

## A NEW SPECIES OF THE HERMIT CRAB GENUS *PAGURIXUS* MELIN (CRUSTACEA: DECAPODA: ANOMURA: PAGURIDAE) FROM THE INDO-WEST PACIFIC

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**ABSTRACT.** – A new species of hermit crab of the family Paguridae, *Pagurixus haigae*, is described on the basis of numerous specimens from Japan, Guam and Phuket, Thailand. It belongs to the *P. anceps* group characterized by the absence of two setal rows on the ventral surface of the ultimate segment of the antennular peduncle. Comparison of the new species with nine previously described species of the group is made. In life, the new species can be easily recognized by the characteristic color pattern. McLaughlin & Haig (1984) incorrectly identified this species as *P. laevimanus* (Ortmann, 1892).

**KEY WORDS.** – Crustacea, Decapoda, Anomura, Paguridae, *Pagurixus*, new species.

### INTRODUCTION

While studying material of hermit crabs obtained in shallow coral reefs of various localities in the Indo-Pacific, many specimens representing a species of *Pagurixus* were found that agreed well with the description of *Pagurixus laevimanus* of McLaughlin & Haig (1984). In their review of species of the *Pagurixus boninensis* group, Komai & Osawa (2006) examined the holotype of *Pagurixus laevimanus* (Ortmann, 1892) preserved in the collection of the Musée Zoologique, Strasbourg, France, and redescribed the species. Their study revealed that the holotype of *P. laevimanus* was actually distinct from a species identified as *P. laevimanus* by McLaughlin & Haig (1984) in many respects, including the presence of the two ventral setal rows on the ultimate segment of the antennular peduncle in the former and the absence of them in the latter. Komai & Osawa (2006) indicated that *P. laevimanus* of McLaughlin & Haig (1984) was an unnamed species of the *Pagurixus anceps* group. In this study, we describe a new species, *Pagurixus haigae*, for this unnamed species based on material from Japan, Thailand and Guam. The new species is compared with ten previously described species of the *P. anceps* group.

The holotype of the new species is deposited in the Natural History Museum and Institute, Chiba, Japan (CBM). The paratypes are deposited in CBM, the Florida Museum of Natural History, University of Florida, Gainesville, U.S.A.

(UF), and the Raffles Museum of Biodiversity Research, National University of Singapore, Republic of Singapore (ZRC). The shield length, abbreviated as SL, is measured from the tip of rostrum to the midpoint of posterior margin of the shield. For detailed observation of the surface structure on the integument, the specimens (including removed appendages) were stained with methylene blue. Mouthparts are not illustrated because there are no differences in many characters within the genus (Komai & Asakura, 1995; Morgan, 1993). Terminology used in the description, for the most part, follows that of McLaughlin (2003), with the exceptions of numbered thoracic sternites, pleon for abdomen, and dactylus (dactyli) for dactyl (dactyls).

### TAXONOMIC ACCOUNT

#### PAGURIDAE Latreille, 1802

#### *Pagurixus* Melin, 1939

#### *Pagurixus anceps* group

#### *Pagurixus haigae*, new species (Figs. 1–4)

*Pagurus* (*Pagurixus*) sp. – Ball & Haig, 1972: 103.

*Pagurixus laevimanus* – McLaughlin & Haig, 1984: 142, Fig. 7;  
Komai & Myorin, 2005: 2, 10 [not *Pagurixus laevimanus*  
(Ortmann, 1892)].

*Pagurixus* sp. 8 (pale) – Paulay et al., 2003: 490.

**Type material.** – Holotype: male (SL 1.9 mm) (CBM-ZC 8406), Japan, Bise-zaki, Motobu, Okinawa Island, Ryukyus, intertidal, under coral rock, coll. T. Komai, 23 Mar.2004.

