



Title	Records of Some Rare Deep-sea Decapod Crustaceans from the Okhotsk Coast of Hokkaido (Caridea and Anomura)
Author(s)	Komai, Tomoyuki; Amaoka, Kunio
Citation	北海道大學水産學部研究彙報, 40(4), 278-291
Issue Date	1989-11
Doc URL	http://hdl.handle.net/2115/24039
Type	bulletin (article)
File Information	40(4)_P278-291.pdf



[Instructions for use](#)

Records of Some Rare Deep-sea Decapod Crustaceans from the Okhotsk Coast of Hokkaido (Caridea and Anomura)

Tomoyuki KOMAI* and Kunio AMAOKA*

Abstract

In September 1987, a small collection of decapod crustaceans were obtained by trawl at the Okhotsk coast of Hokkaido in depth ranging from 718 to 960 m. The poorly known carideans, *Pandalopsis glabra*, *P. ochotensis*, and *Sclerocrangon derjugini* are figured and described, of which the latter two represent the first record from Japanese waters as well as the bathymetric range extension. Besides, an anomuran, *Lithodes couesi* is newly recorded from the Okhotsk Sea.

Introduction

On September 3 and 4, 1987, the T/V Oshoro-Marui of Faculty of Fisheries of Hokkaido University trawled five stations off the Okhotsk coast of Hokkaido. Some decapod crustaceans including carideans and anomurans were obtained. The following species were identified: *Pandalopsis glabra* Kobjakova, 1936, *P. ochotensis* Kobjakova, 1936, *Sclerocrangon derjugini* Kobjakova, 1937, *Lithodes couesi* Benedict, 1894, and *Paralomis verrilli* (Benedict, 1894). Our specimens of *P. glabra* and *P. ochotensis* represent the 4th and 3rd record of these little known species respectively. *S. derjugini* has not been reported since the original description. *P. ochotensis* and *S. derjugini* are new records to the Japanese fauna as well as bathymetric range extensions, and we give descriptions and figures for these species herein. Although *Lithodes couesi* is widely distributed in the North-Pacific Ocean (Sakai, 1976), this crab has never been recorded from the Okhotsk Sea.

Materials and Methods

The materials for this study were obtained from following two stations: OST 8702, 45°8.0'N, 144°29.0'E, 840-960 m in depth; OST 8703, 45°09.3'N, 144°12.5'E, 718 m in depth.

Specimens are deposited in the Faculty of Fisheries, Hokkaido University (HUMZ).

Results

Infraorder Caridea Dana, 1852 Family Pandalidae Haworth, 1825

* Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University
(北海道大学水産学部水産動物学講座)

Genus *Pandalopsis* Bate, 1888

Pandalopsis glabra Kobjakova, 1936

Pandalopsis aleutica glabra Kobjakova, 1936, 192-193, fig. 4; Vinogradov, 1947, 13, no new locality; Birshtein and Zarenkov, (1970) 1972, 441.

Pandalopsis glabra, Hayashi, in Baba et al., 1986, 120-121.

Materials : HUMZ-C 762, OST 8702, 1 ovigerous female (cl 43.2 mm); OST 8703, 1 male (cl 32.4 mm).

Diagnosis : Integument smooth, naked. Rostrum directed somewhat dorsally, far overreaching scaphocerite, 1.5 times longer than carapace, armed dorsally with 10 or 11 movable spines, posterior 5 spines situated on anterior half of carapace, armed ventrally with 10-13 fixed spines; dorsal margin above eye slightly convex. Carapace provided with high middorsal carina disappearing behind last dorsal spine; no transverse band of setae present on cardiac region. Abdomen without median dorsal carina or median spines, 6th somite 0.6 times carapace length; telson 0.8 times carapace length, armed with 7 or 8 pairs of dorsolateral spines and 2 pairs of posterior spines.

Eye large, broadly pyriform, maximum diameter 0.2 times carapace length, ocellus absent. Outer antennular flagellum very long, 2.5 times longer than carapace. Scaphocerite 0.8-0.9 times carapace length, 3.7-3.9 times longer than wide, armed with distolateral spine reaching lamella. Third maxilliped without exopod, ultimate segment almost as long as penultimate segment, antepenultimate segment armed with minute movable spine distolaterally. Anterior 4 pairs of pereopods provided with epipods; propodus of 1st pereopod 0.8 times carpus length, ischium with broad laminar expansion ventrally; 2nd pereopods equal, carpus composed of 11-15 articles, merus 0.4-0.5 times ischium length, chela (Fig. 1b) with fingers shorter than palm; dactylus 0.22 times propodus length in 3rd and 4th pereopods, 0.17-0.18 times in 5th, armed with 7-16 spinules on its entire posterior margin (Fig. 1c); carpus of posterior 3 pairs of pereopods with 2-4 spines, ischium usually with 1 spine, merus with 2 rows of spines, 3rd with 7-10 in lateral row and 6-10 in ventral

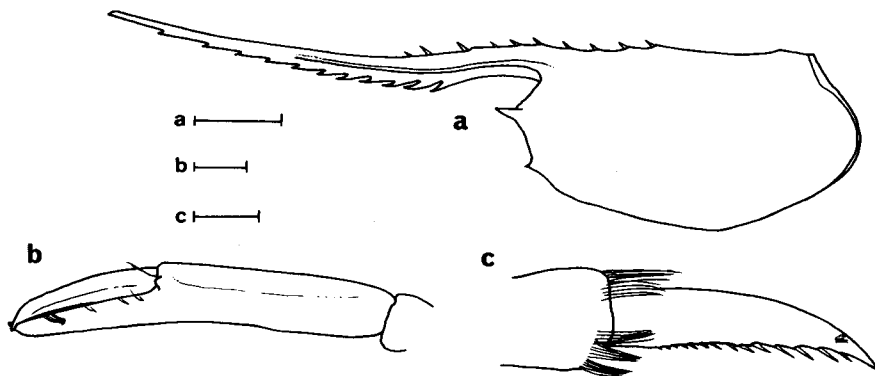


Fig. 1. *Pandalopsis glabra* Kobjakova. a, carapace in lateral view; b, chela of 2nd pereopod; c, dactylus of 3rd pereopod. (Scales: a=10 mm; b, c=1 mm).

row, 4th with 7-10, 4-5, 5th with 5-7, 0-3. Uropod reaching distal end of telson.

