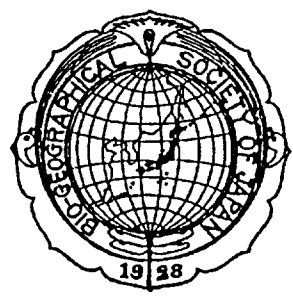


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*Sclerocrangon unidentata*, a New Crangonid Shrimp from the  
Pacific Coast of Honshu, Japan (Crustacea: Decapoda)

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## *Sclerocrangon unidentata*, a New Crangonid Shrimp from the Pacific Coast of Honshu, Japan (Crustacea: Decapoda)

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**Abstract.** A new species of sculptured shrimp (Crangonidae), *Sclerocrangon unidentata*, is described on the basis of the specimens from the Pacific coast of Honshu, Japan. This species is distinguished from the congeners by the erect and strongly compressed rostrum armed with a ventral tooth, the strong branchiostegal spine, and the distinct subbranchial carina.

### Introduction

The crangonid genus *Sclerocrangon* contains 6–7 species (Christoffersen, 1988) which are mostly confined to the North Pacific and North Atlantic Oceans except for *S. atrox* Faxon known from the Pacific coast of Mexico. From the Japanese waters, Miyake (1982) enumerated 3 species of the genus: *S. boreas* (Phipps), *S. sarebrosa* Owen, and *S. gasuyebi* Yokoya.

During the course of a survey of macruran fauna along the coast of Iwate Prefecture, northeastern Honshu, Japan, we collected 4 specimens of a crangonid shrimp belonging to the genus *Sclerocrangon*. Later, we obtained some additional specimens of the same species from off Miyagi Prefecture, Sagami Bay and Suruga Bay. A close examination of these specimens made clear that they represent a new species, and thus we describe a new species, *S. unidentata*, in the following lines.

The holotype and three paratypes are deposited in the National Science Museum, Tokyo (NSMT); the other paratypes are deposited in the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University (HUMZ).

Methods of measurements and terminology mainly follow Butler (1980) and Baba *et al.* (1986), except for some terms defined here: Postorbital carina—a carina extending from base of rostrum to half length of carapace; Subbranchial carina—a longitudinal carina extending below base of branchiostegal spine to near lateral end of carapace.

### Description

Genus *Sclerocrangon* Sars, 1883  
*Sclerocrangon unidentata* sp. nov.  
(Figs. 1–5)

*Type series.* Holotype NSMT-Cr 9662, ♂, 35.6 mm cl, ca. 157 mm tl, off Miyako, Iwate Pref., northeastern Honshu, 600–700 m depth, March 30, 1980. Paratypes HUMZ-C 212, ♀, dissected, and HUMZ-C 213, ♂, collected with holotype; HUMZ-C 202, ♂, off Miyako, 600–700 m depth, trawl net, March 25, 1979; HUMZ-C 934, ♀, off Ishinomaki, Miyagi Pref., 200–300 m depth, trawl net, May 31, 1989; NSMT-Cr 9663, ♀, Sagami Bay (R/V *Soyo Maru*, st. T10; 35°04.8'N, 139°11.1'E), 425 m depth, July 27, 1974; NSMT-Cr 9664, ovig. ♀, Suruga Bay (R/V *Tansei Maru*, KT-83-18 cruise, st. N-7-2; 34°43.8'N, 138°39.1'E, 34°42.1'N, 138°38.6'E), 750 m depth, November 12, 1983; NSMT-Cr 9665, ♂, Suruga Bay, May 20, 1964.

*Description.* Body robust, slightly depressed dorsoventrally (Fig. 1). Integument hard, surface moderately sculptured, pubescent.

