

A New Species of the Hermit Crab Genus *Catapaguroides* A. Milne-Edwards and Bouvier, 1892 (Crustacea: Decapoda: Anomura: Paguridae) from Sagami Bay, Japan

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Abstract The pagurid hermit crab genus *Catapaguroides* A. Milne-Edwards and Bouvier, 1892, is heretofore represented by 28 species worldwide, of which 26 species occur in the Indo-West Pacific. In this article, a new species of the genus, *C. tanseiae*, is described and illustrated on the basis of a single male specimen from Sagami Bay, central Japan, at a depth of 147 m. The new species appears closest to *C. pectinipes* (Lewinsohn, 1969), possibly endemic to the Red Sea. Differentiating characters between the two species are discussed. The present new species is the eighth of the genus known from Japan.

Key words : *Catapaguroides tanseiae*, taxonomy.

During KT07-31 cruise of RV “Tansei-maru” of the Japan Agency for Marine Science and Technology (JAMSTEC), trawling and dredging operations were made in sublittoral to upper bathyal depths (100 – 1330 m) in the Sagami Sea and Izu Islands, central Japan. Taxonomic reports on decapod crustaceans, pertaining to the collection made by this cruise, have been published (e.g., Komai, 2011a; 2011b; 2012; 2013), although part of the collection still remains to be studied. In this article, a new species of the pagurid hermit crab genus *Catapaguroides* A. Milne-Edwards and Bouvier, 1892, *C. tanseiae*, is described and illustrated on the basis of a single male specimen collected from Sagami Bay during this cruise. The new species appears closest to *C. pectinipes* (Lewinsohn, 1969), known only from the Red Sea (Lewinsohn, 1969; Türkay, 1986), among the 28 congeneric species. Differentiating characters between the new species and *C. pectinipes* are discussed. The new species represents the eighth of *Catapaguroides* known from Japanese waters.

The holotype of the new species is deposited in the collection of the Natural History Museum and Institute, Chiba (CBM). General terminology follows McLaughlin et al. (2007), except for numbering of thoracic sternites. Shield length (sl), measured from the tip of the rostrum to the midpoint of the posterior margin of the shield, indicates specimen size.

Taxonomy

Family **Paguridae** Latreille, 1802

Genus *Catapaguroides* A. Milne-Edwards and Bouvier, 1892

Catapaguroides tanseiae sp. nov.

(Figs. 1 – 5)

Material examined. Holotype: male (sl 1.8 mm), RV “Tansei-maru”, KT07-31 cruise, stn L-2-100, S of Jogashima, Sagami Bay, 35°05.693'N, 139°35.506'E, 146 m, 25 November 2007, dredge, coll. T. Komai, CBM-ZC 12095.

Description. Ten pairs of biserial phyllobranchiate gills; third maxilliped with 2 small arthrobranches, anterior gill slender, non-lamellate, posterior gill much smaller, weakly lamellate (Fig. 1E); cheliped with tiny but distinctly lamellate arthrobranches; no pleurobranches on wall of thoracic somite 7.

Shield (Fig. 1A) approximately as long as wide; anterior margins between rostrum and lateral projections concave; anterolateral margins sloping, posterior margin roundly truncate; dorsal surface almost glabrous. Rostrum broadly rounded. Lateral projections obtusely triangular, produced to level of rostrum, each with marginal spinule.

Ocular peduncle (Fig. 1A) moderately stout, about 0.8 times as long as shield, slightly constricted at

