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Author(s)	Takahashi, Yoshie; Kakui, Keiichi
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A new species of the sea spider genus *Cheilopallene* from Japan

(Pycnogonida, Callipallenidae)

Yoshie Takahashi & Keiichi Kakui

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We describe *Cheilopallene ohtsukai* sp. nov. based on males and females collected from 52–57 m depth in the Ryukyu Islands, Japan, northwestern Pacific. This species resembles *C. brevichela* and *C. ogasawarensis* in having the cephalon with a dorsolateral tubercle/spine at the base of the chelifore and the first and second lateral processes each with at least one dorsodistal tubercle/spine, but differs from them in having the movable chela finger with a seta, simple oviger spines, and the male oviger with eight segments. This is the first *Cheilopallene* species with males having an 8-segmented oviger.

Yoshie Takahashi, Independent

Keiichi Kakui (corresponding author), Faculty of Science, Hokkaido University, Sapporo 060-0810, Japan; e-mail: kakui@eis.hokudai.ac.jp

Introduction

Cheilopallene Stock, 1955, one of 17 currently valid genera in Callipallenidae (Bamber et al. 2024), is characterized by lacking a palp and having a pointed tripartite lip, and a chela with a small movable finger and a truncated, nodulose immovable finger (Staples 2021). In a recent review of this genus, Staples (2015) removed three species (*C. gigantea* Child, 1987; *C. hirta* Child, 1988; and *C. trappa* Clark, 1971) from *Cheilopallene* and reassigned them as genus incertae sedis, and added one species, *C. bamberi* Staples, 2015. As Nakamura & Akiyama (2015) described *C. ogasawarensis* Nakamura & Akiyama, 2015, *Cheilopallene* thus currently contains six species (*C. bamberi*; *C. brevichela* Clark, 1961; *C. clavigera* Stock, 1955 [the type species]; *C. coralliophila* Müller, 1992; *C. nodulosa* Hong & Kim, 1987; and *C. ogasawarensis*), all of which have been reported from tropical to temperate regions at depths of about 30 m (Staples 2015). Two species have been reported from Japanese waters: *C. nodulosa*, originally described from Korea (Hong & Kim 1987), from depths of 5–42 m along the mid-southern coast of Honshu (Nakamura & Child 1991); and *C. ogasawarensis* from depths of 15–27 m

off Hitomaru Island, Ogasawara Islands (Nakamura & Akiyama 2015). In this study, we describe a new *Cheilopallene* species collected from depths of 52–57 m depth in the Ryukyu Islands, southern Japan.

Material and methods

Five individuals were collected by TR/V Toyoshio-maru (Hiroshima University, Japan) by means of a biological dredge and fixed in 70 % ethanol.

Body parts and appendages detached from the trunk were observed under stereoscopic and phase-contrast microscopes, illustrated with a camera lucida, and measured with an ocular micrometer. The detached parts were then stored individually in 70 % ethanol. Our specimens were deposited in the Invertebrate Collection of the Hokkaido University Museum (ICHUM), Sapporo under accession numbers ICHUM3337, 3338, and 3340.

Measurements primarily follow Stock (1958) and Fry & Hedgpeth (1969). Trunk length was measured from the base of the chelifore to the posterior end of the fourth lateral process. Body width was measured as the distance across the second lateral processes. Lateral-process width was measured at the base of the process. The length of segments and other structures was measured as the distance in the midline from end to end.

Where the structure was curved, the measurement was made across the chord of the arc. Proboscis and abdomen were measured from the lateral aspect. The cephalon, representing the first trunk segment, bears a proboscis, an ocular tubercle, chelifores, palps (lacking in *Cheilopallene*), ovigers, and legs 1; trunk segments 2–4 bear legs 2–4, respectively.

Taxonomy

Cheilopallene ohtsukai sp. nov.