Rostrum (Fig. 2A) strongly compressed, 0.38–0.45 times carapace length, obliquely erect, extending beyond anterior end of eye, ventrally armed with a strong tooth which is considerably falling short of tip of rostrum; lateral carina absent. Carapace about 1.2 times longer than wide, anterior gastric region, antennal region, and proximal ventral surface of branchiostegal spine depressed below; median dorsal carina armed with 3 strong, sharply pointed teeth on its entire length, dorsal margin of anteriormost tooth nearly straight, often armed with a small spine.

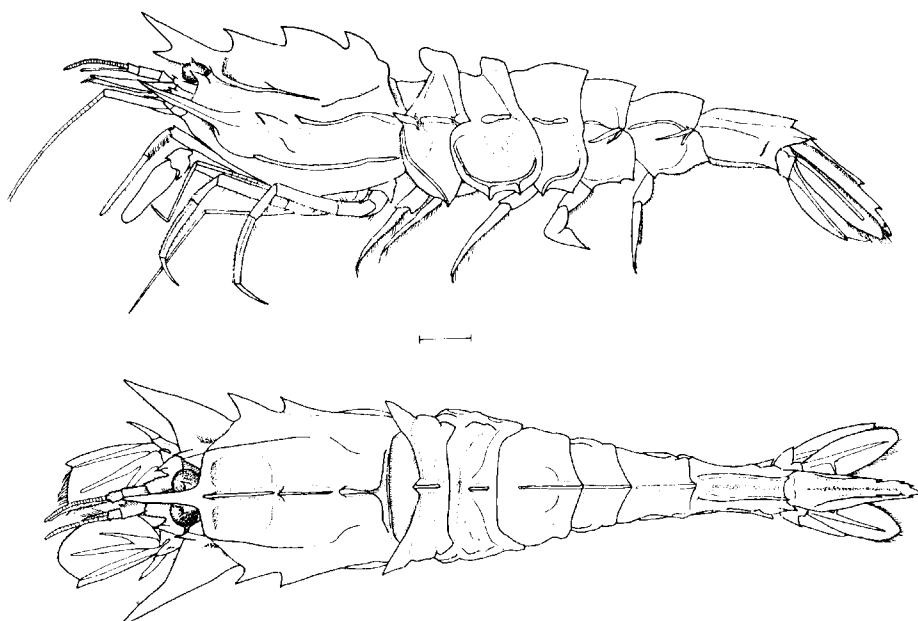


Fig. 1. *Sclerocrangon unidentata* sp. nov., holotype female, lateral and dorsal views. (Scale = 10 mm).

whereas dorsal margins of middle and posterior-most teeth are convex; antennal spine moderately large; branchiostegal spine extremely strong, flared anterolaterally, reaching near half of scaphocerite, supported by carina reaching anterior 1/4 of lateral side of carapace; hepatic spine and posthepatic spine strong, in line with branchiostegal spine, the latter being followed by smooth branchial carina reaching near lateral end of carapace; pterygostomian spine small, but always present; postorbital carina originating from base of rostrum, turned posteriorly behind antennal spine, reaching half of carapace; short oblique carina extending from turn of postorbital carina to hepatic spine; subbranchial carina distinct, extending below base of branchiostegal spine to posterolateral end of carapace; blunt transverse carina present on near dorsoposterior margin of carapace; inferolateral margin of carapace strongly ridged; postorbital fissure distinct; hepatic furrow not so deep, running below hepatic spine.

Abdomen provided with heavy median dorsal carina on 1st to 5th somites, those on the 1st and 2nd produced anteriorly as a prominent lobe, that on the 5th produced posteriorly as a spine; median dorsal carina of 2nd somite situated