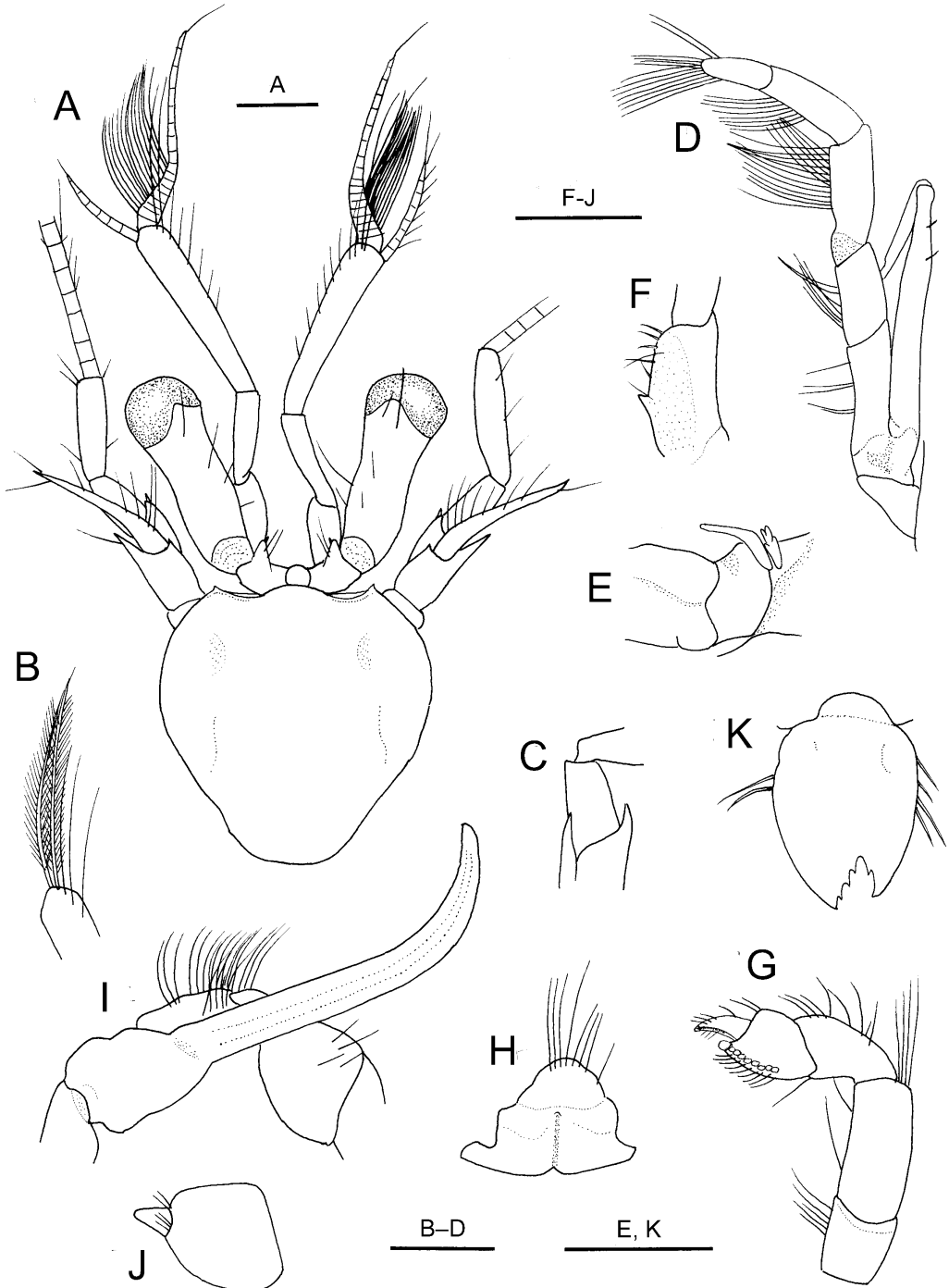


Fig. 1. *Catapaguroides tanseiae* sp. nov., holotype, male (sl 1.8 mm), CBM-ZC 12095. A, shield and cephalic appendages, dorsal view; B, distal part of ultimate segment of left antennular peduncle, obliquely lateral view; C, fourth, third and second segments (distal part) of left antennular peduncle, ventral view; D, left third maxilliped, lateral view; E, basal part of left third maxilliped, showing arthrobranchs; F, ischium of left third maxilliped, ventral view; G, left fourth pereopod, lateral view; H, thoracic sternite 6, ventral view; I, coxae of fifth pereopods and thoracic sternite 8, ventral view; J, coxa of left fifth pereopod, ventral view; K, telson, dorsal view. Scale bars: 0.5 mm.

about midlength; dorsal surface mesially with row of setae increasing in length distally; cornea normally developed, rounded, weakly dilated, corneal width approximately 0.3 of peduncular length. Ocular acicle triangular, with minute submarginal spine, separated to each other basally by basal width of more than 2 acicles. Inter-ocular lobe with slightly convex anterior surface.