Color of fresh specimen: Body red entirely, margin of each abdominal somite slightly darker. Appendages bright red. Eye black, with reflecting pigments.

Remarks: Present materials, representing the 4th record of this species, agree well with the original description and description of Hayashi (in Baba et al., 1986) except for the short, deformed rostrum not reaching the distal end of the scaphocerite of the female specimen.

Distribution: Okhotsk Sea, 515-1076 m (Kobjakova, 1936); Pacific side of Kurile Islands, 1580 m (Birshtein and Zarenkov, 1970).

***Pandalopsis ochotensis* Kobjakova, 1936**
[New Japanese name: ohotsuku-morotogeebi]

Pandalopsis ochotensis Kobjakova, 1936, 190-191; 1937, 106, no new locality; 1958, 224; Vinogradov, 1947, 13, no new locality.

Materials: HUMZ-C 149, OST 8702, 1 ovigerous female (cl 34.0 mm); OST 8703, 3 ovigerous females (cl 30.9-34.7 mm), 1 young female (cl 25.8 mm).

Description: Integument moderately hard, surface naked, with no pits or scales.

Rostrum curved upward in distal 2/3, distinctly overreaching scaphocerite, 0.8-1.3 times carapace length, dorsal margin armed with 18 spines on its entire length, except for anterior some movable, including 7-8 on anterior half of carapace, anterior 2-4 spines widely spaced, ventral margin armed with 10-13 spines; lateral carina distinct at posterior 2/3. Carapace provided with median dorsal carina disappearing beyond midlength of carapace, highest at level of last spine, its dorsal margin nearly straight; orbital margin slightly convex in ventral portion, regularly concave in dorsal 1/2; antennal spine much stronger than branchiostegal spine; transverse band of setae present near posterior margin of carapace (Fig. 2c).

Abdomen with no median dorsal carina or posteromedian spine; pleura of 3 anterior somites rounded posteriorly, unarmed, those of 4th and 5th armed with sharp marginal spine, with nearly straight ventral margin; 6th somite 0.55-0.58 times carapace length, armed with spine at posteroventral corner; telson (Fig. 2d, e) 0.76-0.79 times carapace length, tapering distally, provided with bundle of setae on dorsal proximal portion, armed with 6-7 pairs of dorsolateral spines and 2 pairs of posterior spines.

Eye large, broadly pyriform, maximum diameter about 0.2 times carapace length; ocellus absent.

Antennule (Fig. 2b) with peduncle reaching half of scaphocerite; proximal segment of peduncle with spinule on ventromesial margin; stylocerite short, lobe-like, considerably falling short of tip of proximal segment, with blunt lateral process; intermediate segment of peduncle barely longer than distal segment, armed with movable spinules on dorsoanterior margin; outer flagellum long, 1.4-1.7 times longer than carapace.

Antenna (Fig. 2b) with scaphocerite 0.8 times carapace length, 3.7-3.9 times longer than wide, lateral margin nearly straight, outer spine reaching level of lamella distally.