on posterior half, and those of the 3rd and 4th notched anteriorly; dorsoposterior margins of 1st and 2nd somites not notched medially; 1st abdominal somite armed with a spine supported by longitudinal carina on anterolateral margin, and provided with 2 transverse carinae converging adjacent to middorsal carina and transverse carina extending from anterior spine to ventral end of pleuron; pleuron of 1st somite usually armed with a spine or tooth, but rarely 2; 2nd somite provided with raised dorsoposterior margin as wide carina, slightly tuberculate lateral carina; pleuron of 2nd somite with submarginal carina and 2 ventral spines; 3rd somite with carinae and spines similar to the 2nd except for having submarginal carina originating from anterior ventral spine; 4th somite as long as or longer than 3rd somite in male, whereas it is shorter than that in female, provided with 3 lateral carinae converging to articular knob; pleuron of 4th somite with raised ventral margin and 2 or 3 spines; 5th somite also provided with 3 lateral carinae; pleuron of 5th somite similar to that of the 4th, with ventral margin between 2 spines convex; 6th somite 0.47–0.56 times as long as carapace provided with 2 parallel dorsal carinae ending in a spine posteriorly, and with deep transverse furrow on lateral

side; pleuron of 6th somite flared laterally, armed with a spine on posteroventral corner; postero-lateral process strong, supported by short carina. Telson (Fig. 2J) 0.67–0.93 times as long as cara-

pace, tapering to acute tip distally, with 2 dorsal carinae, sulcate dorsally; 3 pairs of dorsolateral spines present on posterior half, anterior two pairs situated on dorsal carinae, whereas post-

