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Decapod Crustaceans Collected during the Biological Expedition to the Kamchatka Peninsula and the North Kuril Islands in 1997

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Abstract During the Biological Expedition to the Kamchatka Peninsula and North Kuril Islands in 1997, a small collection of decapod crustaceans was obtained from Paramushir and Shumshu Islands. Nineteen species of six families have been identified. Additional material from various sources has also been examined in order to supplement the collection. A rare majid crab, *Hyas kurilensis* Kobjakova, 1962, is rediscovered since the original description, and is transferred to the genus *Oregonia*. The occurrence of a pagurid hermit crab, *Pagurus hirsutiusculus* (Dana, 1851), in Japanese waters is confirmed. All but one species have been previously known from the Bering Sea and Far East, and the ranges of further 17 species are extended to the northwest coast of North America. *Oregonia kurilensis* is so far known only from the Kuril Islands.

Key words: Crustacea, Decapoda, North Kuril Islands, *Oregonia kurilensis*, new combination, redescription.

During the Biological Expedition to the Kamchatka Peninsula and North Kuril Islands carried out in July to August 1997, benthic marine invertebrates were collected at rocky shores in Paramushir and Shumshu Islands and at three stations around Paramushir Island. The present report deals with the material of decapod crustaceans, which contains 19 species belonging to three infraorders and six families. This collection is supplemented by material from various sources. The decapod fauna of the Kuril Archipelago and Kamchatka has been relatively well documented (Brandt, 1851; Makarov, 1938; 1962; Nishimura, 1939; Kobjakova, 1937; 1958; 1962; Vinogradov, 1947; Zarenkov, 1960; Birshtein and Zarenkov, 1970; Komai and Amaoka, 1991). All species included in this report are already known from the region. Nevertheless, the present material contains eight specimens of a majid crab, here referred to *Oregonia kurilensis* (Kobjakova, 1962). This species had been previously represented only by the unique holotype from Kunashir Island, South Kuril Islands. Although it was originally assigned to the genus *Hyas* Leach, 1814, our study shows that it actually belongs to the genus *Oregonia* Dana, 1851. *Oregonia kurilensis* is redescribed in detail based on the present specimens, and compared with the closely related *O. gracilis* Dana, 1851. Brief notes on biogeography of the collected species are also included. In addition, the occurrence of *Pagurus hirsutiusculus* in Japanese waters is verified.

Materials and Methods

The intertidal collection was made at rocky shore near Sebero Kurilisk of the Paramushir Island. Additionally, we were able to obtain material collected during a survey on fishery resources for the scallop, *Chlamys islandicus erythrocomatus* (Dall), around Paramushir Island.

The specimens examined in this study are deposited in the following institutions: Natural History Museum and Institute, Chiba (CBM, with a code of ZC); Laboratory of Marine Zoology, Faculty of Fisheries, Hok-

kaido University (HUMZ, with a code of C); National Science Museum, Tokyo (NSMT); and Zoologische Staatssammlung München (ZSM).

Synonymies are not intended to be complete. They are restricted to the original reference, the most significant works accompanied with illustration and/or photograph, and the original reference of junior subjective synonyms. Measurements are provided as follows: the postorbital carapace length (cl) for caridean shrimps, the shield length (sl) for hermit crabs, and the carapace length (cl) and width (cw) for crab-like anomurans and brachyuran crabs. In the crab-like anomurans and brachyuran crabs, the carapace length was measured from the level of the base of the rostral spines to the posterior margin of the carapace; the carapace width across the greatest breadth.

Taxonomic Accounts

Infraorder Caridea
Family Pandalidae
Pandalus tridens (Rathbun, 1902)

Pandalus montagui tridens Rathbun, 1902a: 901 [type locality: off North Head, Aktan Island].

Pandalus tridens: Butler, 1980: 136, unnumbered fig.; Komai, 1991: 77, fig. 7; 1999: 1289, figs. 10, 11.

Material examined. E of Paramushir Island, 50°38′N, 155°41′E, 108 m, 19.VII.1997; scallop seine; 1 functional male (cl 11.2 mm), 1 transitional (cl 13.4 mm), 1 female (cl 20.7 mm), CBM-ZC 4968. —West of Paramushir Island, 100–120 m; 22.VII.1997; scallop seine; 2 functional males (cl 10.2, 13.4 mm), 1 female (20.7 mm); CBM-ZC 4973.

Remarks. The present specimens agree very well with the redescription of *Pandalus tridens* by Komai (1999). Komai (1997, 1999) suggested that *Pandalus annulicornis* reported by Doflein (1902) from Nemuro, Hokkaido, might be referred to *P. tridens*, because *P. tridens* is very similar to *P. montagui* Leach, 1814, a senior synonym of *P. annulicornis*. The senior author recently reexamined the Doflein's material in the collection of the Zoologische Staatssammlung München (1 male cl 6.7 mm, coll. Haberer, ZSM 163/4) and found that it actually represented *P. prensor* Stimpson, 1860.

Distribution. Pribirof Islands, Bering Sea, to San Nicholas Island, California; Kuril Islands; Pacific coast of Hokkaido, Japan; at depths of 5–1984 m.

Family Hippolytidae
Eualus pusiolus (Krøyer, 1841)
(Fig. 1)

Hippolyte pusiola Krøyer, 1841: 576 [type locality: Norway's west coast].

Eualus pusiolus: Butler, 1980: 195, unnumbered fig., pl. 7B; Williams, 1984: 113, fig. 78; Squires, 1990: 188, figs. 100, 101; Jensen and Johnson, 1999: 136–137; d'Udekem d'Acoz, 1999: 112.

Eualus bulychevae: Komai et al., 1992: 192. Not *Eualus bulychevae* Kobjakova, 1955a.

Material examined. W of Paramushir Island, 100–120 m; 22.VII.1997; scallop seine; 1 female (cl 3.6 mm); CBM-ZC 4976. —E of Paramushir Island, 50°38′N, 155°41′E, 108 m; 19.VII.1997; scallop seine; 1 female (cl 3.3 mm); CBM-ZC 4987.

Additional material. Off Wakkanai, northern Hokkaido, depth unknown; 24.III.1987; sledge net, leg. Wakkanai Fisheries Experimental Station; 1 male (cl 2.6 mm), 5 ovig (cl 2.6–3.3 mm); reported as *Eualus bulychevae* by Komai et al. (1992); HUMZ-C 132.

Remarks. The present specimens from Paramushir Island show the following features: the rostrum (Fig. 1A) is short (0.3–0.4 times as long as the carapace) and does not reach the distal margin of the proximal segment of the antennular peduncle; the dorsal margin of the rostrum is armed with two or three spines, including one arising posterior to the posterior margin of the orbit; the ventral margin of the rostrum is unarmed; the lateral carina of the rostrum is prominent and extends posterior to the anterior gastric region; the infraorbital angle (Fig. 1A) forms a distinct triangular process; the pterygostomian spine of the carapace (Fig. 1A) is present; the third to fifth pereopods each bears an epipod; and the merus of the third pereopod (Fig. 1B) is armed only with one subdistal spine laterally. These features provide evidence to place the specimens in *Eualus*