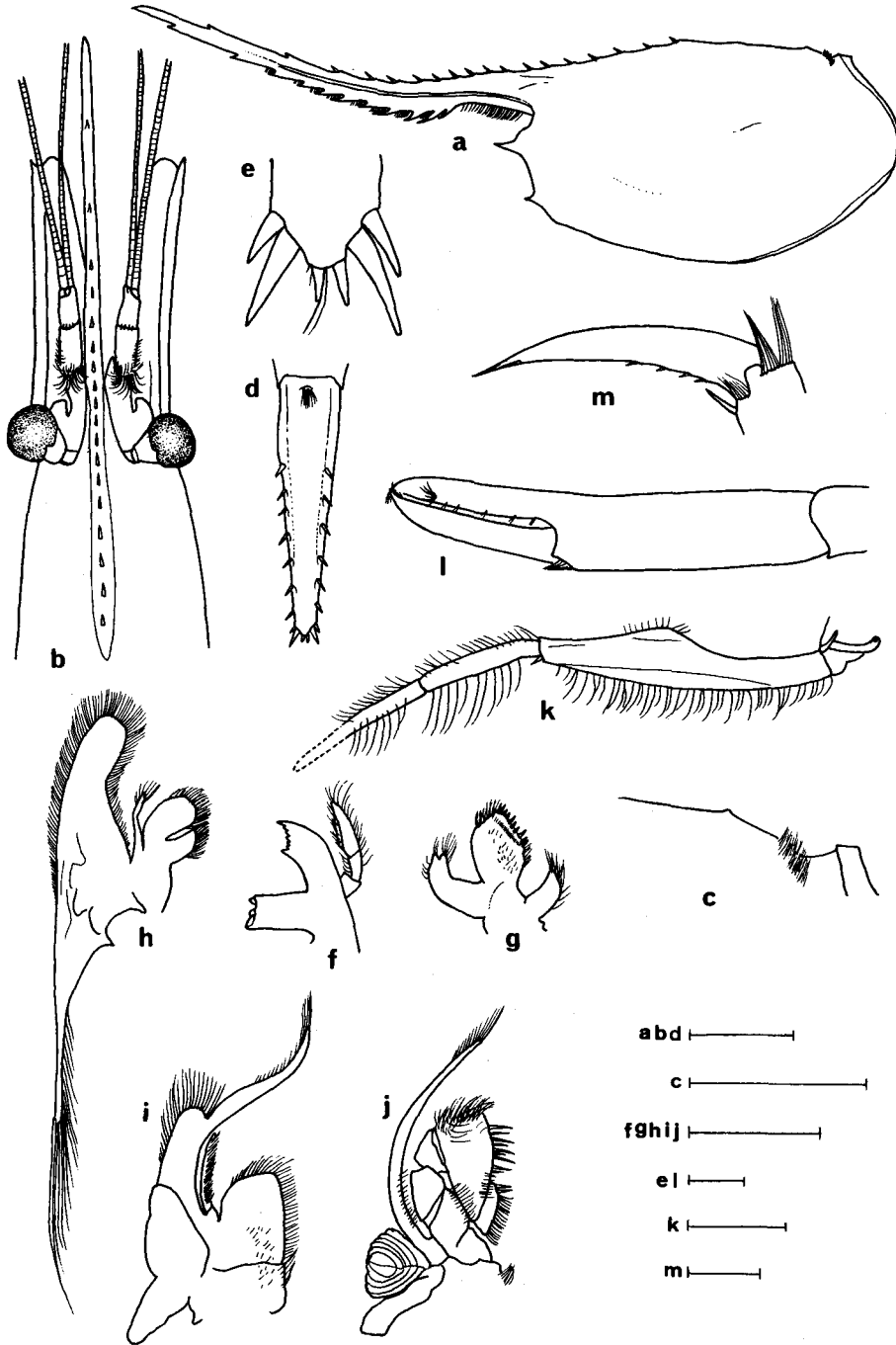


Fig. 2. *Pandalopsis ochotensis* Kobjakova. a, carapace in lateral view; b, anterior region of carapace, eyes, and antennae in dorsal view; c, dorsoposterior region of carapace in lateral view; d, telson; e, tip of telson; f, mandible; g, maxillule; h, maxilla; i, 1st maxilliped; j, 2nd maxilliped; k, 3rd maxilliped; l, chela of 2nd pereopod; m, dactylus of 3rd pereopod. (Scales: a, b, d=10 mm; c, e, l, m=1 mm; c, f-k=5 mm).

Mouthparts as illustrated (Fig. 2f-k); 3rd maxilliped with epipod and basal process, reaching 3/4 length of scaphocerite by tip of ultimate segment; ultimate segment longer than penultimate segment, antepenultimate segment armed with a movable spine distolaterally.

Pereopods with well developed, hooked epipods on anterior 4 pairs. First pereopod reaching midlength of scaphocerite, with microscopic chela, propodus moderately depressed, 0.8-0.9 times carpus length, ischium with broad laminar expansion ventrally. Second pereopods equal, carpus composed of 12-15 articles, overreaching scaphocerite by length of chela; chela (Fig. 21) barely shorter than merus, with fingers slightly shorter than palm. Third pereopod overreaching scaphocerite by length of dactylus and 1/2 of propodus; dactylus (Fig. 2m) 0.25-0.27 times propodus length, armed with terminal spine and 4-5 accessory spines on proximal half of posterior margin; carpus 0.48 times propodus length, armed with 3 spines laterally; merus armed with 2 rows of spines, 8 in lateral row, 7-9 in ventral row; ischium armed with 1 spine ventrally. Fourth pereopod overreaching scaphocerite by length of dactylus and 3/4 of propodus, dactylus 0.24-0.26 times propodus length, similar to that of 4th; merus armed with 2 rows of spines, 8-9 in lateral row and 7 in ventral row; ischium armed with 1 spine ventrally. Fifth pereopod overreaching scaphocerite by length of dactylus and tip of propodus, dactylus strongly curved, 0.13-0.19 times propodus length, armed with terminal spine and 7-8 accessory spines on proximal 2/3 of posterior margin; carpus 0.45-0.47 times propodus length, armed with 1-2 spines laterally; merus armed with 2 rows of spines, 6-7 in lateral row and 2-5 in ventral row; ischium usually with 1 spine ventrally.

Exopod of uropod reaching tip of telson distally, with movable spine on distolateral angle, endopod barely shorter.

Eggs large, 4.01×3.03 mm.

Color of fresh specimen: Body bright red, dorsoposterior margin of 1st to 5th abdominal somites bordered by deep red, tergum of 2nd and 3rd somites with deeper pattern. Thoracic appendages deep red. Eye black, with reflecting pigments.

Remarks: Six species of *Pandalopsis* have been known from the Japanese waters (Miyake, 1982; Baba, Hayashi and Toriyama, 1986): *P. japonica* Balss, 1914, *P. mitsukurii* Rathbun, 1902, *P. lamericella* Brandt, 1851, *P. coccinata* Urita, 1941, *P. glabra* Kobjakova, 1936, and *P. miyakei* Hayashi, 1986. We add *P. ochotensis* to the Japanese fauna herein.

P. ochotensis was originally described by Kobjakova (1936) from specimens taken in the area between Cape Elizaveth and Jonas Island, as well as the median plateau of the northern half of the Okhotsk Sea. Later Kobjakova (1958) reported the occurrence of this species from near the Kurile Islands (Kobjakova, 1958).

Present specimens agree with Kobjakova's original description in most characters, but slightly differ in the rostral length and the number of carpal articles of 2nd pereopod. Although Kobjakova stated that the rostrum is 1.5 times longer than carapace, our specimens show the range from 0.8 (the largest specimen, cl 34.7 mm) to 1.3 (other specimens). Similarly, our specimens disagree with Kobjakova's description in the number of the carpal articles of the 2nd pereopod (12-15 vs. 16-19 in our specimens). We regard these discrepancies as intraspecific variations

which are commonly found in other pandalid shrimps.