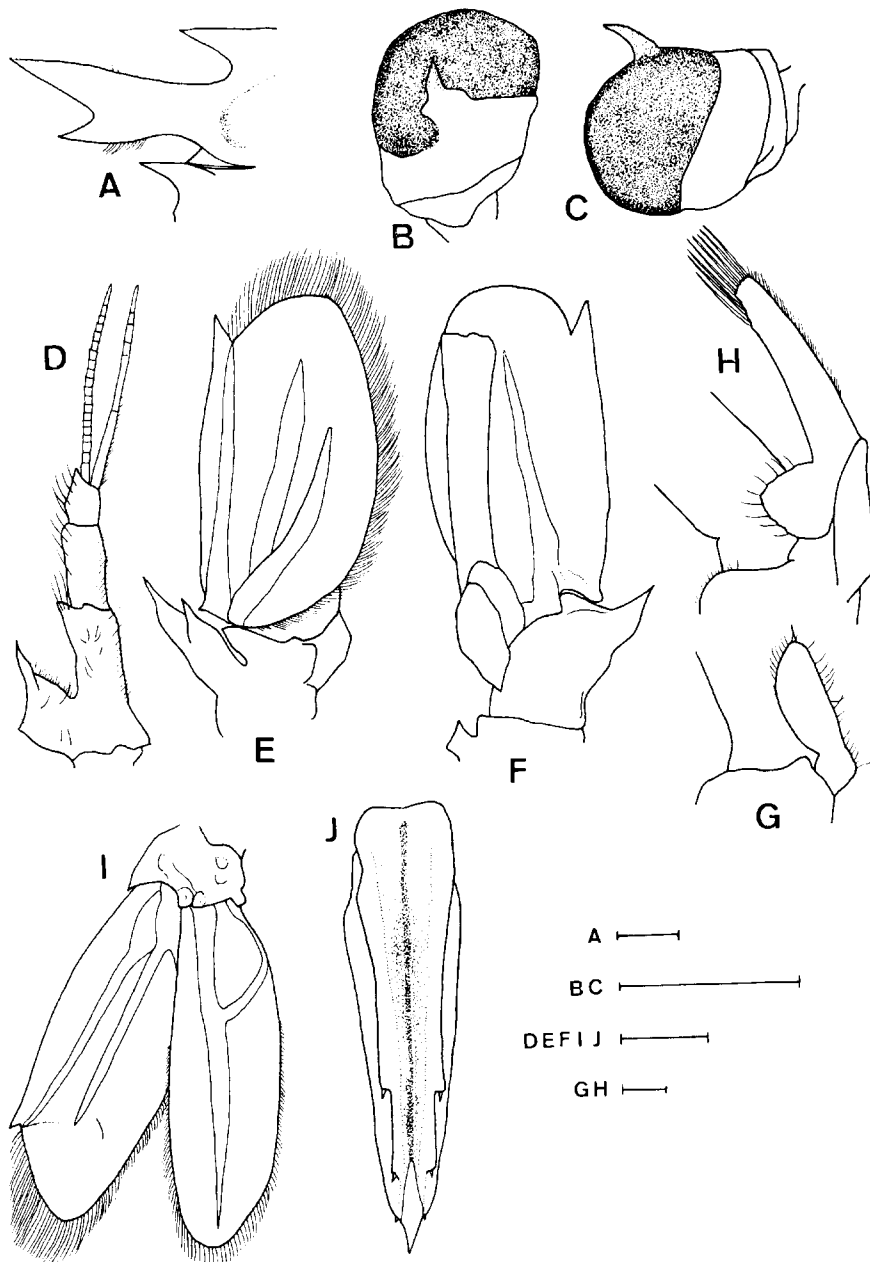


Fig. 2. *Sclerocrangon unidentata* sp. nov., paratype female (A-F, I, J) and male (G, H). A, Rostrum in lateral view; B, eye in dorsal view; C, eye in lateral view; D, antennule; E, antenna in dorsal view; F, antenna in ventral view, marginal setae on scaphocerite omitted; G, endopod of 1st pleopod; H, endopod of 2nd pleopod; I, uropod; J, telson. (Scales. A-F, I, J- 5 mm; G, H- 1 mm).

erriormost pair is on margin near tip; tip supported by short dorsal carina.

Four posterior thorasic sterna armed each with an acute procurved tooth diminishing in size posteriorly; 5 anterior abdominal sterna likewise armed with a median spine, but that of first somite is small; preanal spine present; these sternal teeth or spines excepting preanal spine reduced in matured female.

Eye (Fig. 2B, C) large, spherical, cornea well developed, armed with a sharp spine dorsally.

Antennule (Fig. 2D) with peduncle exceeding beyond half of scaphocerite, distal segment shorter than intermediate segment, provided with blunt process distally, proximal segment with longitudinal ridge ventrally; stylocerite short,

sharply pointed, not reaching distal end of proximal segment of peduncle, lateral margin squarish; both antennular flagella extending beyond scaphocerite, in male, outer flagellum longer and thicker than inner, but shorter in female. Antenna with scaphocerite (Fig. 2E, F) 1.6-2.1 times longer than wide, with lateral margin slightly convex, lamella exceeding outer spine, and 3 blunt dorsal ridges; basicerite armed with 2 anterolateral spines, inferior one much longer than superior, and with deep notch on dorsoanterior margin; carpocerite long and slender, but considerably falling short of distal end of scaphocerite; flagellum stout, spinose.

Mandible (Fig. 3A) typical of family, consisting only of curved molar process divided in 4 teeth