Antennular peduncle (Fig. 1A), when fully extended, overreaching distal corneal margin by 0.9 length of ultimate segment. Basal segment with spinule proximolaterally. Ultimate segment about 0.7 length of shield, slightly broadened distally in lateral view, with 2 long plumose setae at dorsolateral distal portion (Fig. 1B), followed by 7 or 8 setae on dorsal surface decreasing in length proximally. Dorsal flagellum slightly longer than ultimate peduncular segment, with distal portion more than twice length of proximal aesthetasc-bearing portion.

Antennal peduncle (Fig. 1S) slightly overreaching distal corneal margin. Fifth and fourth segments with few short setae. Third segment with 1 prominent spine at ventromesial distal angle (Fig. 1C). Second segment with dorsolateral distal angle produced in simple spine nearly reaching to midlength of fourth segment; dorsomesial distal angle with minute spine. First segment unarmed. Antennal acicle slender, slightly arcuate, overreaching corneal base but not reaching distal corneal margin, terminating in spine, with row of short to moderately long setae over entire length. Antennal flagellum exceeding 5.0 times of shield length; articles each principally with few short setae and moderately long setae (about 2.0 length of article) every 2 articles.

Third maxilliped (Fig. 1D) slender; ischium (Fig. 1F) with crista dentata poorly developed, bearing only 1 small tooth at midlength. Merus and carpus each without dorsodistal spine.

Chelipeds greatly unequal in length and dissimilar. Right cheliped (Fig. 2A – D) elongate; propodal-carpal articulation rotated clockwise about 20° from perpendicular. Chela elongate subovate in dorsal view, about 2.3 times longer than wide, widest at proximal to base of dactylus. Dactylus articulating obliquely with palm, about 0.6 length of palm, somewhat curved ventrally; dorsal surface slightly convex, dorsomesial margin not delimited, unarmed; cutting edge with 3 broadly triangular calcareous teeth, terminating in minute corneous claw; scattered tufts of short to moderately long setae on surfaces. Palm about 0.9 times

longer than carpus; dorsal surface gently convex, with row of 6 tiny spines adjacent to dorsomesial margin; dorsolateral and dorsomesial margins rounded; lateral, mesial and ventral surfaces with sparse tufts of short to long setae; ventral surface slightly convex. Fixed finger gently curved ventrally, with 2 broadly triangular calcareous teeth on cutting edge, terminating in minute corneous claw. Carpus subcylindrical, about 1.3 length of merus, narrowed at base, about 2.5 times longer than distal width; dorsal surface unarmed; ventrolateral distal angle with minute tubercle, ventromesial distal margin unarmed; surfaces with scattered tufts of short to long setae; none of these setae not particularly thickened or bristle-like. Merus with row of tufts of moderately short setae on dorsal surface; dorsodistal margin without spine; lateral surface almost glabrous, ventrolateral margin generally convex, with 1 minute subterminal tubercle; mesial surface with some tufts of moderately short setae dorsally and long setae ventrally, ventromesial margin with 1 tiny distal spine; ventral surface with numerous tufts of long setae. Ischium unarmed; mesial surface with some tufts of short to moderately long setae. Coxa with small spine at ventrolateral distal angle.