Figs 1, 2

<https://zoobank.org/NomenclaturalActs/D290C8F6-5579-4BF3-B155-B8E1DE503749>

Material examined. Holotype: male with a larva, ICHUM3337, 26°14.64' N, 127°31.01' E, Nagannu Island, 22 May 2005, 57 m depth, collected by dredge, Yoshie Takahashi collector. – Paratypes: one male and one female, ICHUM3338, 26°14.63' N, 127°31.79' E, south of Nagannu Island, 26 May 2002, 52 m depth, collected by dredge, Susumu Ohtsuka collector; one male and one female (allotype), ICHUM3340, collection data same as for the holotype.

Diagnosis. Cephalon with dorsolateral tubercle at base of chelifore. First and second lateral processes each with posterior-distal dorsal tubercle. Movable chela finger with middle seta. Oviger spines simple. Oviger with eight (males) or ten (females) segments.

Descriptions

Male holotype. Trunk (Fig. 1A–C) robust, compact, tuberculate, without suture between trunk segments 3 and 4. Cephalon with dorsolateral tubercle at base of chelifore. Neck short, with distinct oviger insertion in dorsal view. Lateral processes as long as their basal diameter, separated from one another by half or less their width, third and fourth touching; first, second, and third lateral processes with posterior-distal dorsal tubercle (some armed with tiny seta at tip); fourth lateral process with anterior-distal dorsal tubercle (absent on right). Ocular tubercle between bases of first lateral processes, slightly shorter than basal width, dome-shaped, with small knobs on top and laterally on both sides; eyes large, slightly pigmented. Proboscis short, length about 1.5 times basal width, cylindrical in proximal half, comprising circular cone in distal half, with pointed tripartite lip; axial suture evident anterior-ventrally for one-third of whole length. Abdomen nearly twice as long as wide, inclined upwards (ca. 45°), with two dorsolateral short setae, not reaching ends of second coxae of legs 4.

Chelifore (Fig. 1A, D) robust; scape short, slightly curved inside, with two dorsolateral short setae; chela strong, same diameter as scape; palm stout, maximum width same as scape diameter; immovable finger blunt, twice as wide as movable finger, with three thick setae on boundary between palm and immovable finger, several distal protuberances each bearing short spine, and two dorsal longer setae; movable finger well curved, nearly as long as wide, with middle seta.

Palp absent.

Oviger (Fig. 1E, F) slender, with eight segments; segments 1–3 subequal, nearly as long as wide; segment 4 almost as long as combined length of segments 1–3, with four tiny ectal spines; segment 5 slender, with seven ectal setae at regular intervals, and ecto-distal long tubercle bearing three setae; three distal short segments (= segments 6–8) subequal in length, each with one, one, and two simple spines, respectively; terminal claw well curved, with endal tooth.

Legs (Fig. 2A–C) robust. Coxa 1 short, with two dorsolateral distal tubercles (some bearing seta at tip). Coxa 2 with posterolateral and laterodistal setae; gonopore at tip of small ventro-subdistal tubercle. Coxa 3 with several setae ventrodistally. Femur with several dorsal and ventral short setae; many thin hairs adjacent to ventral setae; dorsodistal large tubercle bearing long apical seta; raised cement gland pore present on posterior surface. Tibia 1 stout with several dorsal and ventral setae; low dorsodistal tubercle with long apical seta. Tibia 2 swollen dorsally, with several dorsal and ventral setae; small dorsal tubercle at one-fourth of length from distal end of tibia 2 with long seta. Tarsus short, half as wide as maximum width of tibia 2, with ventral spine surrounded by several setae. Propodus straight, without heel, with several dorsal and ventral setae; sole with six spines; claw slightly curved; auxiliary claw absent.