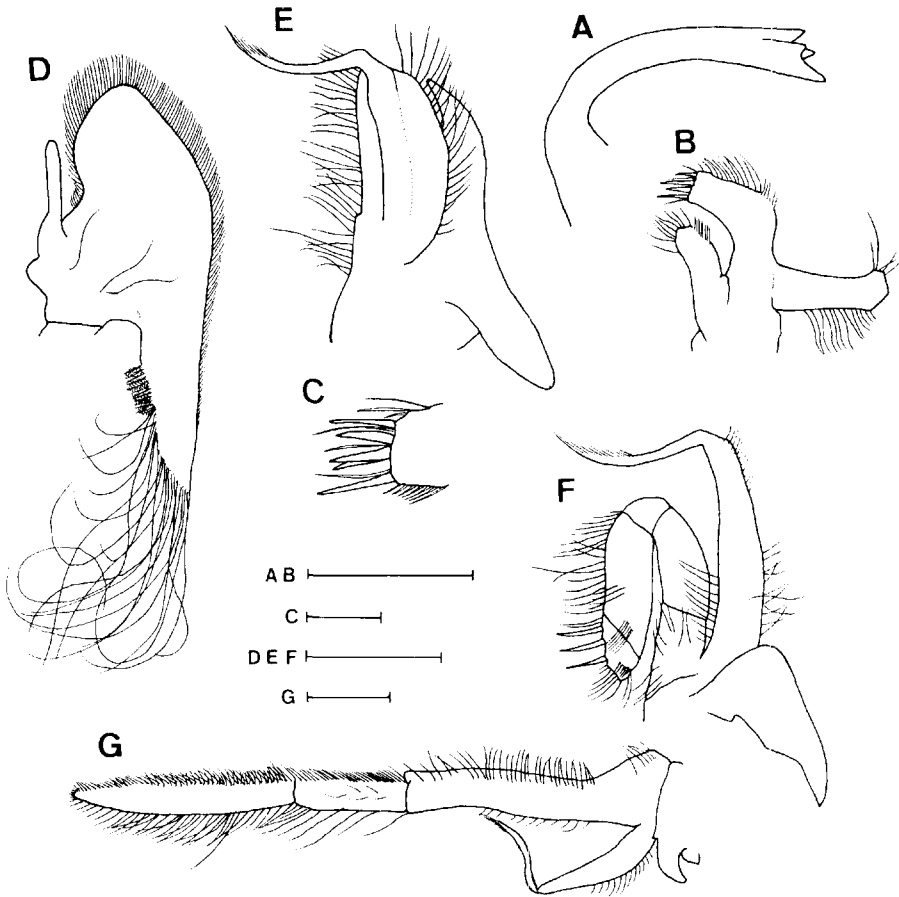


Fig. 3. *Sclerocrangon unidentata* sp. nov., paratype female. A, Mandible; B, maxillule; C, distal part of distal endite of maxillule; D, maxilla; E, 1st maxilliped; F, 2nd maxilliped; G, 3rd maxilliped. (Scales, A, B, D-G 5 mm; C 1 mm).

distally. Maxillule (Fig. 3B) with palp having somewhat truncate tip and 5 apical setae; distal endite strongly curved, tip truncate with 6 stout spines (Fig. 3C); proximal endite broad, with numerous setae. Maxilla with spatulate palp (Fig. 3D); both endites vestigial; scaphognathite very broad, posterior lobe elongate, converging distally, with long setae on distal inner margin. First maxilliped (Fig. 3E) with unsegmented palp bearing marginal setae; distal and proximal

endites absent; exopod well developed, lash with numerous setae distally; caridean lobe narrow, with marginal setae; epipod large, slightly bi-lobed. Second maxilliped normal (Fig. 3F), dactylus wider than long, with 3 long stout spines mesially, propodus articulated with carpus tip by tip, with no spine; exopod well developed, with lash; epipod subtriangular, without podobranch. Third maxilliped (Fig. 3G) overreaching distal end of scaphocerite by distal tip, ultimate segment spatulate,