Left cheliped (Fig. 3A – D) slender, reaching nearly to base of dactylus of right cheliped; propodal-carpal articulation rotated counter clockwise about 20° from perpendicular. Chela not particularly arched, widest at base of dactylus, about 2.9 times longer than wide. Dactylus somewhat curved in dorsal view, subequal in length to palm, unarmed, with scattered tufts of short to long setae; dorsomesial margin not delimited; cutting edge with row of minute corneous teeth in distal half, terminating in small corneous claw. Palm approximately half length of carpus; dorsal surface moderately convex, with 3 tiny spines and 2 low protuberances on dorsomesial margin, otherwise unarmed; surfaces with scattered tufts of short to long setae. Fixed finger broken in distal part. Carpus elongate, slightly widened distally, about 2.6 times longer than distal width; dorsal surface with 1 tiny median spine proximal to midlength and 2 low protuberances proximally on dorsomesial margin; dorsomesial distal angle with 1 prominent spine; surfaces with scattered tufts of long setae, setae on dorsomesial proximal protuberances slightly thickened; ventral surface slightly convex. Merus with tufts of short to moderately long setae on dorsal surface; dorsodistal margin unarmed; ventrolateral margin gener-

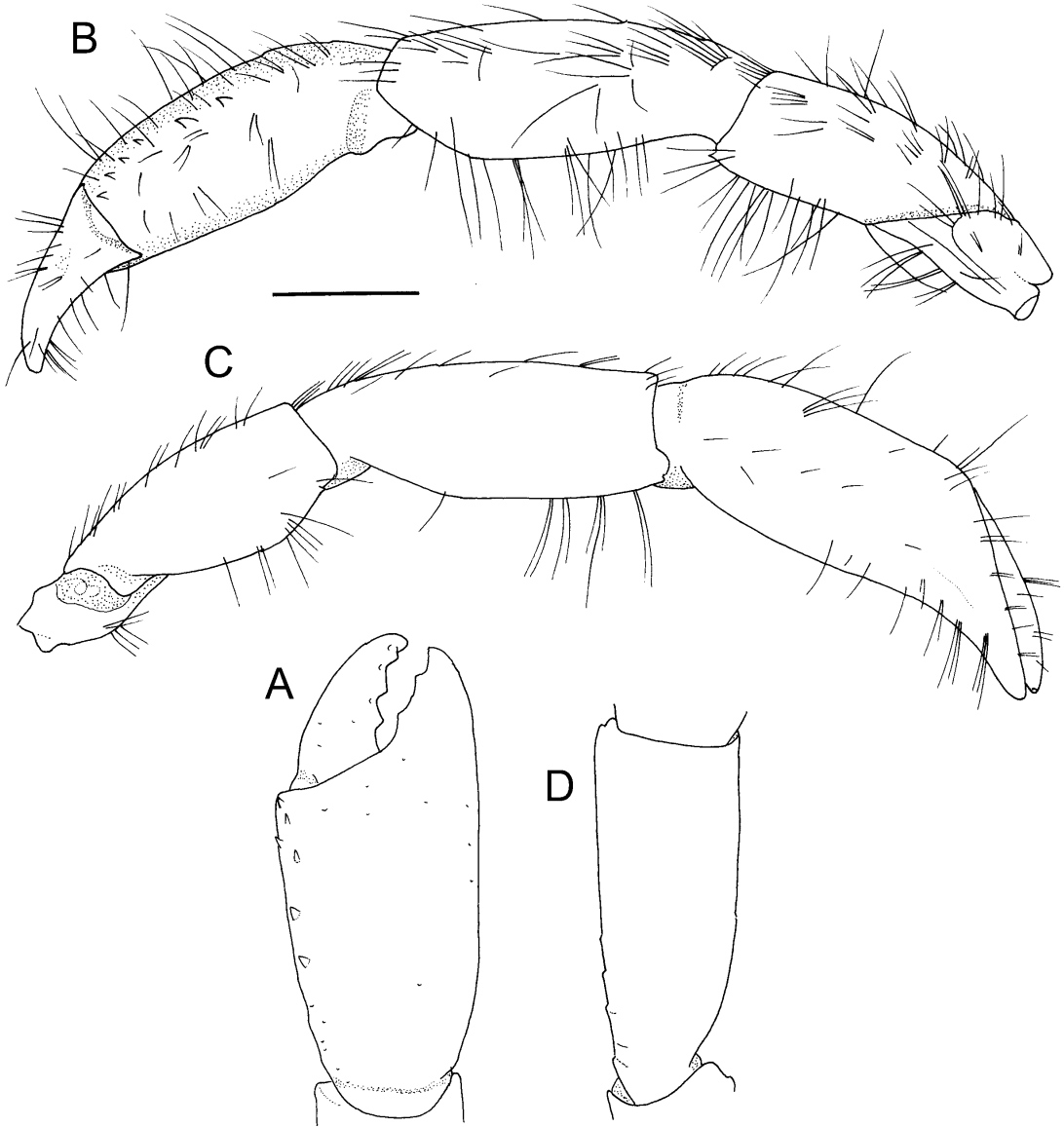


Fig. 2. *Catapaguroides tansaii* sp. nov., holotype, male (sl 1.8 mm), CBM-ZC 12095. A, right chela, dorsal view (setae omitted); B, right cheliped, mesial view; C, same, lateral view; D, carpus of right cheliped, dorsal view (setae omitted). Scale bar: 1 mm.

ally convex, with 2 small spines distally (distal spine smaller than proximal spine); ventromesial margin also convex, with 1 small spine distally and row of long setae in distal half; ventral surface strongly convex, with few tufts of long setae. Ischium spineless; ventral surface with prominent tuft of long setae distally. Coxa with small spine at ventrolateral distal angle.

Ambulatory legs (Fig. 4A, C) long and slender,

right second longest, reaching tip of right cheliped. Dactyli 1.2 – 1.3 times as long as propodi, 10.0 – 13.0 times longer than wide, straight in dorsal view, gently curved ventrally in lateral view, terminating in moderately long, slender corneous claws; dorsal margins each with row of stiff setae increasing in length distally; mesial faces (Fig. 4B, D) each with row of short to long spiniform setae adjacent to ventral margin; ventral margins unarmed. Propodi each with

