and Kim, 1995: 503 (Pojeon).

61. *Parasesarma acis* Davie, 1993 붉은발사각게

Sesarma erythroductyla: Ortmann, 1894, p. 725 [part] (Not *Sesarma erythroductyla* Hess, 1865); T. Sakai, 1976, p. 657, text-fig. 359; Kim and Kim, 1995, p. 503.

Parasesarma acis Davie, 1993, p. 66, figs. 1A-E, 28 (cited from K. Sakai, 2004); K. Sakai, 2004, CD-ROM.

Literatures. Kim and Kim, 1982: 145 (Gachi); Kim and Kim, 1995: 503 (Namdong).

Remarks. The present species has been reported as *Sesarma erythroductyla* Hess, 1865 in Japan and Korea. In 1993, Davie newly described the Japanese specimens known as *Sesarma erythroductyla* Hess, 1865 as *Parasesarma acis* (K. Sakai, 2004).

***62. *Parasesarma pictum* (De Haan, 1835) 사각게**

Material examined. 5♂♂, 3♀♀, Beolpo, 29 Jun. 2004; 1♂, Jeopdo Is., 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 144 (Gachi, Dolmok, Yeomi, Nokjin); Kim and Kwon, 1983: 329 (Seongnamdo Is., Sangjodo Is., Hajodo Is., Cheongdeungdo Is., Gwansado Is., Galmokdo Is.); Kim and Kim, 1995: 503 (Geumgap, Wondari, Anchi, Pojeon, Namdong, Gulpo).

63. *Parasesarma plicatum* (Latreille, 1806) 가지게

Literature. Kamita, 1941: 222 (Jindo Is.).

64. *Cyclograpsus intermedius* Ortmann, 1894 비단게

Literature. Kim and Kwon, 1983: 328 (Seongnamdo Is., Galmokdo Is.).

Family Pinnotheridae De Hann, 1833 속살이게과

****65. *Trytodynamia* sp.**

Material examined. 1♂, Beolpo, 29 Jun. 2004.

Remarks. In Korea, *Trytodynamia* sp. is found from the burrows of *Upogebia major* (De Haan, 1849) and *Protanchyra bidentata* (Woodward and Barrett, 1858) with polychaete worm. *Trytodynamia* sp. is currently under taxonomic revision.

Family Camptandriidae 여섯니세스랑게과 (신칭)

***66. *Camptandrium sexdentatum* Stimpson, 1858 여섯니세스랑게**

Material examined. 13♂♂, 3♀♀, Beolpo, 29 Jun. 2004.

Literature. Kim and Kim, 1982: 143 (Cheondu).

67. *Cleistostoma dilatatum* (De Haan, 1833) 세스랑게

Literatures. Kim and Kim, 1982: 142 (Gachi, Nokjin); Kim and Kwon, 1983: 329 (Sangjodo Is.); Kim and Kim, 1995: 507 (Namdong).

Table 1. Occurrence and the geographical distribution form of decapods in Jindo Island and its adjacent islets.

Species	Localities	Previous records	Present study	Distribution forms ⁽¹⁾			
				N	T	S	C
1. <i>Parapenaeopsis tenella</i>	15	○ ⁴			○		
2. <i>Marsupenaeus japonicus</i>	16	○ ⁴				○	
3. <i>Trachysalambria curvirostris</i>	15, 17	○ ⁴			○		
4. <i>Acetes chinensis</i>	15, 17	○ ⁴			○		
5. <i>Neocaridina denticulata denticulata</i>	26		○		○		
6. <i>Leptochela gracilis</i>	15, 17	○ ⁴			○		
7. <i>Macrobrachium koreana</i>	26		○				○
8. <i>Exopalaemon carinicauda</i>	27		○		○		
9. <i>Exopalaemon modestus</i>	26		○		○		
10. <i>Palaemon gravieri</i>	15	○ ⁴			○		
11. <i>Palaemon macrodactylus</i>	27		○		○		
12. <i>Palaemon paucidens</i>	26		○		○		
13. <i>Alpheus brevicristatus</i>	1, 27, 28	○ ²	○		○		
14. <i>Alpheus japonicus</i>	27		○		○		
15. <i>Alpheus digitalis</i>	28		○		○		
16. <i>Alpheus lobidens</i>	27, 28		○		○		
17. <i>Alpheus hoplocheles</i>	28		○			○	
18. <i>Athanas japonicus</i>	28		○			○	
19. <i>Athanas</i> sp.	28		○				
20. <i>Crangon hakodatei</i>	15	○ ⁴			○		
21. <i>Laomedia astacina</i>	28		○		○		
22. <i>Diogenes nitidimanus</i>	16	○ ⁴			○		
23. <i>Pagurus brachiomastus</i>	16	○ ⁴			○		
24. <i>Pagurus dubius</i>	16	○ ⁴			○		
25. <i>Pagurus geminus</i>	18	○ ⁴					○
26. <i>Pagurus lanuginosus</i>	15, 16, 18, 20	○ ⁴			○		
27. <i>Petrolisthes japonicus</i>	11		○			○	
28. <i>Raphidopus ciliatus</i>	27		○		○		
29. <i>Heikea japonica</i>	1	○ ⁵			○		
30. <i>Paradorippe granulata</i>	1	○ ⁵			○		
31. <i>Matuta planipes</i>	2	○ ³				○	
32. <i>Philyra kanekoi</i>	11		○		○		
33. <i>Philyra pisum</i>	3, 4, 6, 16, 22, 27	○ ^{3,4,5}	○		○		
34. <i>Achaeus tuberculatus</i>	1	○ ⁵			○		
35. <i>Pugettia quadridens</i>	6, 7, 16, 20, 24	○ ^{3,4,5}			○		
36. <i>Halicarcinus messor</i>	6, 7	○ ^{3,5}			○		
37. <i>Parthenope validus</i>	6	○ ⁵				○	
38. <i>Charybdis bimaculata</i>	1, 15, 17	○ ^{4,5}				○	
39. <i>Charybdis japonica</i>	2, 6, 11, 23, 25, 27	○ ^{3,5}	○		○		
40. <i>Ovalipes punctatus</i>	2	○ ³				○	
41. <i>Portunus trituberculatus</i>	2, 11	○ ³				○	
42. <i>Carcinoplax vestita</i>	1	○ ⁵			○		