P. ochotensis is most closely related to *P. japonica* Balss in having dorsal rostral spines on the entire length of the rostrum, in shape of the dorsal margin of the carapace, and presence of the transverse band of setae near the posterior margin of the carapace. These two species, however, can be distinguished in the following points; rostrum less than 1.5 times carapace length in *P. ochotensis* (1.5-2.0 in *P. japonica*); ocellus absent on cornea (present); outer antennular flagellum 1.4-1.7 times longer than carapace (1.1-1.2); scaphocerite 0.8 times carapace length (almost as long as carapace or barely shorter than that); dactylus of posterior 3 pairs of pereopod armed with spinules on proximal half (on entire length). Besides, the egg size of *P. ochotensis* is considerably larger than that of *P. japonica* (4.0×3.0 mm in *P. ochotensis* vs. 2.6×2.0 mm in *P. japonica*). Moreover, in fresh specimen these two species can be easily distinguished by the color (almost uniformly red vs. red with some white stripes).

P. ochotensis was previously collected from 500-504 m depths. Present specimens were obtained from 718-960 m depths, considerably extending the bathymetric range.

Distribution: Only known from the Okhotsk Sea.

Family Crangonidae H. Milne Edwards, 1837

Genus *Sclerocrangon* Sars, 1883

***Sclerocrangon derjugini* Kobjakova, 1937**

[New Japanese name: ohotsuku-kijin-ebi]

Sclerocrangon derjugini Kobjakova, 1937, 132-133.

Materials: HUMZ-C 150, OST 8702, 2 males (cl 26.8, 29.0 mm), 16 females (cl 30.6-37.0 mm).

Description: Integument hard, moderately sculptured, covered with velvet-like setae.

Rostrum (Fig. 3, Fig. 4a) rather depressed, 0.32-0.39 times carapace length, slightly arched over eye, then ascending, converging acute tip dorsally, armed with

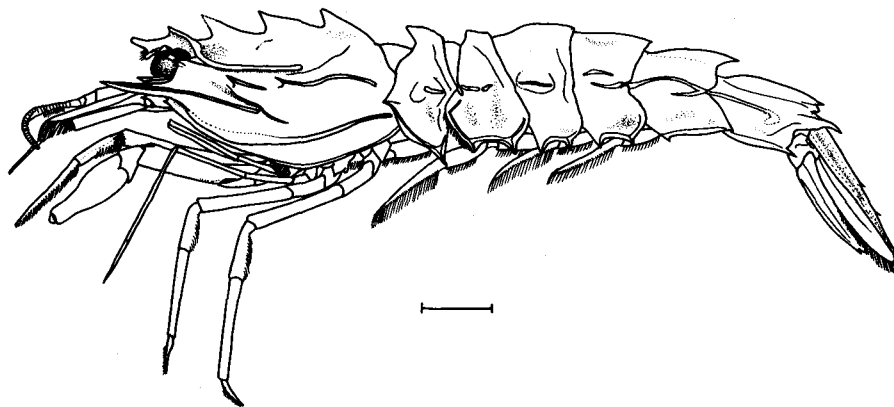


Fig. 3. *Sclerocrangon derjugini* Kobjakova, male in lateral view. (Scale=10 mm).