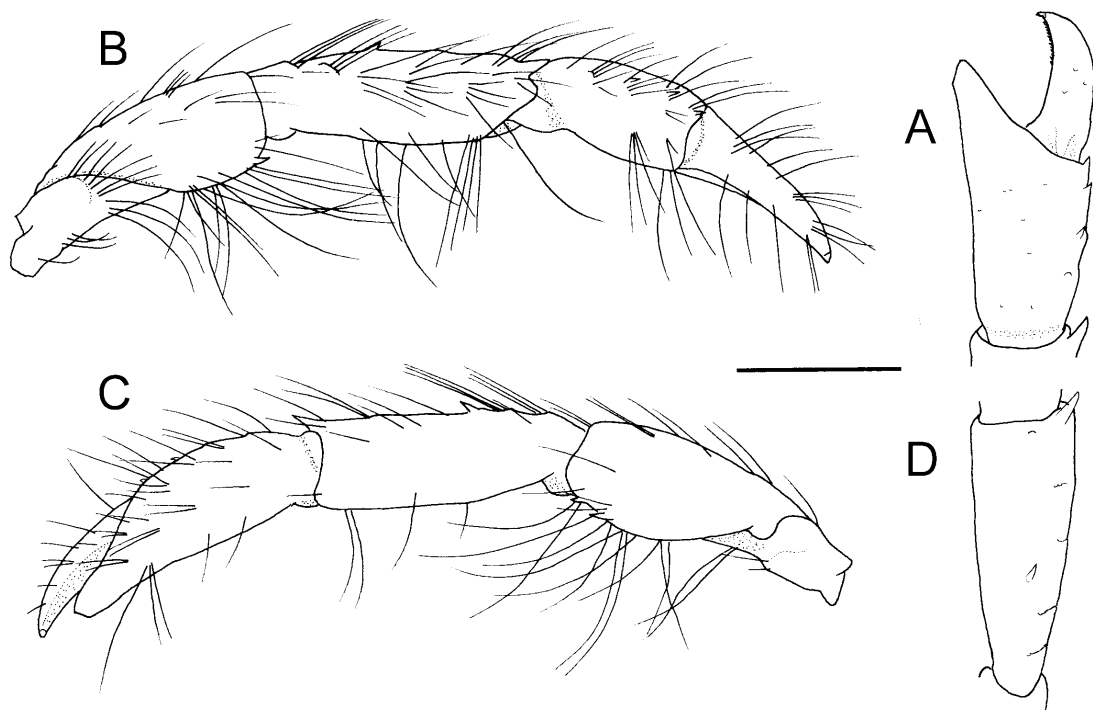


Fig. 3. *Catapaguoides tanseiae* sp. nov., holotype, male (sl 1.8 mm), CBM-ZC 12095. A, left chela, dorsal view (setae omitted); B, left cheliped, mesial view; C, same, lateral view; D, carpus of left cheliped, dorsal view (setae omitted). Scale bar: 1 mm.

elongate corneous spine flanked by 3 pairs of much shorter spiniform-setae on ventrodistal margin (second) or only with short corneous spine (third); dorsal and ventral margins with sparse, moderately long stiff setae. Carpi each with minute dorsodistal spine; sparse, short to moderately long setae on dorsal margin. Meri each with 1 minute distal spine on ventrolateral margin (second) or unarmed (third); dorsal margins each with row of short to moderately long setae; ventral margins with sparse long setae. Ischia with few setae on dorsal and ventral margins. Second pereopods with conspicuous notch on ventral margin at articulation between merus and ischium.

Fourth pereopods (Fig. 1G) semichelate; dactylus with several minute corneous teeth on ventral margin; propodal rasp consisting of corneous scales arranged in single row. Fifth pereopods semichelate.

Anterior lobe of thoracic sternite 6 (Fig. 1H) subsemicircular, unarmed, slightly skewed to left, bearing moderately short setae on anterior margin.

Male with moderately long sexual tube emanating from coxa of right fifth pereopod (Fig. 1I), directed from right to left, flattened in distal 0.3, curving dor-

sally along left lateral surface of posterior carapace. Coxa of left with short, papilla-like sexual tube directed anteromesially (Fig. 1J), partially obscured by adjacent tufts of short setae. Thoracic sternite 8 (Fig. 1I) with single broad lobe bearing dense short setae.

Telson (Fig. 1K) distinctly longer than wide, narrowed posteriorly in posterior half; no lateral indentations; posterior lobes distinctly asymmetrical, separated by small median cleft; terminal margins strongly oblique, left with 3 spinules and acute outer angle, right with 1 spinule and acute outer angle.

Female unknown.

Coloration in life. Shield generally orange, with darker tint laterally; posterior carapace translucent. Ocular peduncle light orange in distal half, whitish in proximal half, with red spots basally; cornea dark gray-brown. Antennular peduncle pale orange; flagella whitish. Antennal peduncle also generally pale orange; antennal acicle with red spot basally; flagellum whitish. Right cheliped mottled orange; carpus with large red spot on dorsal surface medially; merus with 3 red spots on lateral surface. Left cheliped similar to right cheliped. Ambulatory legs banded with or-