Female allotype. Tubercles on trunk and coxae 1 smaller than in male; first and second lateral processes each with posterior-distal dorsal tubercle; fourth (absent on left) and third lateral process with anterior-distal dorsal tubercle. Abdomen with two dorsolateral short setae. Chelifore scape with proximolateral node (Fig. 1G). Movable chela finger with middle seta. Oviger (Fig. 1H) short, 10-segmented; segment 4 with proximal projection; segment 5 with length 0.7 times that of segment 4, with two distal setae; four distal short segments (= segments 7–10), each with two simple spines and distal seta; terminal claw with two endal teeth. Legs (Fig. 2D, E) with coxa 1 bearing two dorsolateral distal tubercles; gonopore on ventro-subdistal surface of coxa 2; femur exceedingly inflated, with large egg inside; propodus with more spines (seven; Fig. 2E) and setae than in male.

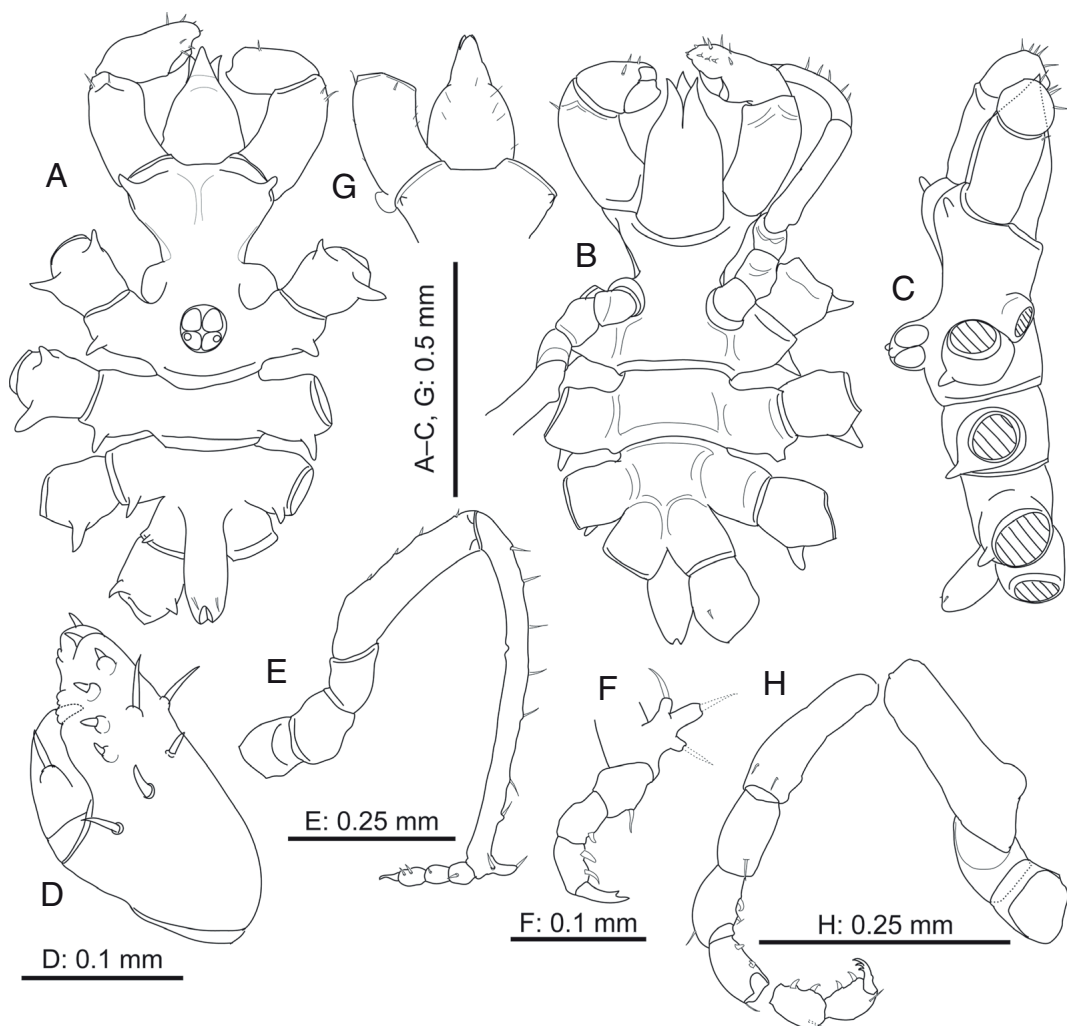


Fig. 1. *Cheilopallene ohtsukai* sp. nov.: holotype, male, ICHUM3337 (A-F); allotype, female, ICHUM3340 (G, H). A–C. Habitus, dorsal, ventral, and right views. D. Left chela. E. Right oviger. F. Distal segments of left oviger. G. Anterior part of trunk, proboscis, and left chelifore scape, dorsal view. H. Left oviger (segment 1 not illustrated).

Larva on male oviger. Advanced larva (cf. Brenneis et al. 2017) with paired chelifores and two pairs of legs (Fig. 2F).

Measurements (male holotype, millimeters). Trunk length 0.88; body width 0.54; proboscis length 0.30; abdomen length 0.15; length of oviger segments (from segment 1, including terminal claw) 0.07, 0.09, 0.09, 0.27, 0.54, 0.04, 0.04, 0.04, 0.04 (1.22 in total); length of leg-3 segments (from coxa 1, including claw) 0.15, 0.23, 0.18, 0.51, 0.54, 0.61, 0.06, 0.28, 0.15 (2.71 in total).

Etymology. The specific name is a noun in the genitive case, honouring Susumu Ohtsuka, organizer of serial benthos/plankton surveys in southwestern Japan by TR/V Toyoshio-maru, which procured many sea spiders.

Remarks. *Cheilopallene ohtsukai* sp. nov. resembles *C. brevichela* from the Maldives and Lizard Islands and *C. ogasawarensis* from Japan in having the cephalon with a dorsolateral tubercle/spine at the base of the chelifore and the first and second lateral processes each with at least one dorsodistal tubercle/spine. Males in *C. ohtsukai* sp. nov. differ from those of the latter two species (character state in parentheses)