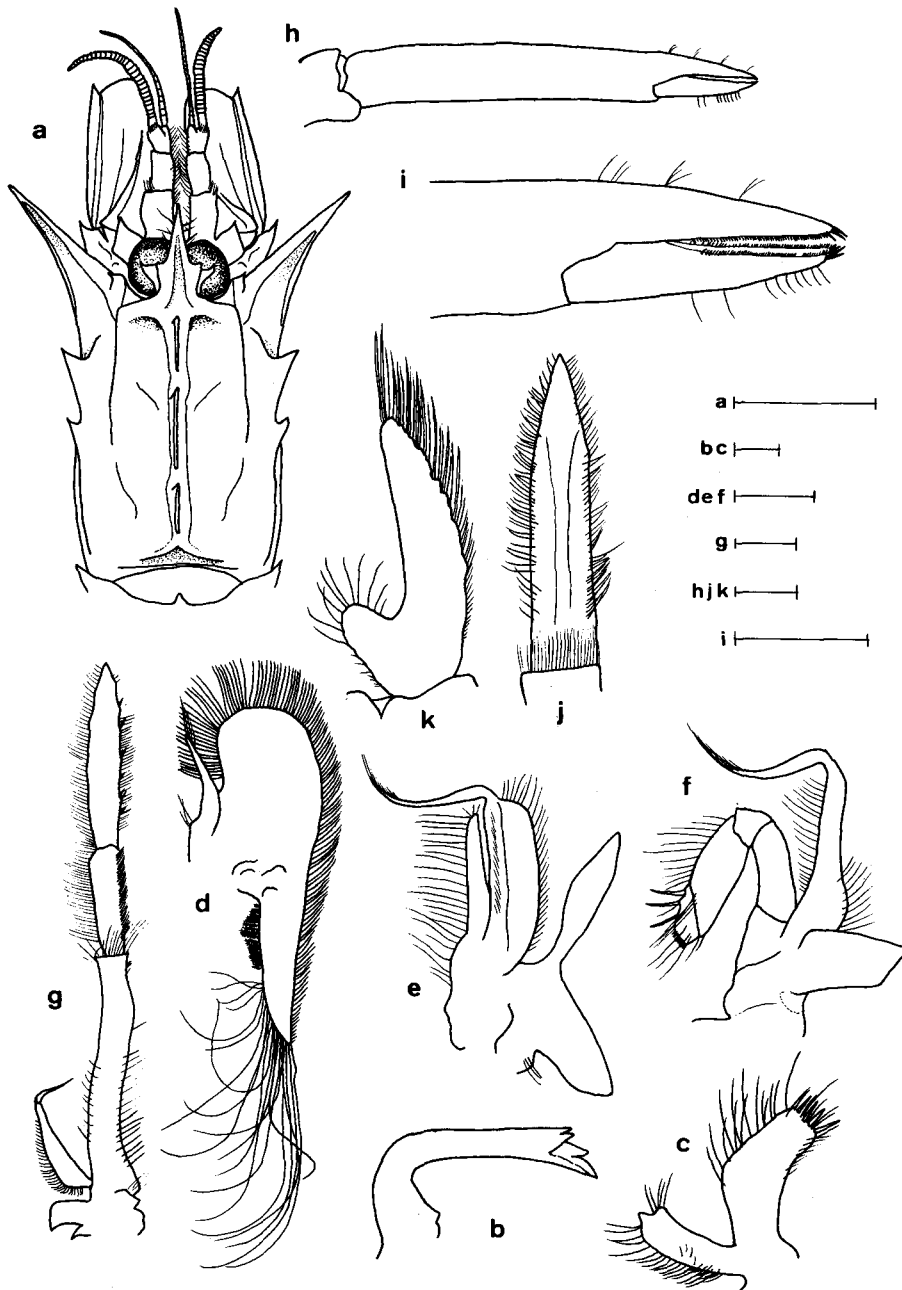


Fig. 4. *Sclerocrangon derjugini* Kobjakova. a, carapace, eyes, and antennae in dorsal view; b, mandible; c, maxillule (proximal endite lost); d, maxilla; e, 1st maxilliped; f, 2nd maxilliped; g, 3rd maxilliped; h, chela of 2nd pereopod; i, fingers of chela of pereopod; j, dactylus of 4th pereopod in dorsal view; k, endopod of 2nd pleopod of male. (Scales: a=10 mm; b-f, h-k=1 mm; g=5 mm).

1 ventral tooth directed forward near tip; dorsal surface sulcate, with paired shallow grooves converging anteriorly, sides raised, armed with pair of lateral teeth on about midlength. Carapace 1.1-1.2 times its width, armed with 3 strong middorsal teeth; gastric region depressed below; antennal spine moderate, branchiostegal spine strong, carinate marginally, flared anterolaterally, often reaching proximal 1/3 of scaphocerite; pterygostomial spine minute, usually present; hepatic furrow distinct; postorbital carina originating from lateral side of rostrum, turned posteriorly behind level of antennal spine, and reaching about midlength of carapace; branchio-cardiac carina present, but indistinct; branchial carina well defined, reaching posterior margin of carapace, produced anteriorly as posthepatic spine; postbranchiostegal carina reaching near midlength of carapace; short, obliquely transverse carina present below hepatic spine; subbranchial carina distinct, extending below base of branchiostegal spine to posterior margin of carapace; submarginal carina distinct.

Abdomen provided with middorsal carina on 1st to 5th somites, those on 1st and 2nd produced anteriorly, on 4th and 5th produced posteriorly as acute spine; anterior margin of 1st abdominal somite armed with lateral spine supported by carina; dorsoposterior margin of 2nd somite notched medially; pleuron of 1st somite produced into acute tip ventrally, those of 2nd to 4th somite armed with 2 spines, and that of 5th with 2-5 spines ventrally; 6th abdominal somite 0.52-0.62 times carapace length, with 2 dorsal carinae ending in acute spines; telson 0.77-0.95 times carapace length, armed with 3 pairs of dorsolateral spine, tapering to acute tip.

Eye large, cornea well developed, spherical, maximum diameter 0.20-0.25 times carapace length, armed with spine dorsally.

Antennule (Fig. 4a) with stout peduncle overreaching midlength of scaphocerite; stylocerite relatively broad, sharply pointed distally, with squarish lateral margin; outer flagellum stouter than inner flagellum, with marginal bristles on each article.

Antenna (Fig. 4a) with stout basicerite armed with a lateral spine, with deep notch on dorsoanterior margin; scaphocerite broad, 0.52-0.60 times carapace length, 1.64-1.96 longer than wide, lateral margin slightly convex, with distolateral spine reaching distal end of lamellar portion; carpocerite slightly curved laterally, inflated, extending to distal end of antennular peduncle; each article of flagellum with no marginal bristle.

Mouthparts as figured (Fig. 4b-g); 3rd maxilliped exceeding scaphocerite by length of ultimate segment; ultimate segment spathulate, 1.64-1.72 times longer than penultimate, 4.12-4.62 times longer than wide, armed with stout spines on mesial margin; basal segment with well-developed lateral process; exopod with lash.

First pereopod reaching or slightly exceeding scaphocerite by tip of chela; chela with palm 0.45-0.52 times carapace length, 2.19-2.67 times longer than wide, cutting edge nearly transverse; carpus short, subglobular, armed with 2 spines laterally; merus with dorsodistal spine. Second pereopod chelate, slender, reaching or exceeding scaphocerite by tip of chela; chela (Fig. 4h, i) with fingers 0.33 times palm length, 0.52-0.55 times carpus length, cutting edge armed with numerous spinules; merus 1.18-1.29 times ischium length. Third pereopod also slender, reaching or exceeding scaphocerite by length of dactylus; dactylus almost straight,

0.26–0.34 times propodus length; carpus 2.16–2.22 times propodus length; merus 1.16–1.32 times ischium length. Fourth pereopod stout, reaching or exceeding scaphocerite by length of dactylus; dactylus (Fig. 4j) subspathulate, 0.48–0.59 times propodus length, thickly bordered with submarginal setae; propodus slightly tapering to distal tip, nearly as long as merus; carpus 0.48–0.66 times propodus length; coxa with spiniform tubercle laterally. Fifth pereopod similar to 4th, but slightly longer, not reaching distal end of scaphocerite.