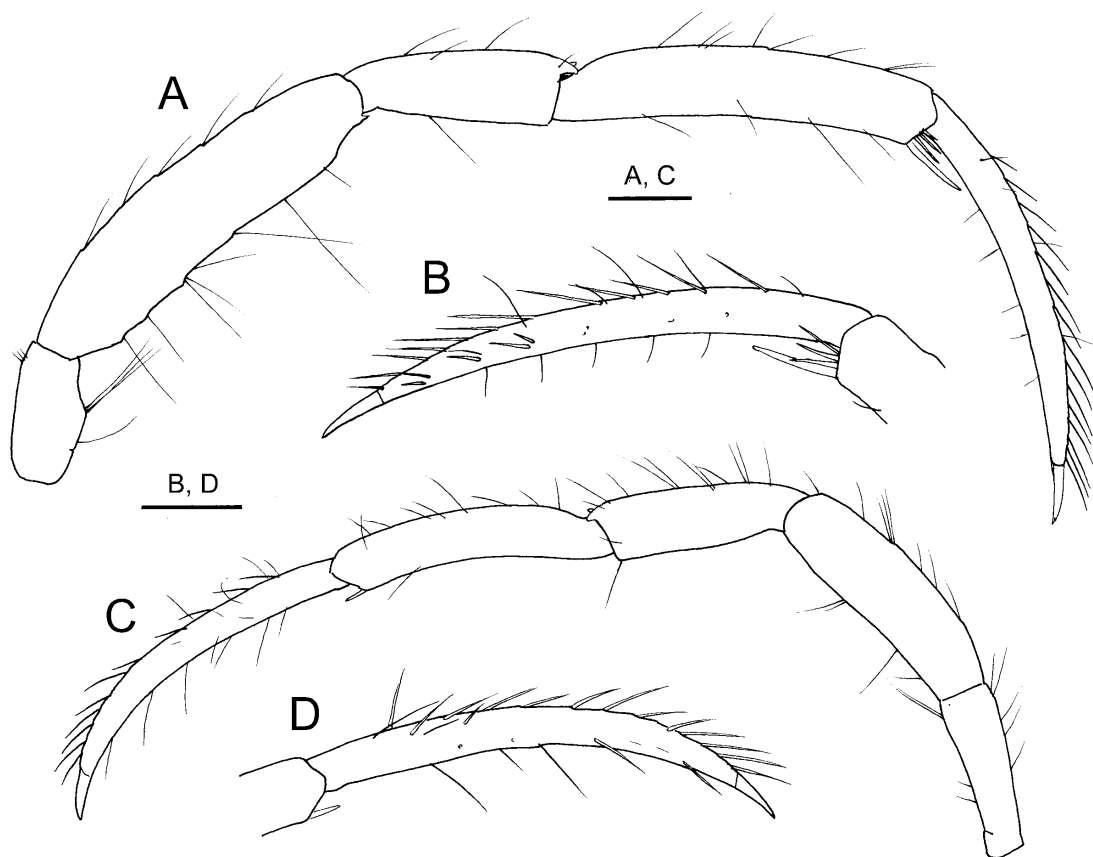


Fig. 4. *Catapaguroides tanseiae* sp. nov., holotype, male (sl 1.8 mm), CBM-ZC 12095. A, right second pereopod, lateral view; B, same, dactylus and distal part of propodus, mesial view; C, left third pereopod, lateral view; D, same, dactylus and distal part of propodus, mesial view. Scale bars: 0.5 mm.

ange, red and white; dactyli each with broad red median ring, whitish in distal to median ring, parts proximal to median ring alternated with white and red; propodi white in distal 0.2 and orange in proximal 0.8, each with moderately narrow red ring just proximal to white distal part; carpi generally orange, with white tinge distally and red spot on dorsal surface medially; meri generally orange, each with 2 red rings proximally and distal to midlength. See Fig. 5.

Distribution. Known only from the type locality in Sagami Bay, central Japan, at a depth of 146 m.

Housing. Gastropod shell. No association with other invertebrates was observed.

Remarks. *Catapaguroides* is heretofore represented by 28 species worldwide, 26 of which occur in the Indo-West Pacific (Komai and Rahayu, 2013). McLaughlin (2002) summarized the taxonomic history of the genus. Eleven species (40%) were described only in the last decade (Osawa and Takeda,