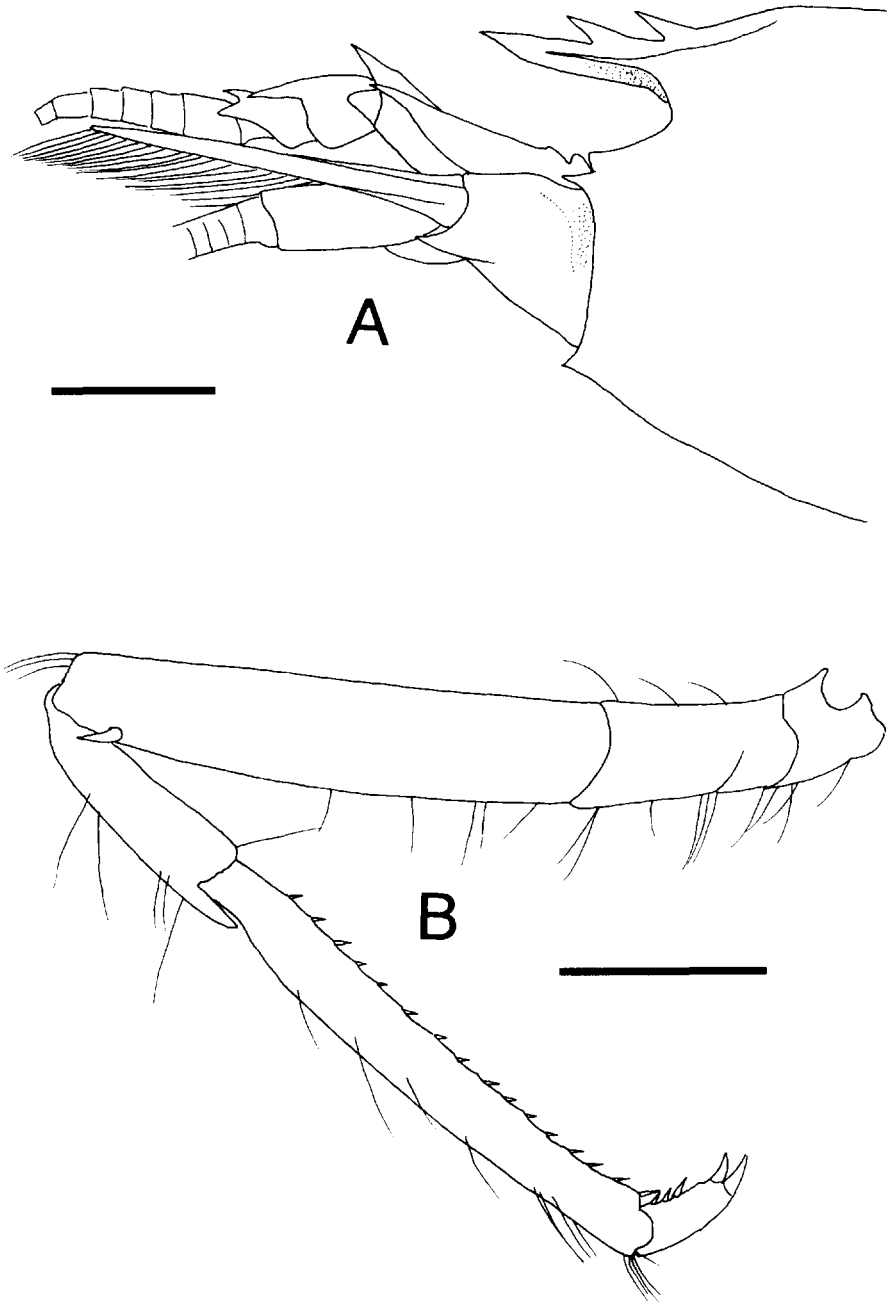

Fig. 1. *Eualus pusiolus* (Krøyer, 1841). Female from Paramushir Island (cl 3.6 mm; CBM-ZC 4976). A, anterior carapace, rostrum and cephalic appendages, lateral, eye removed, distal part of outer antennular flagellum broken, antennal flagellum omitted; B, left third pereopod, lateral. Scale bars: 1 mm.

pusiolus.

We have reexamined the specimens referred to *E. bulychevae* Kobjakova, 1955a, by Komai et al. (1992) (HUMZ-C 132, one male and five ovigerous females) and found that they actually represent *E. pusiolus*.

This species appears closest to *E. dozei* (A. Milne Edwards, 1891), known from Chile,

southeastern Pacific, in having the relatively short rostrum and a single spine on the merus of the third pereopod. Nevertheless, the absence of the infraorbital process will separate *E. dozei* from *E. pusiolus* (see Holthuis, 1952). The rostrum is also still longer in *E. dozei* than in *E. pusiolus*, overreaching the distal margin of the proximal segment of the antennular peduncle (Holthuis, 1952).

Distribution. Chukchi Sea; Bering Sea to British Columbia; Kuril Islands; Sea of Okhotsk; Sea of Japan; east coast of North America southward to Cape Cod; Europe southward to Spain; intertidal to 1381 m.

Heptacarpus flexus (Rathbun, 1902)

Spirontocaris flexa Rathbun, 1902a: 896 [type locality: north of Bird Island, Shumagins, Alaska]; 1904: 78, fig. 32; Schmitt, 1921: 58, fig. 36; Nishimura, 1939: 383, unnumbered fig.

Eualus flexa: Kobjakova, 1936: 211, fig. 32.

Heptacarpus flexus: Hayashi, 1979: 18, fig. 3; Komai et al., 1992: 192.

Material examined. W of Paramushir Island, 100–120 m; 22. VII. 1997; scallop seine; 1 female (cl 9.7 mm); CBM-ZC 4974.

Remarks. The present specimen examined is somewhat damaged, lacking a rostrum and telson. Nevertheless, the absence of an epipod from the third pereopod, the strongly geniculate abdomen and the distally unarmed basal segment of the antennular peduncle certainly place it in *H. flexus*.

Distribution. Bering Sea to Drekes Bay, California; Kamchatka; Kuril Islands; Sea of Okhotsk; Sea of Japan; at depths of 4–250 m.

Spirontocaris ochotensis (Brandt, 1851)

Hippolyte ochotensis Brandt, 1851: 120, pl. 5, fig. 17 [type locality: Sea of Okhotsk].

Spirontocaris mororani Rathbun, 1902b: 43, fig. 16 [type locality: Mororan (=Muroran), Hokkaido].

Spirontocaris ochotensis: Rathbun, 1904: 71, fig. 26; Brashnikov, 1907: 142, fig. 5; Igarashi, 1969: 5, pl. 5, fig. 14; Hayashi, 1977: 168, fig. 5; Miyake, 1982: 50, pl. 17, fig. 4.

Spirontocaris makarovi spatula Kobjakova, 1936: 221 (key) [type locality: Peter the Great Bay, Sea of Japan].

Spirontocaris onagawaensis Yokoya, 1939: 268, fig. 5 [type locality: Onagawa Bay, Miyagi Prefecture].

Material examined. SW of Paramushir Island, 50°11′N, 155°11′E, 120 m; 18. VII. 1997; scallop seine; 1 male (cl 5.0 mm); CBM-ZC 4963.

Remarks. The present male specimen agrees very well with the account of *Spirontocaris ochotensis* given by Hayashi (1977). According to Hayashi, the shape of the rostrum is variable in this species. In the present specimen, the rostrum is rather truncate distally in the lateral view, being similar to the figure 5c of Hayashi (1977).

Distribution. Bering Sea, including Aleutians; Kuril Islands; Sea of Okhotsk; Sea of Japan; Pacific coast of northern Japan southward to Onagawa Bay, Miyagi Prefecture; intertidal to 247 m.

Spirontocaris spinus (Sowerby, 1805)

Cancer spinus Sowerby, 1805: 47, pl. 23 [type locality: "Among oysters on the Scottish coast"].

Spirontocaris spinus: Brashnikov, 1907: 138, fig. 14c; Hayashi, 1977: 177, figs. 8, 9; Squires, 1990: 228, figs. 124, 125, pl. 4b; d'Udekem d'Acoz, 1999: 120.

Spirontocaris brevidigitata Kobjakova, 1935: 88, fig. 3 [type locality: Peter the Great Bay, Sea of Japan]; Igarashi, 1969: 5, pl. 4, fig. 12.

Spirontocaris spina intermedia Kobjakova, 1936: 221 (key) [type locality: not indicated]; 1937: 126.

Spirontocaris spina laevidens Kobjakova, 1936: 221 (key) [type locality: Peter the Great Bay and Tatar Strait].

Spirontocaris spina: Miyake, 1982: 50, pl. 17, fig. 3.

Material examined. W of Paramushir Island, 100–120 m; 22. VII. 1997; scallop seine; 1 female (cl 11.7 mm); CBM-ZC 4975.

Remarks. The present specimen agrees well with the account of *Spirontocaris spinus* by Hayashi (1977).

Distribution. Circum polar, southward to the northern North Sea, east coast of North America; Bering Sea, Sea of Okhotsk, Kuril Islands, Sea of Japan, Pacific coast of north-

ern Japan southward to Iwate Prefecture; at depths of 5–390 m.

Infraorder Anomura
Family Paguridae

Elassochirus gilli (Benedict, 1892)

Eupagurus (*Elassochirus*) *gilli* Benedict, 1892 a: 20 [type locality: Nazan Bay, Atka Island, Alaska].

Eupagurus porcellanus Molander, 1914: 4, pl. 1, fig. 2 [type locality: "Bering Island"].

Pagurus gilli: Makarov, 1938: 176, fig. 68a, pl. 3, fig. 1; 1962: 166, fig. 68a, pl. 3, fig. 1.

Elassochirus gilli: McLaughlin, 1974: 330, figs 88–90; Jensen, 1995: 60, fig. 105.

Material examined. W of Paramushir Island, 100–120 m; 22. VII. 1997; scallop seine; 1 male (sl 12.1 mm); CBM-ZC 4979.

Coloration in life. Chelipeds and ambulatory legs reddish orange generally. Margins of fingers and palm of right cheliped lined by white. Ambulatory legs with scattered small white spots on distal 3 segments.

Remarks. *Elassochirus gilli* is very similar to *E. cavimanus* (Miers, 1879), but, in life, it is readily distinguishable from the latter by its distinctive red-orange coloration. In *E. cavimanus*, the carpus and merus of the chelipeds are purple and the palms are yellow-orange; the ambulatory legs are generally orange, with scattered larger white spots (unpublished data). As mentioned by previous authors (Makarov, 1938; 1962; McLaughlin, 1974), the unarmed dorsal surface of the carpus of the right cheliped also separates *E. gilli* from *E. cavimanus*. In *E. cavimanus*, the dorsal surface of the carpus of the right cheliped bears irregular row(s) of small spines or spinules on the midline.

Distribution. Bering Sea; west coast of North America southward to Puget Sound; Aleutian Islands; Kamchatka; continental coast of Sea of Japan; subtidal to 120 m. There has been no record of this species from Japanese waters.

Labidochirus splendescens (Owen, 1839)

Pagurus splendescens Owen, 1839: 81, pl. 25, fig. 1, 1a [type locality: Kamchatka]; Makarov, 1938: 197, pl. 4, fig. 2; 1962: 187, pl. 4, fig. 2; Igarashi, 1970a: 5, pl. 2, fig. 6.

Eupagurus splendescens: Balss, 1913: 62, figs. 36, 37, pl. 2, fig. 2.

Labidochirus splendescens: McLaughlin, 1974: 342, figs. 91–95.

Material examined. SW of Paramushir Island, 50°11′N, 155°11′E, 120 m; 18. VII. 1997; scallop seine; 2 males (sl 5.7, 7.4 mm), 2 females (sl 6.3, 6.7 mm), 1 ovig (sl 6.9 mm); CBM-ZC 4965.