Second pleopod (Fig. 4k) of male typical of genus, with vestigial endopod sparsely fringed with marginal setae and stout appendix masculina covered with setae dorsally. Uropod with rami of almost equal length, not reaching distal end of telson.

Eggs large, globular, 4.0–5.1 mm in diameter.

Color of fresh specimen: Reddish brown or tan all over body, carinae and spines or teeth on carapace and abdomen little darker. Eye black, with reflecting pigments. Eggs grayish green.

Variations: A total of 18 specimens, 2 males and 16 females were examined.

The carapace length of the largest specimen was 29.0 mm in male and 37.0 mm in female.

A minute tubercle on the turning position of the postorbital carina was found in 3 female specimens.

Ventral spines on the pleuron of the 5th abdominal somite varied 2 to 5, and were paired or often asymmetrically arranged (Table 1).

The length of the outer antennal flagellum showed sexual dimorphism. In males, the proportion to carapace in length was 0.56–0.63, but in females, 0.38–0.49.

The length of scaphocerite varied with sexes. In males, the scaphocerite was 0.62–0.63 times as long as the carapace, but in females, 0.55–0.58 times.

Table 1. *Sclerocrangon derjugini* Kobjakova. Variation of pleural ventral spines on 5th abdominal somite. In asymmetrical number of spines or spinules, the arrangement does not precisely represent the side of the actual specimen.

No. of spines	No. of specimens	
	female	male
2-2	3	1
2-3	4	—
2-4	—	—
2-5	—	—
3-3	3	—
3-4	2	—
3-5	1	—
4-4	1	—
4-5	2	1
5-5	—	—

Remarks: Present specimens well agree with Kobjakova's original description. Examination of these specimens proved that "*S. derjugini*" figured by Zarenkov (1965) is an undescribed species, since it differs from the original description and present specimens in having a spine on the postorbital region and a spine situated at the middle portion of the branchial carina (Komai and Amaoka, in press).

This species has never been recorded since the original description based on the specimens from the area between Cape Elizaveth and Jonas Island at the depth 182-664 m and in the 500-meter median plateau of the northern half of the Okhotsk Sea. This report is not only the rediscovery of this species, but also a range extension.

S. derjugini is readily distinguishable from other congeners by the rostrum armed with a pair of lateral teeth, the 3 strong middorsal teeth, the large eye with an acute spine, and the dactylus of the posterior 2 pairs of pereopods thickly bordered with submarginal setae.

Distribution: Only known from the Okhotsk Sea.

Infraorder Anomura H. Milne Edwards, 1832

Family Lithodidae Samouelle, 1819

Genus *Lithodes* Latreille, 1816

***Lithodes couesi* Benedict, 1894**

Lithodes couesi Benedict, 1894, 281; Rathbun, 1904, 166; Schmitt, 1921, 162, pl. 29, figs. 3-5; Makarov, (1938) 1962, 255, fig. 101; Sakai, 1971, 13, 35, pls. 5, 13; 1976, 696, pl. 242.

Materials: HUMZ-C 767, 1 male (cl 125.4 mm), HUMZ-C 768, 1 ovigerous female (cl 123.2 mm), OST 8702.

Diagnosis: Carapace as long as wide, with rounded margins, areas distinct, covered with various size conical spines. Rostrum short, horizontally produced, apex feebly bifid, with 2 pairs of small lateral spines, 1 pair on near tip, and another near proximal portion, and with a median spine between posterior lateral spines; ventral spine strong, barely falling short of tip of rostrum. Gastrocardiac boundary strongly depressed, branchiocardiac not so depressed. Gastric region with 5 relatively large spines, 1 situated on median line. Cardiac region with spines symmetrically arranged. Branchial region with 10-12 large spines on dorsal surface. Lateral margin slightly raised in posterior region, armed with about 22 spines on each side, of which 4 including postorbital spine on hepatic and 3 on branchial region large. Intestinal region with pair of spines near posterior margin.

Eye short, stout, cornea ventral, with acute small process dorsally. Antennal acicle rudimental, simply tuberculiform. Chelipeds dissimilar, right one stouter, 1.4 times longer than carapace in male, 1.2 times in female, covered with numerous spines; fingers with molar-like teeth on cutting edge, but in male those of left chela with no tooth. Second to 4th pereopods slightly depressed, 3rd and 4th slightly longer than 2nd, 2.6 times longer than carapace in male, 2.2 times in female, covered with spines; proximal part of dactylus surrounded by 4 larger, inclined spines.

Abdomen with many tubercles; 2nd abdominal somite composed of 3 plates, with pair of large tubercles on median plate; in female, margins of 2nd to 6th somites armed with about 30 strong spines.

Color of fresh specimen : Carapace pinkish white, pereopods reddish brown, spines on pereopods yellowish brown. Ventral side pale compared with dorsal side. In male, teeth on cutting edge of right chela white. Cornea of eye black.

Remarks : This species is widely distributed in the North Pacific region, but never taken from the Okhotsk Sea, in which a sympatric *L. aequispina* Benedict has been known.

L. couesi is readily distinguished from *L. aequispina* in having a rudimental antennal acicle (cf. well developed, bifid spiniform in *L. aequispina*) and 7 tiny spines on the rostrum (9 strong spines).

Distribution : Bering Sea, north of Unalaska near Shumagin Islands, Alaska (Benedict, 1894); near San Diego (Schmitt, 1921); Okhotsk Sea (present paper); Pacific coast of northern Japan, Hokkaido to off Onahama, (Sakai, 1976). At depth of 542 to 1125 m (Makarov, 1938).