Table 1. To be continued.

Species	Localities	Previous records	Present study	Distribution forms ⁽¹⁾			
				N	T	S	C
43. <i>Eucrate crenata</i>	1	○ ⁵				○	
44. <i>Macromedaeus distinguendus</i>	6	○ ^{3,5}				○	
45. <i>Pilumnopeus makianus</i>	6, 23, 27	○ ^{3,5}	○			○	
46. <i>Pilumnus minutus</i>	21	○ ⁵				○	
47. <i>Sphaerozius nitidus</i>	6, 7	○ ^{3,5}				○	
48. <i>Pachygrapsus crassipes</i>	7, 12, 13, 15, 20, 24	○ ^{3,4,5}				○	
49. <i>Eriocheir japonicus</i>	2	○ ³			○		
50. <i>Gaetice depressus</i>	6, 7, 8, 11, 16, 23, 24, 25	○ ^{3,4,5}	○		○		
51. <i>Hemigrapsus longitarsis</i>	6, 16, 2, 3, 4, 6, 8, 10, 11	○ ^{4,5}			○		
52. <i>Hemigrapsus penicillatus</i>	12, 14, 16, 17, 18, 22, 23, 24, 25, 27, 28, 3, 4, 6, 8, 11, 13, 15	○ ^{3,4,5}	○		○		
53. <i>Hemigrapsus sanguineus</i>	16, 18, 20, 23, 24, 25, 27, 28	○ ^{3,4,5}	○		○		
54. <i>Hemigrapsus sinensis</i>	6, 16, 22, 27	○ ^{3,4,5}	○		○		
55. <i>Helice tientsinensis</i>	4, 17	○ ^{3,4}			○		
56. <i>Helice tridens</i>	9	○ ³			○		
57. <i>Helicana japonica</i>	4, 8, 9, 28	○ ³	○		○		
58. <i>Nanosesarma gordonii</i>	6	○ ⁵			○		
59. <i>Chiromantes dehaani</i>	5, 8	○ ³			○		
60. <i>Chiromantes haematocheir</i>	1, 4, 6, 8, 9, 24	○ ^{1,3,5}			○		
61. <i>Parasesarma acis</i>	9, 25, 4, 7, 8, 9, 11, 13, 16,	○ ^{3,5}				○	
62. <i>Parasesarma pictum</i>	17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28	○ ^{3,4,5}	○			○	
63. <i>Parasesarma plicatum</i>	1	○ ¹				○	
64. <i>Cyclograpsus intermedius</i>	13, 19	○ ⁴				○	
65. <i>Tritodynamia</i> sp.	27		○				
66. <i>Camptandrium sexdentatum</i>	3, 27	○ ³	○			○	
67. <i>Cleistostoma dilatatum</i>	4, 9, 17, 25	○ ^{3,4,5}			○		
68. <i>Ilyoplax dentimerosa</i>	9	○ ³			○		
69. <i>Ilyoplax pingi</i>	27		○		○		
70. <i>Macrophthalmus abbreviatus</i>	10, 16, 22, 25, 28	○ ^{3,4,5}	○		○		
71. <i>Macrophthalmus japonicus</i>	3, 4, 9, 16, 17, 22, 23, 25, 27, 28	○ ^{3,4,5}	○			○	
72. <i>Ocypode stimpsoni</i>	18, 28	○ ⁴	○		○		
73. <i>Scopimera globosa</i>	14, 27	○ ⁴	○			○	
74. <i>Uca arcuata</i>	1, 4, 25	○ ^{1,3,5}				○	
75. <i>Uca lactea</i>	25, 28	○ ⁵	○			○	

References: Previous records: ¹Kamita (1941); ²Kim (1977); ³Kim and Kim (1982); ⁴Kim and Kwon (1983); ⁵Kim and Kim (1995).