Coloration in life. Generally light brown. Ocular peduncles generally dark brown, without markings. Chelipeds and ambulatory pereopods with metallic iridescens on dorsal or lateral faces of propodi and carpi; spines and tubercles darker brown; ventral faces of chelipeds and mesial faces of ambulatory pereopods pale yellow-brown. Propodi of ambulatory pereopods with obscurely defined transverse bands of brown distal to midlength.

Remarks. The present specimens agree well with the redescription by McLaughlin (1974). Another representative of *Labidochirus*, *L. anomalus* (Balss, 1913), is restricted to northeast Asian waters (Miyake, 1982). The less produced, terminally dentate rostrum and the presence of low protuberances on the propodi, carpi and meri of the ambulatory pereopods immediately separates *L. splendescens* from *L. anomalus* (cf. McLaughlin, 1974). In the latter species, the rostrum is more strongly produced and its apex is simply pointed; the protuberances on the propodi, carpi and meri of the ambulatory pereopods are squamiform.

We have found that only the abdomen of the specimens was entirely protected by a small naticid shell. The shells were too small to retract the cephalothorax and thoracic appendages.

Distribution. Arctic Ocean from Kolyma River to Point Barrow; Chukchi Sea; Bering Sea; Gulf of Alaska southward to Puget Sound; Kamchatka; Kuril Islands; Sea of Okhotsk; Sea of Japan; subtidal to 412 m.

Pagurus hirsutiusculus (Dana, 1851)

Bernhardus hirsutiusculus Dana, 1851: 270 [type locality: Puget Sound]; 1855: 9, pl. 27, fig. 3a, 3b.

Eupagurus hirtiuculus (sic): Balss, 1913: 62, pl. 1, fig. 9.

Pagurus hirsutiusculus hirsutiusculus: McLaughlin, 1974: 175, figs. 43a-c, 44a-h.
Pagurus hirsutiusculus: Crain and McLaughlin, 1993: 985–1010 (by implication); Jensen, 1995: 66, fig. 125.

Material examined. Sebero Kurilisk, Paramushir Island, rocky shore, intertidal; 12. VII. 1997; hand collecting, leg. T. Komai; 7 males (sl 5.7–10.3 mm), 1 female (sl 8.2 mm), 1 ovig (sl 5.1 mm); CBM-ZC 4980. Shumshu Island, rocky shore, intertidal; 23. VII. 1997; hand collecting, leg. V. Barkalov; 7 males (sl 5.7–10.3 mm), 2 females (sl 7.1, 7.9 mm), 4 ovig (sl 6.7–8.8 mm); CBM-ZC 4986.

Additional material. Tomoshiri, eastern Hokkaido, rocky shore, intertidal; 10. VIII. 1998; hand collecting, leg. S. Wada; 1 male (sl 5.0 mm); CBM-ZC 4886.—Akkeshi, eastern Hokkaido, rocky shore, intertidal; 9. VIII. 1998; hand collecting, leg. S. Wada; 1 male (sl 5.1 mm); CBM-ZC 4887.

Remarks. The present material from the North Kuril Islands and eastern Hokkaido agree well with the redescription of *P. hirsutiusculus hirsutiusculus* by McLaughlin (1974) both in morphology and coloration. Crain and McLaughlin (1993) proposed full specific status for the two taxa previously assinged to the subspecies of *P. hirsutiusculus*. *Pagurus hirsutiusculus* was recorded from Japanese waters by Stimpson (1858; from Hokodate Bay, southern Hokkaido) and Yokoya (1933; from Tsugaru Strait) (as *Eupagurus hirsutiusculus*). However, there has been no subsequent record of this species from the above mentioned localities in spite of the recent extensive survey by the senior author. Komai (1996) suggested that the record of this species by Stimpson (1858) from Hakodate Bay might be referable to *Pagurus nigrofascia* Komai, 1996. He also indicated that Yokoya's (1933) record of *Eupagurus hirsutiusculus* from Tsugaru Strait might be attributable to misidentification, because Yokoya's specimen came from a sublitoral depth of 110 m. It has been documented that *Pagurus hirsutisculus* occurs intertidal zone (e.g., Crain and McLaughlin, 1993; Jensen, 1995), but there is no definite record of the species from sublittoral depths greater than 20 m. The other references (Terao, 1913; Miyake, 1957; 1978; 1982) are merely citation from Stimpson (1858) and/or Yokoya (1933). The occurrence of this species in eastern Hokkaido is confirmed for the first time. Nevertheless, this species appears to be rare in eastern Hokkaido (S. Wada, personal communication), though it is very abundant in intertidal zone in Paramushir and Shumshu Islands.

Although Makarov (1938; 1962) included Peter the Great Bay in the distributional range of this species, there is no definite evidence to support the occurrence of this species in the Sea of Japan as yet.

Distribution. Known with certainty from Pribirof Island to California; Kamchatka; Kuril Islands; eastern Hokkaido; intertidal.

***Pagurus trigonocheirus* (Stimpson, 1858)**

Eupagurus trigonocheirus Stimpson, 1858b: 249 [type locality: Bering Straits].
Pagurus trigonocheirus: Squires, 1964: figs i-iiB, 2B; McLaughlin, 1974: figs 59, 60, pl. 1, figs. 1, 2; Miyake, 1982: 126, pl. 42, fig. 4.
Pagurus pubescens: Igarashi, 1970a: 6, pl. 4, fig. 14. Not *Pagurus pubescens* Krøyer, 1838.

Material examined. SW of Paramushir Island, 50°11′N, 155°11′E, 120 m; 18. VII. 1997; scallop seine; 9 males (sl 6.0–12.9 mm), 2 females (sl 6.1, 9.7 mm); CBM-ZC 4964.—E of Paramushir Island, 50°38′N, 155°41′E, 108 m; 19. VII. 1997; scallop seine; 4 males (sl 8.1–13.8 mm); CBM-ZC 4969.

Additional material. Off Choshi, Chiba Prefecture, ca. 300 m; 20. II. 1995; commercial trawler; coll. T. Komai; 1 male (sl 8.7 mm); CBM-ZC 1066.—Similar locality, ca. 250 m; 24. XI. 1998; commercial trawler; leg. T. Komai; 1 ovig (sl 10.3 mm); CBM-ZC 5085.

Coloration in life. Shield generally light reddish brown. Ocular peduncles with transverse band of reddish brown proximally on light tan background. Antennular and antennal peduncles light reddish brown generally; antennal flagellum not banded. Palm of chelipeds white or light tan; carpi with tinge of reddish brown distally and proximally, spines or tubercles dark reddish brown; meri with reticulated pattern of reddish brown. Second and third pereopods generally pale

reddish brown or pale tan; dactyls with tinge of reddish brown proximally and dorsally; propodi each with dark reddish brown bands distally and proximally; carpi with tinge of reddish brown distally and proximally; meri each with tinge of reddish brown distally and proximally, darker on dorsal surface.

Remarks. The specimens examined closely agrees with the detailed redescription of *P. trigonocheirus* by McLaughlin (1974).

Komai (1993) suggested that Yokoya's specimen from between Shioyazaki and Inubozaki at depth of 583 m, which was referred to *Eupagurus trigonocheirus*, might actually represent *Pagurus townsendi* (Benedict, 1892a), because the recorded depth is far greater than the known bathymetric range of *P. trigonocheirus* and it is included in the bathymetric range of *P. townsendi*. During the continuous faunal survey of Boso Peninsula, the senior author confirmed the occurrence of the latter species off Choshi at depth greater than 400 m (unpublished data). The additional material included here extends the geographical range of *Pagurus trigonocheirus* to off Choshi in the Pacific coast of Japan at depths shallower than 400 m.

Distribution. Arctic Ocean; Chukchi Sea; Bering Sea; Kamchatka; Kuril Islands; Sea of Okhotsk; Sea of Japan; Pacific coast of northern Japan southward to off Choshi, Chiba Prefecture; subtidal to 300 m.

Pagurus undosus (Benedict, 1892)

Eupagurus (*Trigonochirus*) *undosus* Benedict, 1892a: 17 [type locality: Saint Paul Island, Pribirof Islands, Bering Sea].

Eupagurus trigonocheirus var. *paulensis* Balss, 1913: 64, figs. 38, 39 [type locality: Saint Paul Island, Pribirof Islands, Bering Sea].

Pagurus undosus: McLaughlin, 1974: 252, figs 64–66; Takeda and Miyauchi, 1992: 144; Komai, 1994: 24, fig. 1.

Material examined. Sebero Kurilisk, rocky shore, intertidal; 12–15.VII.1997; hand collecting, leg. T. Komai; 3 males (sl 9.0–10.2 mm), 1 female (sl 7.0 mm); CBM-ZC 4981.

Coloration in life. Shield grayish brown, with 4 pairs of dark brown spots lateral to gastric region. Ocular peduncles generally brown or maroon, with tinge of gray proximal to corneas. Antennular and antennal peduncles maroon; antennal flagellum uniformly brown. Chelipeds orangish brown generally, palms and carpus with tinge of gray on dorsal faces; spines or tubercles on carpi darker; distal parts of meri brown or maroon. Dactyls of second and third pereopods with band of dark brown proximally, dorsal surfaces orange, lateral faces light orange, becoming pale proximally; propodi each with dark brown bands distally and basally, lateral face between bands whitish, with small dark brown spots dorsally and ventrally; lateral faces of carpi grayish centrally with few small brown spots and reddish brown dorsally and ventrally; meri dark reddish brown in distal 0.3 and gray-brown in proximal 0.7, with small spots of dark brown.