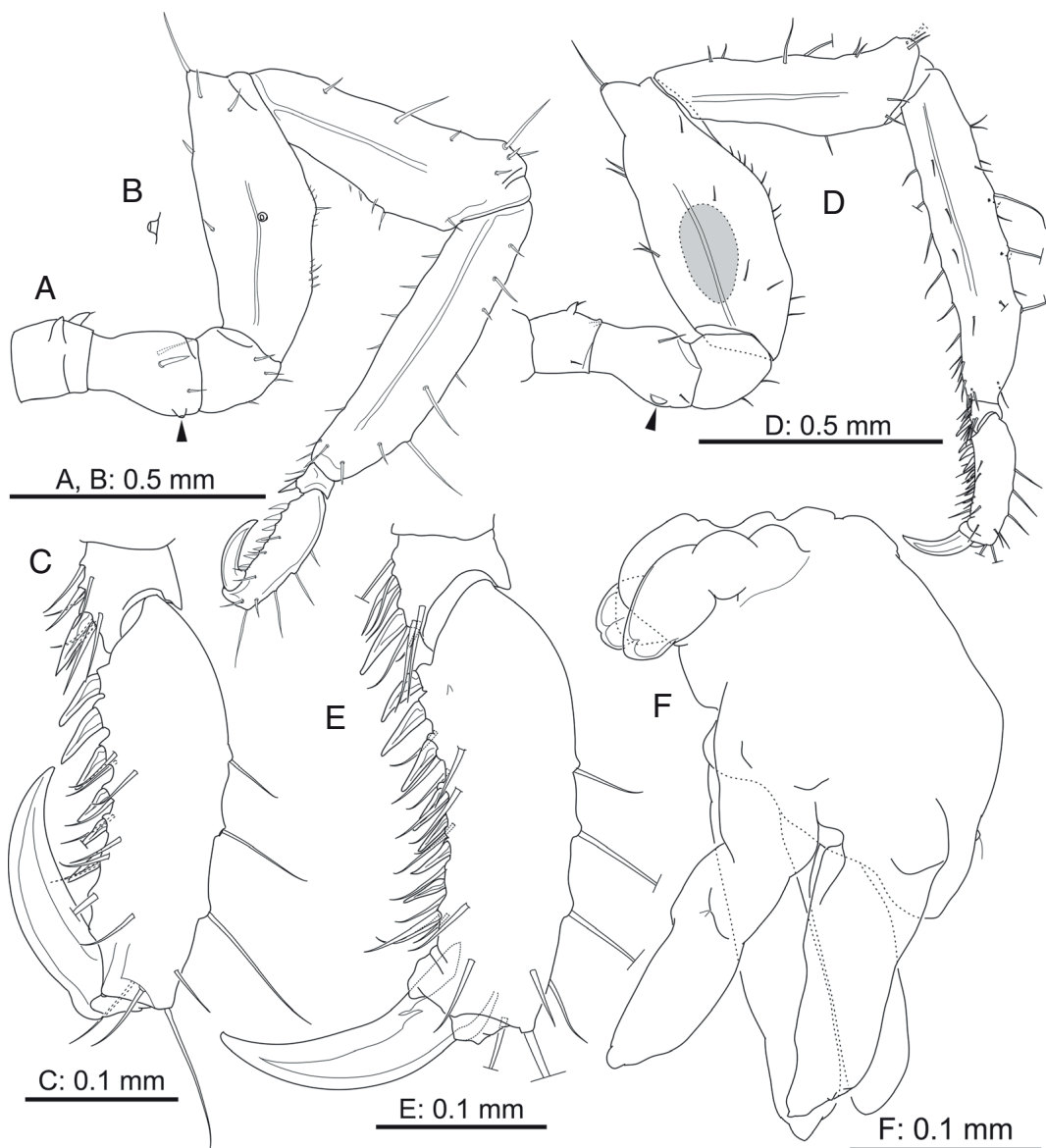


Fig. 2. *Cheilopallene ohtsukai* sp. nov.: holotype, male, ICHUM3337 (A-C); allotype, female, ICHUM3340 (D,E); larva, ICHUM3337 (F). **A, D.** Right leg 3 (shaded area, egg); arrowheads, gonopore. **B.** Raised cement gland pore on right leg 3. **C, E.** Tarsus, propodus, and claw of right leg 3. **F.** Habitus, left view.

in having the ocular tubercle located between the bases of the first lateral processes (slightly anterior to the bases in *C. brevichela*), the movable chela finger with a middle seta (seta lacking), an 8-segmented oviger (10-segmented), and simple oviger spines (denticulate). Currently, the 8-segmented oviger in male *C. ohtsukai* is unique in *Cheilopallene*.

Presence/absence, location, and number of the

dorsodistal tubercle on the third lateral process differed among specimens. The tubercle was observed on the posterior surface of both processes (holotype), on the anterior surface of both processes (ICHUM3338 male and ICHUM3340 female), or absent (ICHUM3338 female); in ICHUM3340 male, the left process had an anterior-distal dorsal tubercle whereas the right one had one anterior-distal dorsal

and one posterior-distal dorsal tubercles. Presence/absence of the anterior-distal dorsal tubercle on the fourth lateral process also differed among specimens. The tubercle was found on both processes (ICHUM3340 male), on right process (ICHUM3340 female), or on left (the other specimens).

We found a cement gland pore in male *C. ohtsukai* sp. nov. Although Staples (2015) stated that all *Cheilopallene* species probably lack this pore, our observation raises the possibility that the pore was overlooked in other congeners.

We observed a proximolateral node on the chelifore scape of *C. ohtsukai* sp. nov. in females but not in males. This supports the idea (Nakamura & Child 1991, Staples 2015) that this node is a female-specific character in this genus. From this viewpoint, we regard Stock's (1955) specimen of *C. clavigera* as having been a male.

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