Genus *Paralomis* White, 1856

Paralomis verrilli (Benedict, 1894)

Pristopus verrilli Benedict, 1894, 486; Rathbun, 1904, 165.

Paralomis verrilli, Schmitt, 1921, 159, pls. 24, 30, figs. 5, 6; Makarov, (1938) 1962, 258-259; Vinogradov, (1947) 1964, 81-82; Sakai, 1971, 19, 39, pl. 18; 1976, 702, pl. 247; Miyake, 1982, 138, pl. 46, fig. 2.

Materials : HUMZ-C 769, 1 male (cl 99.3 mm), HUMZ-C 770, 1 ovigerous female (cl 74.8 mm), OST 8703.

Diagnosis : Carapace barely wider than long, pentagonal in outline, areas distinct, covered with rather flat tubercles. Rostrum short, directed forward, apex simple, with strong single pair of lateral spines; ventral margin unarmed. Gastrocardiac and branchiocardiac boundary strongly depressed. Gastric region convex dorsally, with 5 conical spines. Cardiac region with 4 conical spines. Branchial region with 5 conical spines on each side, of these 4 situated behind level of cardiac region. These spines with apical setae. Lateral margin with about 20 spines on each side including postorbital spine.

Eye short, cornea ventral, with acute spine dorsally. Antennal acicle well developed, composed of 7-10 acute spines. Cheliped dissimilar, very stout in male, covered with spines and tubercles; fingers of right chela of male with 3 molar-like processes on proximal half of cutting edges, whereas those of left with no distinct tooth, widely gaping. Second to 4th pereopods flattened, almost equal in length, 2.6 times longer than carapace in male, 1.8 times in female, anterior and posterior margins armed with strong spines.

Abdomen covered with flat, small tubercles, and with marginal spinules; 3rd to 5th abdominal somites distinct, without common membranous region; 2nd somite composed with single plate, with pair of deep depressions.

Eggs about 2.0 mm in diameter.

Color of fresh specimen : Carapace pale reddish brown, thoracic appendages deep red. Distal half of cutting edges of chelae black or deep brown.

Remarks: *P. verrilli* is widely distributed in the North Pacific Ocean (Sakai, 1976). From the Okhotsk Sea, Vinogradov (1947) reported this species.

Although a congener, *P. multispina* (Benedict, 1894) is also known from the Okhotsk Sea, we do not find this species in our material.

Distribution: Okhotsk Sea (Vinogradov, 1947); off Pribilof Islands (Benedict, 1894); off Sea Lion Rock, Washington (Rathbun, 1904); off Cortez Bank, California (Rathbun, 1904); off Nemuro, Hokkaido (Sakai, 1976). At the depth 450-1770 m (Vinogradov, 1947; Miyake, 1982).

Acknowledgments

We wish to express sincere gratitude to Dr. Austin B. Williams of the Systematics Laboratory, National Marine Fisheries Service, National Museum of Natural History for his valuable suggestions and critical reading of the manuscript. Also, we wish to thank Drs. Kazuhiro Nakaya and Mamoru Yabe of the Hokkaido University for their useful advice. We are also grateful to Dr. Ken-Ichi Hayashi of Shimonoseki University of Fisheries for providing information and helpful suggestions.

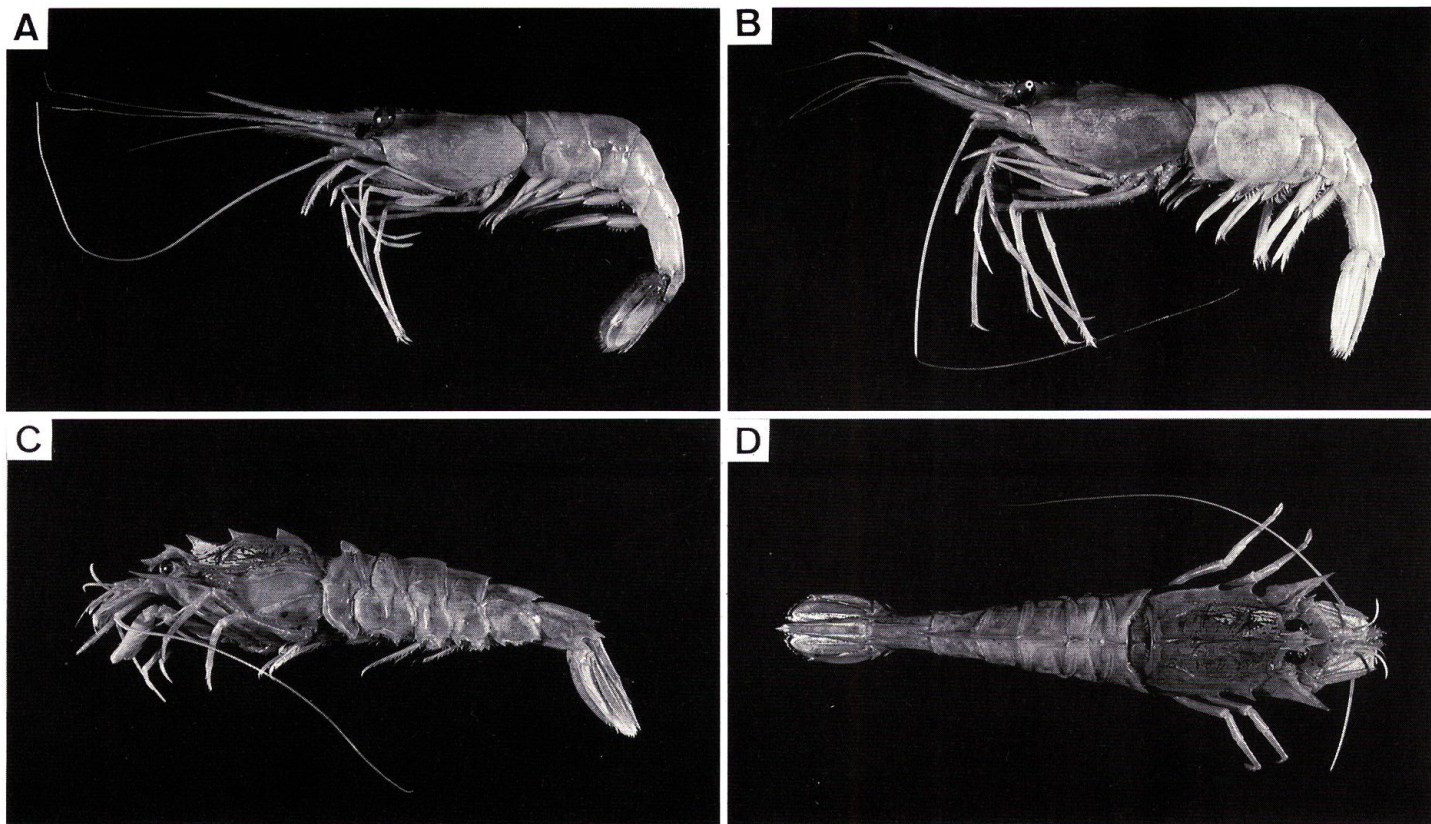
We are deeply indebted to Capt. Kiyoshi Masuda and the staff of T/V Oshoro-Marū of the Faculty of Fisheries, Hokkaido University for collecting the materials.