Remarks. The present material agrees closely with the redescription by McLaughlin (1974).

Distribution. Bering Sea; Chukchi Sea; Kuril Islands; Sea of Okhotsk; Sea of Japan; Pacific coast of Hokkaido; intertidal to 64 m.

Family Lithodidae
Subfamily Hapalogastrinae

Dermaturus mandtii Brandt, 1850

Dermaturus Mandtii Brandt, 1850: 50 [type locality: Saint Paul Island, Pribirof Islands, Bering Sea]; Holmes, 1900: 116, pl. 1, fig. 16.

Dermaturus mandtii: Brashnikov, 1907: 65; Makarov, 1938: 242, fig. 79; 1962: 229, fig. 79; Urita, 1942: 47, text-fig. 15; Kobjakova, 1955b: 154, pl. 38, fig. 7; Igarashi, 1970a: 9, pl. 7, fig. 24; Miyake, 1982: 134, pl. 45, fig. 3.

Hapalogaster mandtii: Schalfeew, 1892: 332, figs. 2, 5c.

Material examined. Sebero Kurilisk, rocky shore, intertidal; 12–15.VII.1997; hand collecting, leg. T. Komai; 3 males (cl 7.0–14.5 mm, cw 5.7–13.3 mm), 5 females (cl 6.1–14.2 mm, cw 5.6–13.6 mm); CBM-ZC 4983.

Remarks. The present material agrees well with the description by Makarov (1938; 1962). This species is readily recognizable by the numerous setose striae on the carapace and chelipeds.

Distribution. Bering Sea, west coast of

North America southward to Sitka; Kamchatka; Kuril Islands; Sea of Okhotsk; northern part of the Sea of Japan; Pacific coast of eastern Hokkaido; intertidal to 72 m.

Hapalogaster grebnitzkii Schalfeew, 1892

Hapalogaster Grebnitzkii Schalfeew, 1892: 329, fig. 3a, 3b [type locality: Bering Islands and Kodiak, Alaska].

Hapalogaster grebnitzkii: Brashnikov, 1907: 64; Schmitt, 1921: 150, fig. 96, pl. 29, fig. 2; Kobjakova, 1955b: 153, pl. 38, fig. 6: Miyake, 1957: 89, text-fig. 1; 1982: 134, pl. 45, fig. 2; Igarashi, 1970a: 8, pl. 6, fig. 19.

Material examined. Sebero Kurilisk, rocky shore, intertidal; 12–15.VII.1997; hand collecting, leg. T. Komai; 1 male (cl 8.3 mm, cw 8.1 mm), 7 females (cl 5.8–11.7 mm, cw 5.7 11.9 mm); CBM-ZC 4982.—W of Paramushir Island, 100–120 m; 22.VII.1997; scallop seine; 1 female (cl 6.0 mm, cw 5.7 mm); CBM-ZC 4977.

Remarks. The present specimens agree very well with the description by Makarov (1938; 1962). This species is similar to *H. dentata* (de Haan, 1849), known from the temperate Asian waters, but the presence of five, rather than seven, teeth on the lateral margin of the carapace posterior to the cervical groove immediately separates *H. grebnitzkii* from the latter.

Distribution. Bering Sea; west coast of North America southward to Humboldt Bay, California; Kamchatka; Sea of Okhotsk; northern part of the Sea of Japan; Pacific coast of eastern Hokkaido; intertidal to 120 m.

Subfamily Lithodinae

Paralithodes brevipes (H. Milne Edwards and Lucas, 1841)

Lithodes brevipes H. Milne Edwards and Lucas, 1841: 465, pls. 24–27 [type locality: Kamchatka].

Paralithodes brevipes: Makarov, 1938: 262, figs. 92–94; 1962: 246, figs. 92–94; Kobjakova, 1955b: 154, pl. 38, fig. 9; Igarashi, 1970a: 10, pl. 8, fig. 27; Sakai, 1976: 691, pl. 238; Miyake, 1982: 139, pl. 47, fig. 2.

Material examined. Sebero Kurilisk, rocky shore, intertidal; 13.VII.1997; hand collecting, leg. T. Komai; 1 carapace (exuvia) (cl 62.0 mm, cw 60.4 mm); CBM-ZC 4984.

Distribution. Northern part of Sea of Japan; Sea of Okhotsk; Pacific coast of eastern Hokkaido; Kuril Islands; east coast of Kamchatka; southern part of Bering Sea; intertidal to 50 m.

Infraorder Brachyura
Family Majidae

Chionoecetes bairdi Rathbun, 1924

Chionoecetes bairdi Rathbun, 1924: 3 [type locality: head of Kingscombe Inlet, British Columbia]; 1925: 235 pls. 86, 87; Igarashi, 1970b: 4, pl. 3, fig. 7; Anonymous, 1990: unnumberd page, unnumbered fig.; Honma and Muraoka, 1992: 41, fig.1B; Jensen, 1995: 20, fig. 11.

Material examined. SW of Paramushir Island, 50°11′N, 155°11′E, 120 m; 18.VII. 1997; scallop seine; 2 females (cl 54.6, 75.0 mm, cw 64.4, 83.3 mm); CBM-ZC 4966.—E of Paramushir Island, 50°38′N, 155°41′E, 108 m; 19.VII.1997; scallop seine; 1 male (cl 55.8 mm, cw 60.8 mm); CBM-ZC 4972.

Remarks. Chionoecetes bairdi is similar to *C. opilio* (O. Fabricius, 1788), the most reliable character to separate them being the shape of the anterior buccal frame (see Anonymous, 1990; Motoh, 1999). The anterior buccal frame is convex in *C. bairdi*, while it is straight in *C. opilio*. In addition, the spines on the branchial region of the carapace are usually stronger and more acute in *C. bairdi* than in *C. opilio*.

Distribution. From the southeastern part of Bering Sea and Aleutian Islands eastward and southward to British Columbia; Kuril Islands; Sea of Okhotsk; Pacific coast of Hokkaido; shallow water to 466 m.

Hyas coarctatus alutaceus Brandt, 1851

Hyas coarctatus Variet. *alutacea* Brandt, 1851: 79 [type locality: Bear Island, near the Shantar Islands, northern Sea of Okhotsk].

Hyas latifrons Stimpson, 1858a: 217 [type locality: Bering Sea].

Hyas coarctatus alutaceus: Birula, 1910: 4, pl. 1, figs. 2-5; Rathbun, 1925: 258, pls. 94–97; Sakai, 1935: 94, pl. 22, fig. 3; 1938: 276, pl. 37, fig. 1; 1976: 184, pl. 63, fig. 2; Kobjakova,

1955b: 156, pl. 41, fig. 2; Garth, 1958: 146, pl. 1, fig. 4, pl. 13; Igarashi, 1970b: 4, pl. 4, fig. 9; Pohl, 1991: 2718; Dai and Yang, 1991: 126, fig. 64, pl. 14, fig. 1; Honma and Muraoka, 1992: 39, fig. 2B.

Hyas coarctatus coarctatus: Honma and Muraoka, 1992: 40, fig. 2A. Not *Hyas coarctatus coarctatus* Leach, 1815.

Material examined. E of Paramushir Island, 50°38′N, 155°41′E, 108 m; 19.VII. 1997; scallop seine; 1 male (cl 23.5 mm, cw 14.6 mm), 1 female (cl 17.5 mm, cw 11.4 mm); CBM-ZC 4970.—W of Paramushir Island, 100–120 m; 22.VII.1997; scallop seine; 1 male (cl 19.5 mm, cw 12.5 mm), 1 ovig (cl 30.7 mm, cw 22.4 mm); CBM-ZC 4978.

Remarks. Three subspecies have been recognized within *Hyas coarctatus* Leach, 1815: *i.e.*, *H. coarctatus coarctatus* Leach, 1815 (known from the northeastern Atlantic), *H. c. alutaceus* Brandt, 1851 (known from the northwestern Atlantic, Arctic, and North Pacific Oceans), and *H. c. ursinus* Rathbun, 1924 (known only from the Sea of Japan and the East China Sea). *H. c. ursinus* may be separated from the other two taxa by the thickly setose ambulatory legs, sternum and abdomen and the more strongly curved and slender distal part of the first gonopod (cf. Dai and Yang, 1991). Future studies will might eventurally show that *H. c. ursinus* is in fact a distinct species, because its geographical ranges and that of *H. c. alutaceus* overlap (Rathbun, 1924; Dai and Yang, 1991). Discriminating between *H. c. coarctatus* and *H. c. alutaceus* is rather difficult (Rathbun, 1925). Nevertheless, in comparison with *H. c. coarctatus*, *H. c. alutaceus* is characterized by a shorter, broader rostrum and a wider carapace near the anterior hepatic region, though the proportional length of the rostrum partially overlap between the two taxa (Pohle, 1991). The present material is referred to *H. c. alutaceus* on the basis of these features and distribution. Differences in larval morphology between the two taxa have been documented by Pohle (1991).