Abbreviations: (1) Distribution forms-N: northern form; T: temperate zone form; S: southern form; C: cosmopolitan species.

Table 2. Number of species and/or subspecies of the 73 decapod species categorized by distribution forms.

Group	Geographical distribution form				No. of sp.
	Northern	Temperate	Southern	Cosmopolitan	
Dendrobranchiata	0	3 (75.0%)	1 (25.0%)	0	4
Caridea	0	12 (80.0%)	3 (20.0%)	0	15
Thalassinidea	0	1 (100%)	0	0	1
Anomura	0	5 (71.4%)	1 (14.3%)	1 (14.3%)	7
Brachyura	0	26 (56.5%)	20 (43.5%)	0	46
Total	0	47 (64.4%)	25 (34.2%)	1 (1.4%)	73

Family Ocypodidae Rafinesque, 1815 달랑게과

68. *Ilyoplax dentimerosus* Shen, 1932 털콩게

Literature. Kim and Kim, 1982: 142 (Gachi).

***69. *Ilyoplax pingi* Shen, 1932** 펄털콩게

Material examined. 12♂♂, 5♀♀, Beolpo, 29 Jun. 2004.

Literature. Kim and Kim, 1995: 506 (Anchi).

***70. *Macrophthalmus abbreviatus* Manning & Holthuis** 길게

Material examined. 9♂♂, 6♀♀, Jeopdo Is., 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 142 (Seomang); Kim and Kwon, 1983: 329 (Hajodo Is.); Kim and Kim, 1995: 506 (Anchi, Namdong).

***71. *Macrophthalmus japonicus* (De Haan, 1835)** 철게

Material examined. 10♂♂, 2♀♀, Beolpo, 29 Jun. 2004; 13♂♂, 9♀♀, Jeopdo Is., 30 Jun. 2004.

Literatures. Kim and Kim, 1982: 142 (Cheondu, Gachi, Nokjin); Kim and Kwon, 1983: 329 (Sangjodo Is., Hajodo Is.); Kim and Kim, 1995: 507 (Anchi, Namdong, Gulpo).

***72. *Ocypode stimpsoni* Ortmann, 1897** 달랑게

Material examined. 1♂, 1♀, Jeopdo Is., 30 Jun. 2004.

Literature. Kim and Kwon, 1983: 329 (Gwansado Is.).

***73. *Scopimera globosa* (De Haan, 1835)** 엽낭게

Material examined. 15♂♂, Beolpo, 29 Jun. 2004.

Literature. Kim and Kwon, 1983: 329 (Gwanmaedo Is.).

74. *Uca arcuata* (De Haan, 1833) 농게

Literatures. Kamita, 1941: 156 (Jindo Is.); Kim and Kim, 1982: 141 (Nokjin); Kim and Kim, 1995: 506 (Namdong).

75. *Uca lactea* (De Haan, 1835) 흰발농게*Material examined.** 10♂♂, 10♀♀, Jeopdo Is., 30 Jun. 2004.**Literature.** Kim and Kim, 1995: 506 (Namdong).

DISCUSSION

Thirty five decapod species in 13 families were identified and classified. Of these, 12 species of caridean shrimps in three families [*Caridina denticulata denticulata* De Haan, 1844, *Macrobrachium koreana* Kwon and Han, 1984, *Palaemon carinicauda* Holthuis, 1950, *Palaemon modestus* (Heller, 1862), *Palaemon macrodactylus* Rathbun, 1902, *Palaemon paucidens* De Haan, 1844, *Alpheus japonicus* Miers, 1879, *Alpheus rapax* Fabricius, 1798, *Alpheus lobidens* De Haan, 1850, *Alpheus hoplocheles* Coutiere, 1897, *Athanas japonicus* Kubo, 1936, and *Athanas* sp.], one thalassinidean species [*Laomedea astacina* De Haan, 1849], two anomuran species in one family [*Petrolisthes japonicus* (De Haan, 1849) and *Raphidopus ciliatus* Stimpson, 1858], and two crab species in two families [*Philyra kanekoi* Sakai, 1934 and *Tritodynamia* sp.] are newly reported from the study area. Therefore, with the previous records, a total of 75 decapod species (4 dendrobranchiantan shrimps in 2 families, 16 caridean shrimps in 5 families, 1 thalassinidean, 7 anomurans in 3 families, and 47 of brachyuran crabs in 18 families) are now known to occur in Jindo Island and its adjacent islets.