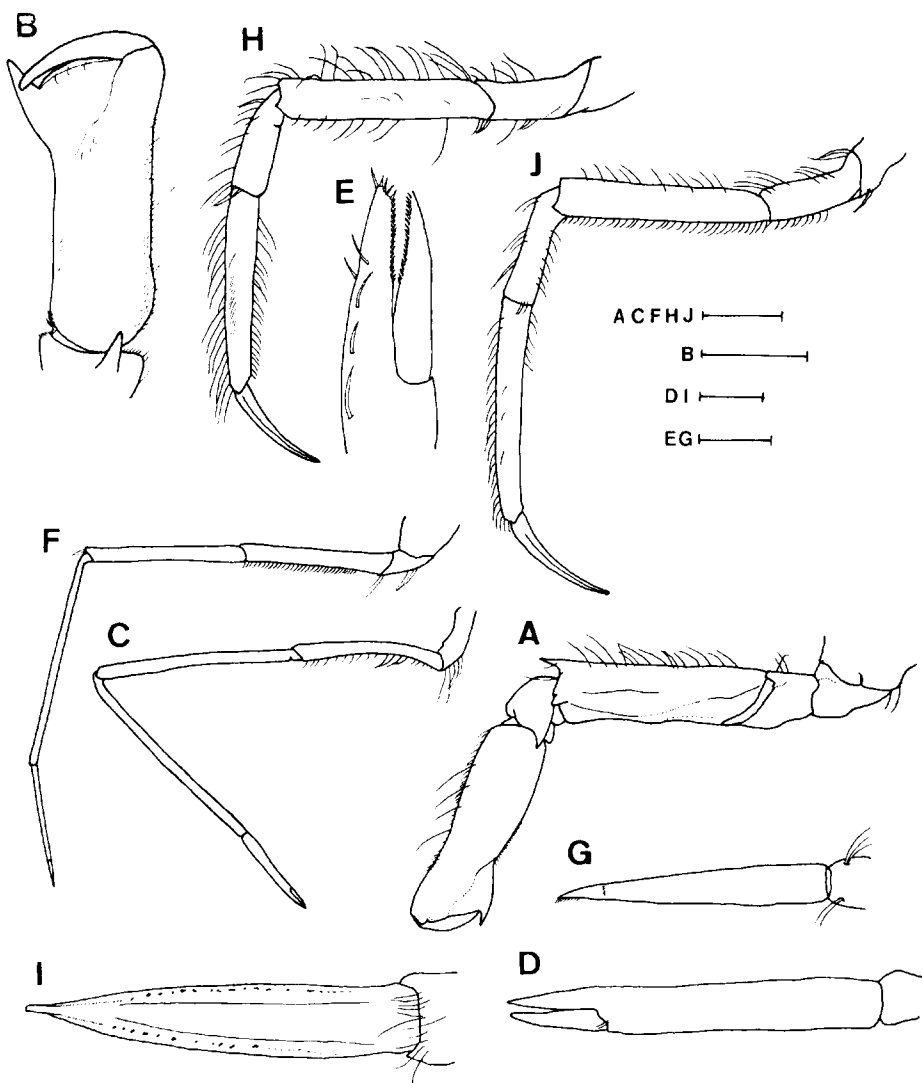


Fig. 4. *Sclerocrangon unidentata* sp. nov., paratype female. A, First pereopod; B, chela of 1st pereopod; C, 2nd pereopod; D, chela of 2nd pereopod; E, fingers of chela of 2nd pereopod; F, 3rd pereopod; G, dactylus of 3rd pereopod; H, 4th pereopod; I, dactylus of 4th pereopod; J, 5th pereopod. (Scales. A-C, F, H, J 5 mm; D, I 1 mm; E, G 0.5 mm).

furnished with movable spinules and coarse setae on mesial margin, but without spinules on lateral margin; penultimate segment moderately flattened, with grooming setae along mesial margin; antepenultimate segment slightly curved sigmoidally; exopod with well-developed lash; basal segment with wing-like process laterally.