Honma and Muraoka (1992) found two morphs referable to *Hyas coarctatus* in the collection from northern Hokkaido and Sakhalin. They discriminated the two morphs based on the overall body size, proportion of the carapace and relative stoutness of the ambulatory pereopods, and referred the larger morph with the relatively wide carapace and relatively stout ambulatory pereopods to *H. c. alutaceus* and the smaller morph with the relatively narrow carapace and relatively slender ambulatory pereopods to the nominotypical subspecies. However, they did not compare their specimens with material of the nominotypical form from the northeastern Atlantic. It has been reported that these characters are considerably variable with growth in *H. c. alutaceus* (cf. Rathbun, 1925; Pohl, 1991). Further, the nominotypical subspecies appears to be restricted to the northeastern Atlantic (Pohle, 1991; d'Udekem d'Acoz, 1999). It is reasonable to consider that the smaller morph represents only young individuals of *H. c. alutaceus*.

Distribution. Bering Sea; Aleutian Islands to Puget Sound; Kuril Islands; Sea of Okhotsk; Sea of Japan; East China Sea southward to Amoy; Pacific coast of northern Japan southward to Kinkazan; at depths of 30–200 m.

Oregonia gracilis Dana, 1851

(Figs. 2, 6)

Oregonia gracilis Dana, 1851: 270 [type locality: Puget Sound]; 1852: 106; 1855: pl. 3, fig. 2a-c; Rathbun, 1904: 171; 1925: 71, text-figs. 19, 20, pls. 24, 25; Schmitt, 1921: 198, figs. 122a, b; Yokoya, 1928: 765; 1933: 141; Shen, 1932, 48, figs. 23–25; Sakai, 1935: 82, fig. 32; 1938: 231, pl. 34, fig. 1; 1976: 183, pl. 63, fig. 1; Kobjakova, 1937: 148: pl. 1, fig. 5; 1955b: 155, pl. 40, fig. 3; Vinogradov, 1950: 235, fig. 150; Garth, 1958: 136, pl. 1, fig. 2, pl. 11, fig. 1; Igarashi, 1970b: 2, pl. 2, fig. 4; Miyake, 1983: 30, pl. 10, fig. 5; Takeda, 1987: 133, fig. 1; Dai and Yang, 1991: 125, fig. 63, pl. 13, fig. 8; Honma and Muraoka, 1992: 39, fig. 2D; Jensen, 1995: 23, fig. 20.

Oregonia hirta Dana, 1851: 270 [type locality: Puget Sound].

Oregonia longimana Bate, 1864: 663 [type locality: Esquimalt Harbor].

Oregonia mutsuensis Yokoya, 1928: 766, figs. 3a-c [type locality: Mutsu Bay, Aomori, Japan]; 1933: 143; Sakai, 1938: 232; 1976: 183: fig. 97.

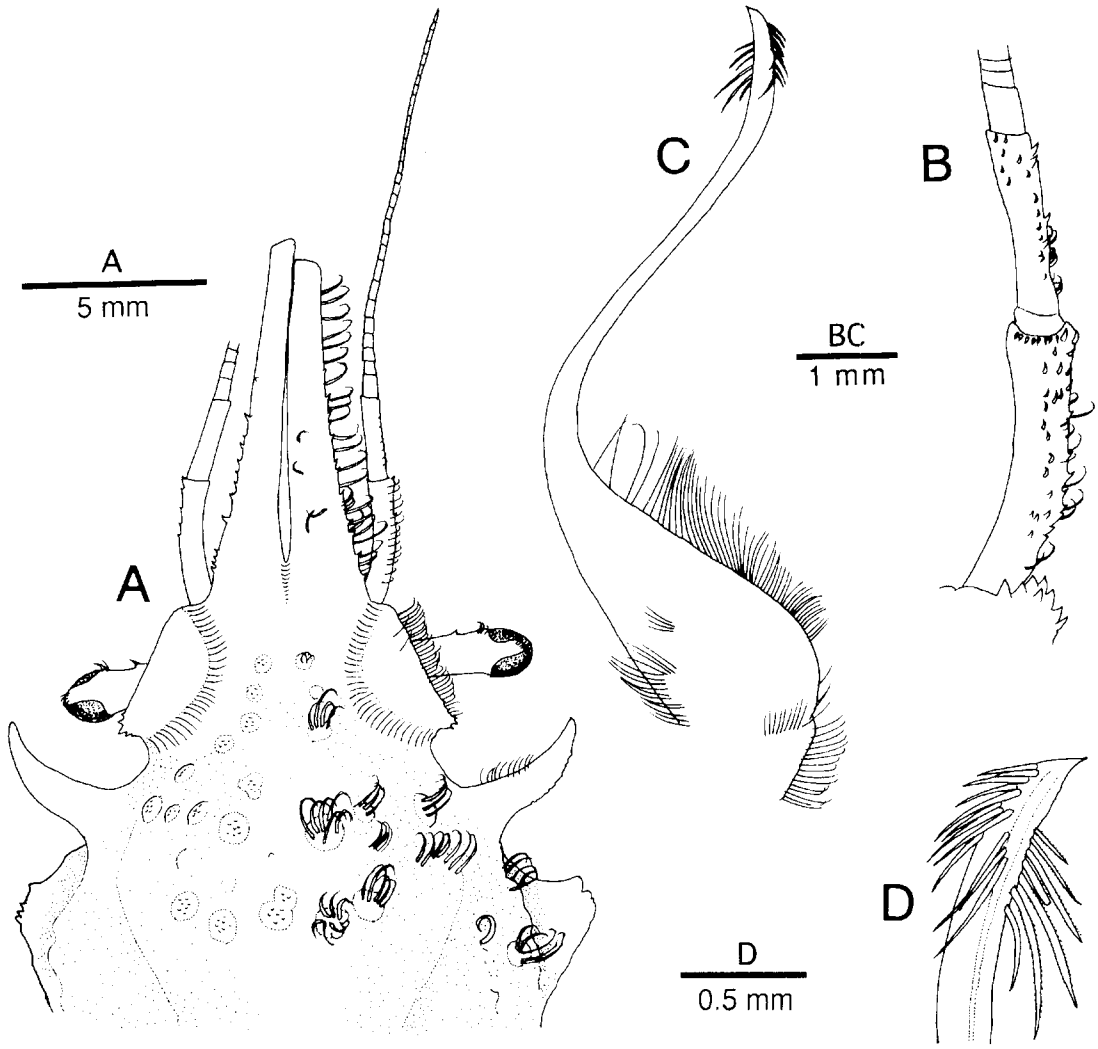

Fig. 2. *Oregonia gracilis* Dana, 1851. A, B, male from off Kashima (cl 25.4 mm, cw 19.6 mm; CBM-ZC 5188); C, D, male from Ohtsuchi Bay (cl 25.0 mm, cw 19.2 mm; NSMT-Cr 3214). A, anterior carapace, rostral spines and cephalic appendages, dorsal, setae omitted from left, left antennular flagellum broken; B, second and third segment of left antenna, ventral; C, left first gonopod, external; D, same, distal part, internal.

Oregonia gracilia (sic): Makarov, 1941: 141.

Material examined. E of Paramushir Island, 50°38′N, 155°41′E, 108 m; 19.VII. 1997; scallop seine; 2 males (cl 12.0, 12.8 mm, cw 8.3, 9.1 mm); CBM-ZC 4971.

Additional material. Off Kashima, Kashima-nada, 36°57′N, 141°25′E, 200 m; RV "Tanshu-maru", stn I-200; 26.IV.1997; otter trawl; coll. K. Uchikawa; 3 males (cl 15.4–25.4, cw 11.0–19.6 mm), 3 females (cl 18.1–20.4 mm, cw 9.1–13.2 mm); CBM-ZC 5188.—Sendai Bay, 38°31′N, 141°50′E, 195–200 m; RV "Tanshu-maru", stn F-200; 24.IV.1997; coll. K. Uchikawa; 3 females (cl 18.0–24.6 mm, cw 13.8–19.0 mm); CBM-ZC 5189.—Off Kuji, Iwate Prefecture, 40°18.23′N, 142°06.05′E, 155–156 m; RV "Wakataka-maru", stn B2-1; 21.X.1997; coll. K. Uchikawa; 6 males (cl 11.8–17.3 mm, cw 8.0–12.3 mm), 3 ovig (cl 13.6–21.6 mm, cw 10.2–16.1 mm); CBM-ZC 5190.—No data; 2 males (cl 16.0, 25.0 mm, cw 12.4, 19.2 mm), 1 ovig (cl 25.0 mm, cw 19.0 mm); NSMT-Cr 3214.—Otsuchi Bay, Iwate Prefec-

ture; 23.V.1984; coll. M. Takeda; 2 males (cl 24.0, 24.2 mm, cw 18.4 mm, 18.5 mm), 1 female (cl 13.0 mm, cw 11.0 mm), 2 young female (cl 8.0, 8.1 mm, cw 7.0, 6.4 mm); NSMT-Cr 9859.

Remarks. As noted by Takeda (1987), *Oregonia gracilis* is highly variable in the relative length and shape of the rostral spines. The ratio of the "length of rostral spines/carapace length" in males ranges from 0.31 to 0.54. As shown in Fig 6, there is no clear pattern of growth changes.