Table 1 and 2 show the species composition of the 73 decapod species (unidentified species, *Athanas* sp. and *Tritodynamia* sp. were excluded) by the geographical distribution forms following Kim's (1973) monograph. Forty six brachyuran crab species consist of 26 species (56.5%) of temperate zone form and 20 species (43.5%) of southern form. Of the eight thalassinidean and anomuran species, six species (75%) were temperate zone form. In the case of shrimp species, temperate zone form is much more dominant (15 out of 19 species, 78.9%). As a whole, the dominant geographical distribution form of decapods in Jindo Island and its adjacent islets is temperate zone form (47 of 73 species, 64.4%) and this fact agrees to the result of Kim and Kim (1982).

ACKNOWLEDGEMENTS

The authors are grateful to Mr. Sang-kyu Lee and Mr. Tae-seo Park for their assistance in preparing the manuscript. This work was supported by the Korea Research Foundation Grant (KRF-2002-070-C00080).

REFERENCES

- Dai, A. and S. Yang, 1991. Crabs of the China Seas. China Ocean Press, Beijing, pp. 1-555.
Kamita, T., 1936. Nomenclature and distribution of *Helice* from Korea. Fisher. Korea. **133**: 1-6.

- Kamita, T., 1941. *Studies on the decapod crustaceans of Chosen. Part 1.* Crabs. Fisher. Soc. Chosen, pp. 1-289.
- Kim, H. S., 1973. Anomura and Brachyura. Illustrated encyclopedia of fauna and flora of Korea. Vol. 14. Ministry of Education, R. O. K., Samwha Publishing Co. Ltd., pp. 1-694.
- Kim, H. S., 1977. Macrura. Illustrated of fauna and flora of Korea. Vol. 19. Ministry of Education, R. O. K., Samwha Publishing Co. Ltd., pp. 1-414.
- Kim, H. S. and D. H. Kwon, 1983. Marine invertebrate fauna in the vicinity of Jindo Island. Report on the Survey of Natural Environment in Korea, no 3, pp. 315-336.
- Kim, W. and H. S. Kim, 1982. Classification and geographical distribution of Korean crab (Crustacea, Decapoda, Brachyura). Proc. Coll. Natur. Sci., SNU, **7**(1): 133-159.
- Kim, W. and S. H. Kim, 1995. The brachyuran crabs (Crustacea: Decapoda) of Chindo Island, Korea. Korean J. Syst. Zool., **11**(4): 497-508.
- Martin, J. W. and G. E. Davis, 2001. An updated classification of the recent Crustacea. Nat. Hist. Mus. L. A. County, Science Series, **39**: 1-124.
- Park, Y. C. and K. N. Han, 2000. Systematic study on four shrimps (Crustacea: Decapoda: Natantia) of Sokmo Channel near Kanghwa Island, Korea. The Yellow Sea, **6**: 12-21.
- Sakai, T., 1976. Crabs of Japan and the adjacent seas. Kodansha Ltd., pp. 1-773.
- Sakai, K. and K. Yatsuzuka, 1980. Notes on some Japanese and Chinese *Helice* with *Helice (Helicana)* n. subgen., including *Helice (Helicana) japonica* n. sp. (Crustacea: Decapoda). Senckenb. Biol., **60**: 393-411.
- Sakai, K., 2004. Crabs of Japan. World Biodiversity Database CD-ROM Series.
- Yang, H. J. and A. Anker, 2003. New records of alpheid shrimps (Decapoda: Caridae: Alpheidae) from Korea. Korean J. Syst. Zool., **19**(1): 1-9.

RECEIVED: 18 February 2005

ACCEPTED: 6 October 2005

한국 진도의 갑각십각류

노 현 수 · 정 중 우 · 송 성 준 · 김 원*

(서울대학교 자연과학대학 생명과학부)

요 약

진도의 십각류 종류상을 밝히기 위해 분류학적 연구를 수행하였다. 그 결과 13과 35종이 동정되었으며, 이 가운데 새우류 3과 12종, 족류 1종, 집게류 1과 2종, 게류 2과 2종이 진도의 십각류 종류상에 새로이 추가되었다. 과거기록을 포함하여 총 75종의 분류목록을 작성하였으며, 주요 분류군들에 대해서는 간략한 고찰을 하였다. 또한 이미 분포상이 밝혀진 십각류 73종의 분포형과 종 출현 양상을 근거로 진도와 그 인근도서의 십각류 분포 양상을 논하였다.