Finally, the senior author wishes to thank to Dr. Kunio Sasaki of the Faculty of Science of Kochi University for his helpful advice and encouragement during course of this study.

References

- Baba, K., Hayashi, K. and Toriyama, M. (1986). *Decapod crustaceans from continental shelf and slope around Japan*. 336 pp. Japan Fisheries Resource Conservation Association, Tokyo.
- Benedict, J.E. (1894). Description of new genera and species of the crabs of the family Lithodidae with notes on the young of *Lithodes camtschatica* and *L. brevipes*. *Proc. U.S. Nat. Mus.*, **15**, 479-488.
- Birshtein, Y.A. and Zarenkov, N.A. (1970). Bottom decapods (Crustacea, Decapoda) of the Kurile-Kamchatka trench area, p. 439-447. In V.G. Bogorov (ed.) *Fauna of the Kurile-Kamchatka trench and its environment*. *Proc. Shirshov Inst. Ocean.* **86**. (Translation from Russian by Israel Program for Sci. Transl., Jerusalem, No. TT71-50130, 1972).
- Kobjakova, Z.I. (1936). Uebersicht der Dekapoden-Gattung *Pandalopsis* Bate. *Zool. Anz.*, **116**, 185-194.
- Kobjakova, Z.I. (1937). Systematisch Uebersicht der Dekapoden aus dem Okhotskischen und Japanischen Meere. *Uchenie Zapiski Leningr. Univ.*, **15**, 93-154, pls. 1-3. (in Russian with German summary).
- Kobjakova, Z.I. (1958). Decapod from the South Kurile Islands. *Invest. Far East Seas USSR*, **5**, 220-248. (in Russian).
- Komai and Amaoka. A new species of genus *Sclerocrangon* from the Urupp Island, Kurile Islands and east of Hokkaido. (in press).
- Makarov, V.V. (1938). Rakoobraznyey. Anomura. In Shtakel'berg, A.A., (ed.) *Fauna USSR*, **16** (10) (3), i-x, 1-324, pls. 1-5 (Moscow and Leningrad: Akademii Nauk SSSR). English translation, 1962: Crustacea, Anomura: 1-278, pls. 1-5.
- Miyake, S. (1982). *Japanese crustacean decapods and stomatopods in color*. Vol. I. Macrura, anomura and stomatopoda. Hoikusha, Osaka, viii+277 pp., 64 pls. (in Japanese).
- Rathbun, M.J. (1904). Decapod crustaceans of the northwest coast of North America. *Harriman*

- Alaska Exped.*, 10, 1-210.
- Sakai, T. (1971). Illustrations of 15 species of crabs of the family Lithodidae, two of which are new to science. In: *Researches on Crustacea*, 4, 5, 1-49, pls. 1-21, figs. 1-3.
- Sakai, T. (1976). *Crabs of Japan and the adjacent seas*. Kodansha, Tokyo. (in 3 volumes: (1) English text, xxx+773 pp., (2) Plate volume, 16 pp., 251 pls., (3) Japanese text, 461 pp.
- Schmitt, W.L. (1921). The marine decapod crustacea of California with special reference to the decapod crustacea collected by the United States Bureau of Fisheries Steamer "Albatross" in connection with the biological survey of San Francisco Bay during the years 1912-1913. *Univ. Calif. Publ. Zool.*, 23, 1-359, pls. 1-50.
- Vinogradov, L.G. (1947). Decapod crustaceans of the Okhotsk Sea. *Izv. Tikhookean. Nauchno Issled. Inst. Rybn. Khoz. Okeanogr.*, 25, 67-124. (Translation from Russian by Fish Res. Board Can. Transl. Ser. No. 477, 1964).
- Vinogradov, L.G. (1950). The classification of shrimps, crabs and other decapods from Far East. *Ibid.*, 33, 179-358. (in Russian).
- Zarenkov, N.A. (1965). Revision of the genera *Crangon* Fabricius and *Sclerocrangon* G.O. Sars (Decapoda, Crustacea). *Zool. Zh.*, 44, 1761-1775. (In Russian).



A. *Pandalopsis glabra* Kobjakova, male, cl 32.4 mm.
B. *Pandalopsis ochotensis* Kobjakova, ovig. female, cl 30.9 mm.
C, D. *Sclerocrangon derjugini* Kobjakova, female, cl 37.0 mm.