We have examined additional material from Japanese waters which is certainly referable to *O. gracilis*, as well as the two specimens from the Paramushir Island, and confirmed that the length of the cheliped and ambulatory legs, density of the setation of the propodi of the second to fourth pereopods, and the shape of the telson, are highly variable. We have found an apparent correlation between the relative length of the cheliped and of the ambulatory legs, and the setation and the shape of the telson. Specimens having relatively long chelipeds (merus is 0.8 1.1 times as long as the carapace) and relatively long and slender ambulatory legs possess only short pubescence and few short setae on the propodi of the first to third ambulatory legs, as well as a nearly straight or slightly concave distal margin of the telson. On the other hand, the specimens having the relatively short chelipeds (merus is 0.5–0.6 times as long as the carapace) and relatively short and stout ambulatory legs bear some longitudinal rows of long stiff setae in addition to short setae or pubescens on the propodi of those pereopods and the weakly convex distal margin of the telson. These two morphs occur often sympatrically (unpublished data). The first (Fig. 2C, D) and second gonopods are generally similar between the two morphs. As such, it is reasonable to consider that both morphs as belonging to the same species, *O. gracilis*.

Further, this species exhibits considerable sexual dimorphism in some characters other than the development of the cheliped and the shape of the abdomen. The rostral spines are relatively shorter in females than in males (0.21–0.32 times as long as the carapace versus 0.31–0.54 times as long) (Fig. 6). The setae on the dorsal surface of the carapace are more numerous and denser in females than in males. The ambulatory legs are relatively shorter and stouter in females than in males.

Takeda (1987) considered that the two syntypes of *Oregonia mutsuensis* Yokoya, 1928, might represent young males of *O. gracilis*, although the syntypes were not available for reexamination, and felt that it was a junior synonym of *O. gracilis*. Our observation of the small specimens (<cl 10 mm) supports Takeda's opinion.

Distribution. Bering Sea to Monterey Bay, California; Commander Islands; Kuril Islands; Sea of Okhotsk; Sea of Japan; Yellow Sea; Pacific coast of northern Japan southward to off Choshi, Chiba Prefecture; shallow water to 370 m.

Oregonia kurilensis (Kobjakova, 1962), comb. nov.

(Figs. 3–6)

Hyas kurilensis Kobjakova, 1962: 246, fig. 5 [type locality: Yuzino Kurilisk, Kunashir Island, South Kuril Islands].

Material examined. Sebero Kurilisk, intertidal; 16.VII.1997; hand collecting, leg. T. Komai; 6 males (cl 13.8–23.0 mm, cw 9.2–18.4 mm), 2 females (cl 12.2, 22.1 mm, cw 8.3, 17.2 mm); CBM-ZC 4972.

Description of adult male. Carapace (Fig. 3 A) pyriform, 1.3–1.4 times longer than broad (excluding rostral spines). Rostral spines (Fig. 4A, B) relatively short (0.19–0.30 times as long as carapace) and slender, closely set each other, sometimes with narrow hiatus between spines, directed anteriorly, or slightly downwards; lateral margins slightly convergent anteriorly. Dorsal surface of carapace (Fig. 3A) with numerous tufts of hooked setae; regions indistinctly indicated. Gastric region weakly inflated, with low tubercles bearing tufts of hooked setae. Cardiac region defined by deep cardiac grooves, with paired low tubercles. Intestinal region with paired shallow depressions anteriorly. Branchial regions weakly inflated, each with scattered low tubercles. Hepatic region weakly inflated, with 1 or 2 small but prominent tubercles bearing minute spines or granules and

Fig. 3. *Oregonia kurilensis* (Kobjakova, 1962). Male from Cebero Kurilisk, Paramushir Island (cl 23.0 mm, cw 18.4 mm; CBM-ZC 4972). A, entire animal, dorsal; B, carapace, thoracic sternum and abdomen, ventral.

few smaller tubercles. Orbit poorly developed. Supraorbital eave minutely denticulate on concave lateral margin, posterolateral angle forming triangular projection; preorbital angle unarmed. Postorbital spines well developed, somewhat compressed vertically, slightly curved or nearly straight, directed anterolaterally. Broad U-shaped postorbital sinus between supraorbital eave and postorbital spine, with 1 additional small but prominent tubercle just above postorbital sinus. Pterygostomian region with row of minute spines on lateral margin.

Epistome (Fig. 4B) short, nearly flattened, with pair of tubercles forming posterior part of antennular fossae and distinct ridges partially encircling antennal gland opening.

Buccal frame (Fig. 4B) highly elevated, divided in 3 sections in either side by narrow incision; mesial and anterolateral plates sharply edged; lateral ridge blunt, accompanied by shallow groove on pterygostomian region.

Ocular peduncle (Fig. 4A, B) short, moderately slender, with minute spine or tubercle anteroventrally; dorsal extension of peduncle with tufts of short setae; cornea not inflated.

Antennular fossae (Fig. 4B) large, longitudinally subovate, lateral margins of fossae smooth. Basal antennular segment with anterolateral angle slightly produced, with tufts of short setae. Interantennular septum narrow, slightly widened anteriorly, grooved medially, terminating posteroventrally in blunt triangular process in lateral view. Anterior process of epistome narrow, in contact anteriorly with interantennular septum.

Basal antennal article (Fig. 4B) with ventral surface shallowly sulcate medially, bearing small tubercles; ventrolateral margin with few tiny tubercles, anterolateral corner slightly produced, with cluster of tiny spines. Second segment (Fig. 4C) stout, noticeably curved mesially, with numerous tiny spines and scale-like, flattened setae dorsally and laterally. Third segment (Fig. 4C) shorter, narrower than second segment with scale-like setae laterally and tufts of plumose setae at distomesial corner. Antennal flagellum relatively stout, less than twice length of 2 distal segments combined.

Third maxillipeds (Fig. 3B, 4D) meeting in midline. Ischium broadly sulcate medially, external lateral ridge low, blunt, with very short setae; lateral margin nearly straight; mesial margin weakly convex, with row of tiny spines or tubercles and numerous setae; anteromesial angle produced as broadly rounded process. Merus shorter than ischium, roughly pentagonal, external surface with 2 shallow longitudinal sulcus, with scattered very short setae; lateral margin with row of tiny spines; anterolateral margin deeply concave; anteromesial corner strongly produced, with cluster of small spines. Carpus with short, spiniform setae on external surface, internal face strongly inflated. Propodus stout, with short setae on external surface. Dactyl as long as propodus, tapering distally.

Chelipeds (Fig. 3A) equal, short, moderately stout. Ischium with small spinulose tubercles on mesial face dorsally. Merus subcylindrical, 0.5 0.6 times as long as carapace; dorsal surface with longitudinal row of small multispinose tubercles; ventrolateral and ventromesial margins each with row of multispinose tubercles; lateral face with rows of short, hooked setae; laterodistal and mesiodistal projections prominent, unarmed. Carpus with some low tubercles on dorsal surface; lateral face with numerous short, hooked setae; mesiodistal margin with row of long stiff setae. Chela (Fig. 4E) 0.5–0.6 times as long as carapace. Palm of dorsal surface rounded, with low, multispinose tubercles and few long stiff setae; outer surface with rows of short hooked setae dorsally and few short plumose setae ventrally; mesial face convex, with few short setae; ventral surface rounded; fixed finger not deflexed, basally with longitudinal sulcus on outer, inner and ventral surfaces, cutting edge with row of small triangular teeth, sometimes interspersed by minute teeth. Dactyl nearly as long as palm; outer and inner surfaces each with distinct longitudinal sulcus; dorsal surface faintly sulcate proximally; cutting edge with row of minute teeth and low, minutely denticulate tooth proximally.

Ambulatory pereopods (Fig. 3A) relatively short, stout, cylindrical. Second pereopod longest, reaching tip of cheliped or slightly overreaching it by half length of dactyl; meri 0.6–0.65 times as long as carapace, surfaces