First pereopod (Fig. 4A) about as long as 3rd maxilliped, very stout, reaching distal end of scaphocerite by tip of chela; chela (Fig. 4B) with palm slightly depressed, 2.7 times longer than wide, about 0.5 times as long as carapace; fixed finger strong, stout; cutting edge nearly transverse, bordered by ridge; carpus short, subglobular, with distal spine on outer ventral side; merus slightly shorter than chela, with dorsodistal spine, with longitudinal groove ventrally; coxa with prominent tubercle on outer side. Second pereopod (Fig. 4C) longer than the 1st, slender, reaching tip of scaphocerite distally; chela (Fig. 4D, E) about 0.5 times as long as carpus, fingers short, about 0.36 times as long as palm, with numerous spinules on both cutting edges; carpus slightly longer than merus; ischium curved weakly, slightly shorter than merus; coxa with a well-developed wing-like process laterally. Third pereopod (Fig. 4F) also slender, as long as or slightly longer than the 2nd; dactylus (Fig. 4G) about 0.3 times as long as propodus, tip acute; propodus 0.4 times as long as carpus; carpus longer than merus; ischium barely shorter than merus, almost straight; coxa covered with plumose setae posteriorly. Fourth pereopod (Fig. 4H) stout, reaching or slightly exceeding tip of scaphocerite by dactylus; dactylus

(Fig. 4I) 0.6 times as long as propodus, subspatulate, ridged laterally and ventrally, tip simply acute, with no fringe of submarginal setae; coxa with spiniform tubercle laterally. Fifth pereopod (Fig. 4J) similar to the 4th, reaching or slightly exceeding half of scaphocerite, slightly longer than the 4th in length of propodus.

Endopod of 1st pleopod of male small, subrectangular (Fig. 2G). Second pleopod of male (Fig. 2H) with rudimental endopod and well-developed appendix masculina covered with stout setae dorsolaterally. Uropod (Fig. 2I) with rami subequal in length, slightly falling short of distal end of telson; endopod dorsally with longitudinal carina extending from base to distal end; exopod with 2 longitudinal carinae converging basally, outer margin convex, with a fixed spine; basal segment with distolateral spine.

Pleurobranchs present on 4th to 8th thoracic somites; arthrobranch or podobranch absent on any thoracic appendages.

Eggs large, oval, 3.2 · 2.4 mm.

*Color in fresh.* Body bright red uniformly, posterior portion of branchial region pale or white, and abdomen nebulous. Appendages also bright red, but antennular peduncle, scaphocerite, and distal portions of 2nd and 3rd pereopods pale. Movable finger of chela of 1st pereopod white. Eye black, with reflecting pigments.

*Variations.* In the carapace length of the largest specimen, 31.0 mm in male and 35.6 mm in female, 4th abdominal somite is as long as or longer than 3rd somite in male, whereas it is shorter than the 3rd in female (Fig. 5A).

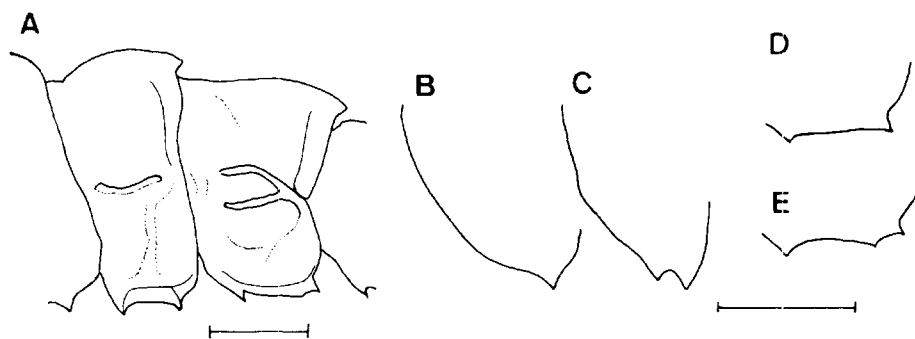


Fig. 5. Morphological variations of *Sclerocrangon unidentata* sp. nov. A, Third and 4th abdominal somites of male (HUMZ-C 202); B and C, pleura of 1st abdominal somite; D and E, pleura of 4th abdominal somite. (Scales 10 mm).

The pleural ventral spine of 1st abdominal somite is usually 1, but 2 spines are present in one male specimen (HUMZ-C 202) (Fig. 5B, C); number of pleural ventral spines of 4th abdominal somite is also variable, 2 or 3 (Fig. 5D, E).