2004; Komai 2009; Komai et al., 2010; Komai and Rahayu, 2013), suggesting that inventory of species of the genus is far from complete. The present new species appears closest to *C. pectinipes*, possibly endemic to the Red Sea. Shared characters are: cornea normally developed, dilated; antennal peduncle overreaching distal corneal margin; right palm with small dorsomesial spines, but otherwise unarmed on dorsal surface; carpus of right cheliped approximately as long as palm; and carpus of left cheliped armed with spines (Lewinsohn, 1969). *Catapaguroides tanseiae* sp. nov. is readily distinguished from *C. pectinipes* by the lack of spines on the dorsal surface of the carpus of the right cheliped and the possession of a row of small spines on the dorsomesial margin of the palm of the left cheliped. In *C. pectinipes*, the carpus of the right cheliped bears a longitudinal row of four tiny spines on the dorsal surface; and the palm of the left cheliped is unarmed. Furthermore, in the new species, the carpus



Fig. 5. *Catapaguroides tanseiae* sp. nov., holotype, male (sl 1.8 mm), CBM-ZC 12095, entire animal in dorsal view, showing color in life.

of the left cheliped is armed with one spine on the dorsal surface somewhat posterior to the midlength and one moderately strong spine at the dorsomesial distal angle. On the other hand, in *C. pectinipes*, the carpus of the left cheliped is armed with three small spines, arranged in a longitudinal row, on the distal half of the dorsal surface, and with a small spine at the ventrolateral distal angle. The right sexual tube seems to be relatively longer in *C. tanseiae* sp. nov. than in *C. pectinipes* (cf. Lewinsohn, 1969: Fig. 14i).

Following the key by Komai and Rahayu (2013), the present new species is also placed close to *C. declivis* McLaughlin, 1997, known from Indonesia. However, *C. declivis* is characterized by the dactylus of the right cheliped bearing a weak dorsoproximal and dor-

somesial crest or ridge, a prominent dorsolateral row of spines on the right cheliped carpus, the carpus of the left cheliped bearing dorsolateral and dorsomesial rows of spines, and the strong spines on the terminal margins of the telson (McLaughlin, 1997).

From Japanese waters, the following seven species of *Catapaguroides* have been recorded: *C. cristimanus* de Saint Laurent, 1968, *C. foresti* McLaughlin, 2002, *C. fragilis* (Melin, 1939), *C. iejimensis* Osawa and Takeda, 2004, *C. japonicus* de Saint Laurent, 1968, *C. longior* Komai, Yamada and Shirakawa, 2010, and *C. umbla* Komai, 2009 (Melin, 1939; de Saint Laurent, 1968; Osawa and Takeda, 2004; Asakura, 2004; 2006; Komai, 2009; Komai *et al.*, 2010). None of them has been recorded from waters north to Boso Peninsula in the Pa-

cific side. From the Sea of Japan side, only *C. japonicus* was recorded from the southern part (off Hagi, Yamaguchi Prefecture; Komai *et al.*, 2002). All but *C. japonicus* occur in subtropical Ryukyu Archipelago and/or Ogasawara Islands, though the geographical range of *C. fragilis* extends to Sagami Bay. *Catapaguroides japonicus* has been recorded from Sagami Bay and Suruga Bay (de Saint Laurent, 1968; Komai and Takeda, 2006), in addition to off Yamaguchi Prefecture. The present new species represents the eighth of the genus known from Japanese waters, but its actual distribution remains unknown at present.

Etymology. Named after the JAMSTEC research vessel "Tansei-maru" in reference to the great contributions in documenting deep-sea fauna of waters around Japan. The vessel was retired on January 2013.

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相模湾から採集されたヒメヤドカリ属 (甲殻亜門：
十脚目：異尾下目：ホンヤドカリ科) の1新種

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神奈川県三浦市城ヶ島沖の水深 147 m から採集された雄標本 1 個体に基づき、ホンヤドカリ科ヒメホンヤドカリ属の新種 *Catapaguroides tanseiae* (新称：タンセイヒメホンヤドカリ) を記載した。本属には 28 種の既知種が知られるが、本新種はそれらのうち、紅海から知られる *C. pectinipes* (Lewinsohn, 1969) に最も類似する。しかし、本新種は、右鉗脚の腕節上面に棘を欠くなどの諸形質により、*C. pectinipes* から識別される。日本産の本属種としては 7 既知種が知られており、本新種は 8 種目となる。

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