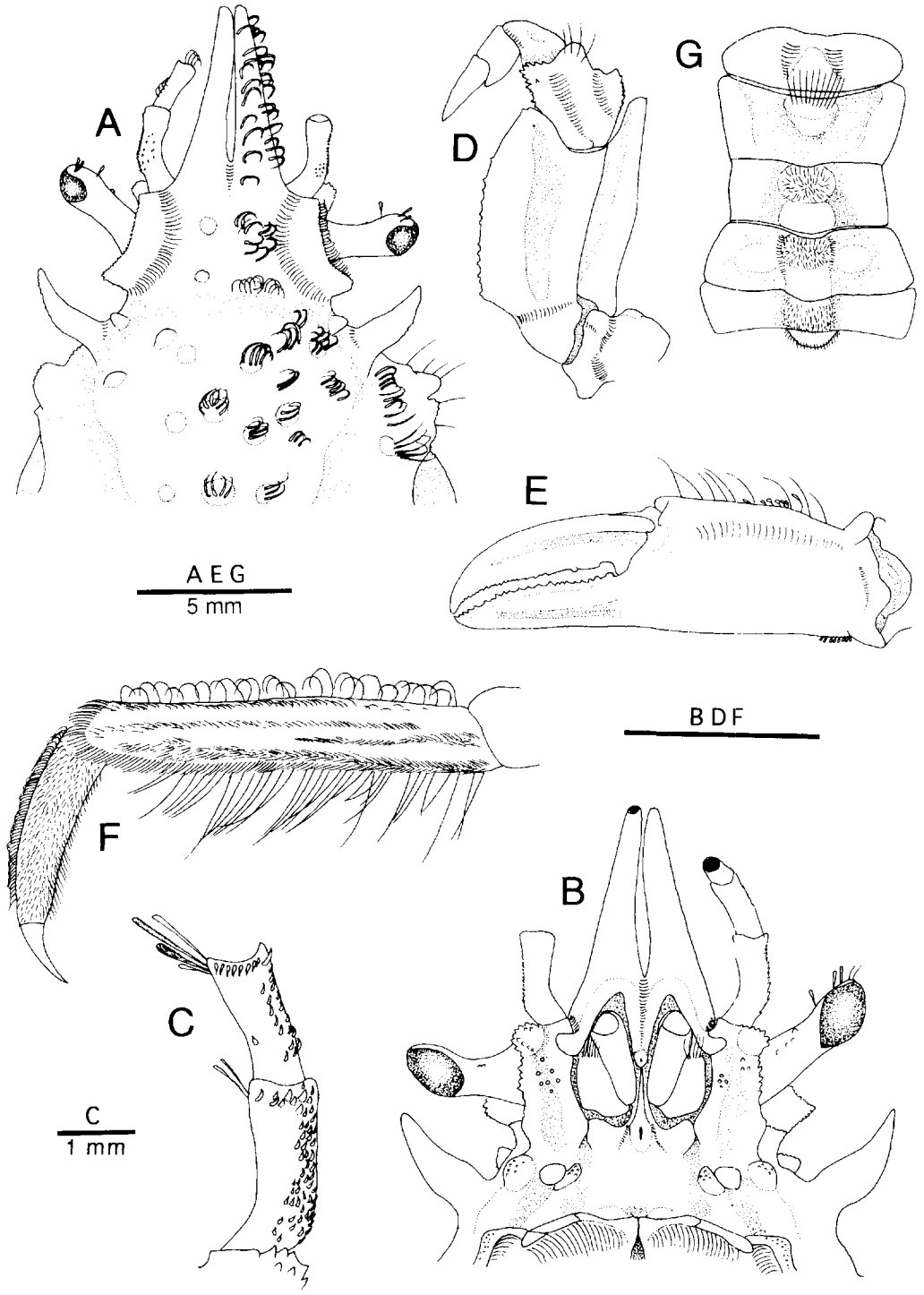

Fig. 4. *Oregonia kurilensis* (Kobjakova, 1962). Male from Cebero Kurilisk, Paramushir Island (cl 23.0 mm, cw 18.4 mm; CBM-ZC 4972). A, anterior carapace, rostral spines and cephalic appendages, dorsal, setae omitted from left, right antenna broken, left antennal flagellum missing; B, same, ventral view, setae omitted; C, second and third segment of antenna, ventral; D, left third maxilliped, external, setae omitted; E, chela of left cheliped, external; F, dactyl and propodus of left second pereopod, lateral; G, third to sixth abdominal segments and telson, external, setae partially omitted.

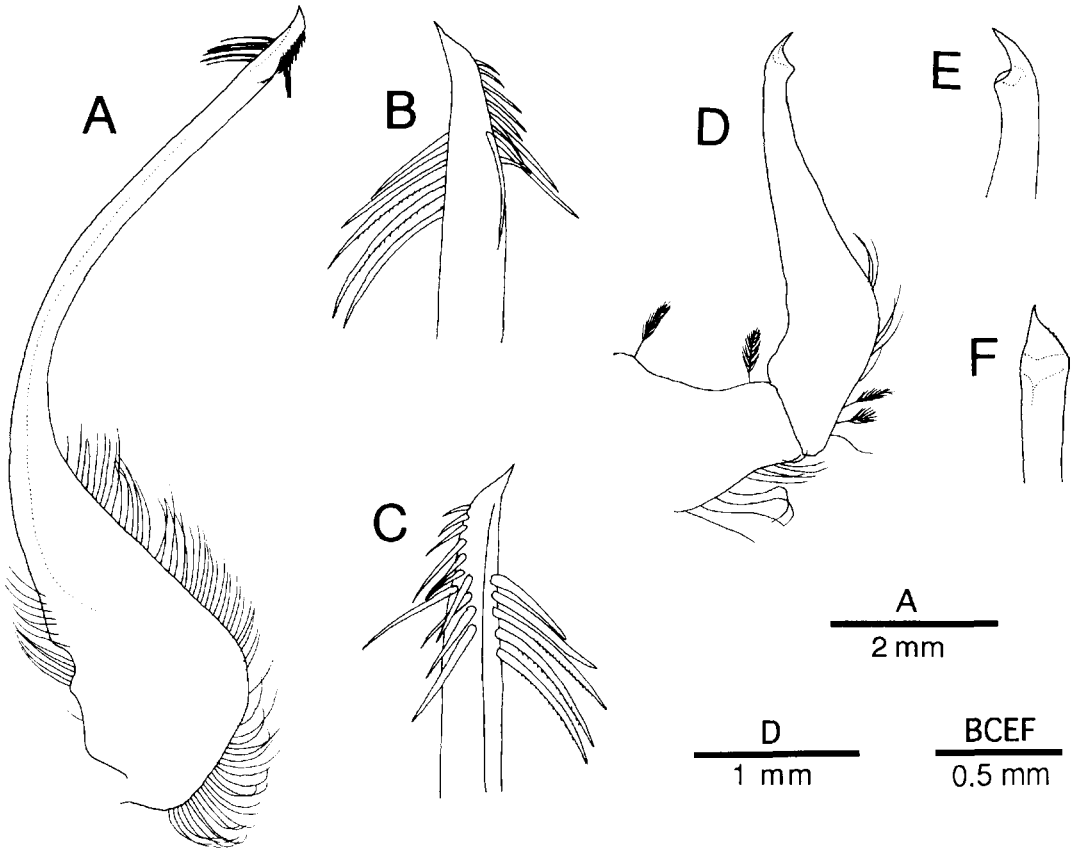

Fig. 5. *Oregonia kurilensis* (Kobjakova, 1962). Male from Cebero Kurilisk, Paramushir Island (cl 23.0 mm, cw 18.4 mm; CBM-ZC 4972). A, left first gonopod, external; B, same, distal part, external; C, same, internal; D, left second gonopod, external; E, same, distal part, internal; F, same, mesial.

with dense mat of scale-like setae and rows of long setae, but without spine; carpus with single row of long hooked setae on dorsal surface and shorter hooked setae and sparse long plumose setae on lateral face, no spine present; propodus (Fig. 4F) about twice length of carpus, with single or double row of hooked setae on dorsal surface, lateral face with 3 or 4 longitudinal bands comprising of double or triple row of dense short hooked setae, mesial face with 2 longitudinal bands composed of double or triple row of dense short hooked setae and single low of sparse long plumose setae, ventral surface with single row of long, stiff plumose setae; dactyl (Fig. 4F) 0.4-0.5 times as long as propodus, lateral and mesial faces each with dense short setae. Third to fifth pereopods similar to second pereopod in setation, but becoming successively shorter.

Thoracic sternum (Fig. 3B) strongly uneven, with scattered patches of short, stiff setae, but no spine. Suture between third and fourth thoracic sternite vestigial, represented by small notch on lateral margin, but other sutures well developed, extending to midline. Third thoracic sternite with concave anterolateral margins, with small rounded tubercles on anterior margin. Fourth thoracic sternite deeply concave posterolaterally, corresponding to coxae of cheliped; external surface with pair of blunt, convergent ridges meeting anteriorly in midline and pair of deep depressions anterolaterally. Fifth thoracic sternite with pair of abdominal locking buttons showing as small rounded tubercles, corresponding to sockets on internal face of sixth abdominal somite.

Abdomen (Fig. 4G) with seven movable segments, including telson. All somites wider than long, third somite widest and fifth somite narrowest. External surface of each

somite with broad median elevation in second to sixth somites and short hooked setae sometimes arranged in rows or patches. Sixth somite with distally divergent lateral margins. Telson shorter than sixth somite, 3.3 times as wide as long, distolateral margins broadly rounded, distal margin convex or slightly concave mesially; external surface generally concave with low, broad median elevation.

First gonopod (Fig. 5A) elongate, slender, flattened, noticeably curved laterally, slightly twisted, terminating in slender, acute spine; proximal lateral lobe broadly rounded, with row of plumose setae; distal portion (Fig. 5B, C) with single row of 5 long, straight or slightly curved bristles having minutely dentate surface on lateral surface somewhat proximal to apical spine, with double or triple short row of bristles, becoming shorter distally, on lateral surface beginning from just proximal to base of apical spine. Second gonopod (Fig. 5D) very short, arising from just mesial to first pleopod, tapering distally; apical portion (Fig. 5E, F) terminating in acute tooth, slightly overhanging subdistal "terrace" on mesial face.

Coloration. Carapace and appendages generally brown. Fingers of cheliped with tinge of pink.

Remarks. The larger female specimen (cl 22.1 mm) seems to be sexually aberrant. Its abdomen is relatively narrower when compared with other female specimens of *O. gracilis*, the second to fifth pleopods are biramous, but not setose, and the gonopores on the sixth thoracic sternite are not fully developed, being only narrow pits. The smaller female is small (cl 12.2 mm), and seems to be still immature.

Kobjakova (1962) described *Hyas kurilensis* on the basis of a single specimen from Yuzino Kurilisk, Kunashir Island, South Kuril Islands. However, since the original description, there has been no subsequent record of this species. The unique holotype has been deposited supposedly in the Zoological Institute, St. Petersburg, but we have been unable to obtain information about the holotype. Nevertheless, our specimens from Paramushir Island agree well with the original description and illustration of *Hyas kurilensis*, particularly in the following respects: the rostral spines are much more slender and close each other when compared with the other species *Hyas*; there is a deep, U-shaped hiatus between the preorbital lobe and postorbital spine; and the ambulatory pereopods are relatively short and robust. We thus have little hesitation in assigning our specimens to Kobjakova's taxon. The only notable difference between the original illustration and our specimens is in the shape of the postorbital spine. According to the illustration by Kobjakova (1962: fig. 5), the postorbital spine is relatively stouter and more anteriorly directed in the holotype than in the present specimens. However, this might be due to the inaccuracy of the figure. In addition, our study shows that the present specimens should be assigned to *Oregonia*, instead of *Hyas*, in having the distinct hiatus between the preorbital lobe and postorbital spine and the cylindrical, rather than flattened, second segment (first movable segment) of the antenna. The presence of these features in the holotype of *Hyas kurilensis* is also apparent from the illustration of Kobjakova. Therefore, we propose to assign this species to *Oregonia*.