*Ecological note.* *Sclerocrangon unidentata* is semibathyal species as well as *S. atrox* Faxon from the Pacific coast of Mexico and *S. derjugini* Kobjakova from the Okhotsk Sea, inhabiting the muddy or sandy bottom of continental slope. Ohta (1983), who made the intensive photographic census of large-sized benthic organisms in the bathyal zone of Suruga Bay, collected 7 specimens of "undescribed" *Sclerocrangon* by trawl net and observed 3 individuals by underwater camera at the depth of 593 to 1,155 m. According to his kind information, it is without doubt conspecific with the species just described as new to science. As recorded on 77 page, the specimens in the type series are obtained from the depth of 200–750 m. The bathymetric range of the present new species is, therefore, from 200 to 1,155 m.

The senior author observed a male specimen (HUMZ-C 202) kept alive in aqualium for a week. This specimen often crept on sandy bottom, but did not bury as reported in many crangonid shrimps (Butler, 1980).

*Remarks.* Five species of *Sclerocrangon* have been known from the North Pacific. *S. boreas* (Phipps) (widely distributed in the North Pacific and North Atlantic Oceans; shelf species), *S. sarebrosa* Owen (the Japan Sea and the Okhotsk Sea; shelf species), *S. gasuyehi* Yokoya (the Japan Sea, shelf species), *S. derjugini* Kobjakova (the Okhotsk Sea; semibathyal species), and *S. zenkevitchii* Birshtein et Vinogradov (the Bering Sea; bathyal species). The laterally compressed rostrum armed with a sharp ventral tooth and the strongly flared branchiostegal spine readily distinguish present new species from these 5 species. In *S. boreas*, *S. sarebrosa*, *S. gasuyehi*, and *S. derjugini*, the rostrum is depressed and dorsally sulcate, with a paired shallow grooves, while that of *S. zenkevitchii* is compressed, but lacks ventral tooth and often far exceeds the scaphocerite. In addition, the branchiostegal spine is moderately or only weakly flared in these 5 species.

The new species is similar to *S. atrox* in having the laterally compressed rostrum armed with a

ventral tooth, the large eye, 3 strong middorsal teeth on the carapace, and 2 ventral spines on each pleuron of 2nd to 5th abdominal somites, as well as the ecological features (both species are semibathyal and distributed in relatively low latitude area for the genus), but differs from it in the following characters: 1) There is a distinct subbranchial carina extending near the posterolateral end of the carapace in the new species (absent in *S. atrox*); 2) The ventral tooth of rostrum is considerably falling short of the tip of rostrum in the new species (almost reaching the tip of rostrum in *S. atrox*); 3) The rostral lateral carina flinged with setae is absent in the new species (present in *S. atrox*); 4) The branchiostegal spine reaches half of the scaphocerite in the new species (slightly extends beyond anterior margin of the basicerite in *S. atrox*); 5) The anterior part of postorbital carina is nearly transverse in the new species (obliquely transverse in *S. atrox*); 6) The eye-tubercle is sharply pointed and spiniform in the new species (blunt in *S. atrox*).

*Etymology.* This species was named in reference to a large ventral tooth of the rostrum.

*Distribution.* Pacific coast of Honshu from off Iwate Prefecture to Suruga Bay, Japan.

#### Acknowledgment

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### 本州太平洋岸産エビシヤコ科の1新種

駒井智幸・武田正倫

岩手県から駿河湾にかけての太平洋岸の水深 200-1,155 m より得られた標本に基づいて、エビシヤコ科属の新種 *Sclerocrangon unidentata* (新称: トクキシヤコ) を記載した。本種は、側扁した額角を持つことなどの点でオキシロの太平洋岸に分布する *S. atrox* Faxon に最も類似するが、額角に側隆起がないこと、鰓前棘が非常に大きく、側方に強く張り出すこと、顕著な下鰓隆起を持つことなどの点で容易に識別される。

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