Oregonia kurilensis is similar to *O. gracilis* Dana, 1851, which shows considerable intraspecific variation in the length of the rostral spines, the structure of the male cheliped and the shape of the telson. Nevertheless, a comparison with many specimens of *O. gracilis* (see "Material examined" of *O. gracilis*) has shown that there are several distinctive features which distinguish them. The rostral spines of males are relatively shorter in *O. kurilensis* than in *O. gracilis* (0.19–0.30 times as long as the carapace versus 0.31–0.54 times as long; see Fig. 6). However, this character is not useful to separate the female specimens, because the ratio greatly overlaps between the two species (Fig. 6). The presence of a prominent tubercle just above the postorbital sinus is useful to separate *O. kurilensis* from *O. gracilis* (cf. Figs. 2A and 4A). However, in the smallest specimen of *O. kurilensis* (cl 13.8 mm), this tubercle is absent. Thus, this character may be reliable in identifying adult specimens only. The second (first movable) segment of the antennular pe-

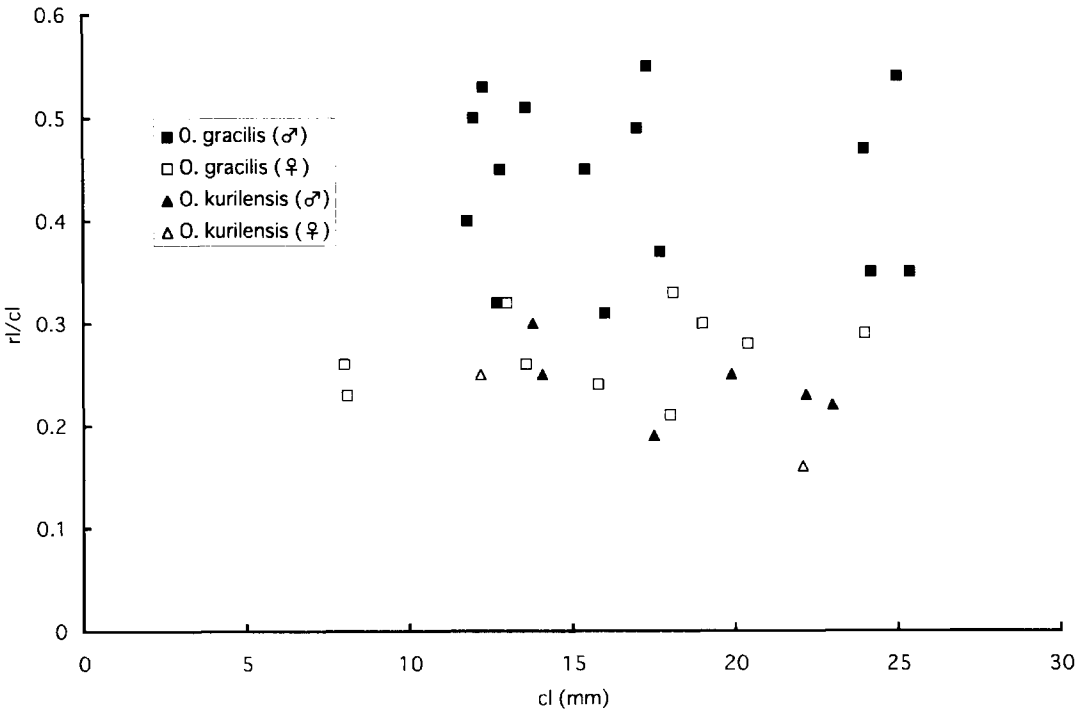

Fig. 6. Plot of proportinal ratio of the rostral spines length against the carapace length for *Oregonia gracilis* (squares) and *O. kurilensis* (triangles). *Oregonia gracilis*, males: N=12; females: N=10; *Oregonia kurilensis*, males: N=6; females: N=2.

duncle is noticeably curved basally in *O. kurilensis* (Fig. 4C) but it is nearly straight or slightly curved in *O. gracilis* (Fig. 3B). In addition, this segment is relatively stouter in *O. kurilensis* than in *O. gracilis*. The ambulatory legs are proportionally shorter and more robust in *O. kurilensis* than in *O. gracilis*. The male first gonopod also seems to be stouter and less strongly twisted in *O. kurilensis* than in *O. gracilis* (cf. Fig. 5A and Fig. 2C).

The shape of the male telson is as variable as in *O. gracilis*. In the largest specimen, the terminal margin of the telson is slightly emarginate medially, but in the other specimens, it is weakly convex.

Distribution. Known only from Kunashir and Paramushir Islands; intertidal to 65 m.

Family Cheiragonidae
Erimacrus isenbeckii (Brandt, 1848)

Platycorystes (*Podocanthus*) *isenbeckii* Brandt, 1848: 180 [type locality: Unalaska].

Erimacrus isenbeckii: Benedict, 1892: 229, pl. 26, fig. 5-7, pl. 27; Rathbun, 1930: 155, text-fig. 23, pl. 68; Sakai, 1939: 433, pl. 53; 1976: 315, pl. 106; Kobjakova, 1955b: 157, pl. 41, fig. 3; Igarashi, 1970b: 6, pl. 6, fig. 14; Miyake, 1983: 72, pl. 24, fig. 3.

Material examined. SW of Paramushir Island, 50°11′N, 155°11′E, 120 m; 18.VII. 1997; scallop seine; 1 male (cl 47.9 mm, cw 48.1 mm); CBM-ZC 4967.

Distribution. Aleutian Islands eastward to Unalaska; Kamchatka; Kuril Islands; Sea of Okhotsk; Sea of Japan; Pacific coast of northern Japan southward to Choshi, Chiba Prefecture; at depths of 30–300 m.

Telmessus cheiragonus (Tilesius, 1812)

Cancer cheiragonus Tilesius, 1812: 347, pl. 7, fig. 1 [type locality: Awatshca Bay, Kamchatka].

Telmessus serratus White, 1846: 497 [type locality: not indicated].

Platycorystes ambiguus Brandt, 1848: 179 [type locality:].

Cheiragonus hippocarcinoides Brandt, 1851: 147 [type locality: Sea of Okhotsk and Kamchatka].

Telmessus cheiragonus: Benedict, 1892: 224, pl. 25, figs. 2–4; Rathbun, 1904: 179; 1930: 150, fig. 21; Kobjakova, 1955b: 157, pl. 41, fig. 4; Igarashi, 1970b: 6, pl. 6, fig. 15; Sakai, 1976: 314, pl. 105; Miyake, 1983: 71, pl. 24, fig. 2.

Material examined. Sebero Kurilisk, rocky shore, intertidal; 13.VII.1997; hand collecting, leg. T. Komai; 1 male (cl 34.6 mm, cw 44.3 mm), 1 female (cl 38.4 mm, cw 46.8 mm); CBM-ZC 4985.

Distribution. Bering Sea; west coast of North America southward to California; Aleutian Islands; Kamchatka; Kuril Islands; Sea of Okhotsk; Sea of Japan; Pacific coast of Hokkaido; intertidal to 30 m.

Notes on biogeography

The geographic distribution of the 17 species from the North Kuril Islands ranges generally from the Far East to the northwest coast of North America. Three of them, *Eualus pusiolus*, *Spirontocaris spinus* and *Hyas coarctatus alutaceus*, reach the North Atlantic Ocean (d'Udekem d'Acoz, 1999). Only *Paralithodes brevipes* is restricted to Asian waters, including the western part of the Bering Sea. *Oregonia kurilensis* is so far known only from Kunashir and Paramushir Islands, but future studies may eventually extend the range of this poorly known species. Although a strong affinity with the South Kuril Islands and Hokkaido fauna is evident on the basis of these species, the complete lack of the temperate elements characterizes the decapod fauna of the North Kuril Islands.

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カムチャッカ・北千島生物学調査で採集された十脚甲殻類

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カムチャッカ・千島生物学調査で採集された材料と，その他のコレクション由来の標本を検討し，10科19種の十脚甲殻類について報告した．*Oregonia kurilensis* (Kobjakova, 1962) は国後島から採集された1個体に基づいて記載されたが，それ以来報告がなかった．パラムシル島で新に採集された標本は，この種の原記載によく一致し，さらに，近縁種のケセンガニともいくつかの形態的な特徴で識別できるので，独立種として扱った．本種は，原記載では，ヒキガニ属 *Hyas* に帰せられたが，原記載と標本を検討した結果，ケセンガニ属に所属することが明らかになったので，新組み合わせを提唱した．エゾホンヤドカリ *Pagurus hirsutiusculus* の日本沿岸における分布はこれまで確認されていなかったが，北海道東部から採集された標本を北千島産の標本と比較検討した結果，本種であることが判明した．

北千島の十脚甲殻類相は，主に，北部北太平洋に広く分布する種により構成され，温帯性要素を欠くことで特徴づけられる．