**Paratypes: Japan:** 2 males (SL 1.3, 1.7 mm), 1 female (SL 1.8 mm) (CBM-ZC 8175), Kurio, Yakushima Island, Osumi Islands, subtidal, rocky reef, coll. T. Komai, 3 Jun.1996; 1 male (SL 1.3 mm), 2 females (SL 1.7, 1.7 mm), 1 juvenile (SL 1.2 mm) (CBM-ZC 8348), Maeda-misaki, Okinawa Island, intertidal, coral reef, coll. T. Komai, 16 Jun.1996; 2 males (SL 1.6, 1.7 mm) (CBM-ZC 8407), same data as holotype; 1 male (SL 1.2 mm), 4 ovigerous females (SL 1.1–1.6 mm) (CBM-ZC 8176), Bise-zaki, Okinawa Island, reef flat, intertidal, coll. T. Komai, 10 Jun.1995; 1 male (SL 1.7 mm) (CBM-ZC 8490), Uehara beach, Iriomote Island, Yaeyama Islands, intertidal, dead coral, coll. T. Komai, 16 Jul.2000; 2 males (SL 1.2, 1.2 mm), 1 female (SL 1.2 mm), 2 ovigerous females (SL 0.8, 1.2 mm) (ZRC), Urasoko Bay, Ishigaki Island, Yaeyama Islands, subtidal, 8 Mar.1999, trap, coll. Y. Takada.

**Guam:** 6 males (SL 0.9–1.7 mm), 2 females (SL 0.9, 1.0 mm), 3 ovigerous females (SL 1.0–1.1 mm), 1 juvenile (SL 1.0 mm) (UF 7307), Pago reef front, 4–8 m, under rubble in surge channels and pockets, 14 Aug.2000; 1 male (SL 1.7 mm), 1 ovigerous female (SL 1.5 mm) (UF 7308), same data; 5 males (SL 1.1–1.4 mm), 1 female (SL 0.8 mm) (UF 7309), Cocos, narrow windward reef flat at south end, 0.5–1.0 m, under rocks, 20 Aug.2000.

**Thailand:** 1 male (SL 1.6 mm), 1 ovigerous female (SL 1.5 mm) (CBM-ZC 8344), Cape Promthep, Phuket, intertidal, coll. T. Komai, 8 Nov.1995.

**Non-types: Guam:** 1 male (SL 0.9 mm), 1 female (SL 1.0 mm), 2 ovigerous female (SL 0.9, 1.1 mm) (UF 7292), south of Haputo, station HP-20, 6–9 m, under rubble, coll. R. Chang et al., 16 Aug.2000.

**Description.** – Shield (Fig. 2A) 1.1–1.2 times longer than broad; anterior margin between rostrum and lateral projections slightly concave or nearly straight; anterolateral margins sloping; posterior margin roundly truncate; dorsal surface with few tufts of short setae laterally. Rostrum triangular, distinctly overreaching lateral projections, moderately slender, terminating acutely. Lateral projections obtuse, each with small submarginal spinule.

Ocular peduncles (Fig. 2A) moderately stout, 0.6–0.8 length of shield, each with few tufts of short setae on dorsomesial surface; corneas slightly dilated, corneal width about 0.3 of peduncular length; basal part slightly inflated, subequal to corneal width. Ocular acicles subtriangular, each with small submarginal spine.

Antennular peduncles (Fig. 2A, B) overreaching distal margins of corneas by 0.2–0.3 length of ultimate segments. Ultimate segment with short seta at distolateral angle; ventral surface lacking rows of setae. Basal segment with small spine on distal margin of statocyst lobe. Ventral flagellum with few short setae on lateral and mesial margins.

Antennal peduncles (Fig. 2A) slightly overreaching distal margins of corneas. Second segment with small spine at dorsomesial distal angle; laterodistal projection short, not reaching midlength of fourth segment, terminating in simple or bifid spine. First segment with small laterodistal spine;

ventromesial distal margin strongly produced, but unarmed. Antennal acicle moderately short, arcuate, not reaching distal margin of cornea; mesial margin with few setae. Flagellum moderately long, exceeding 3.0 length of shield.

Right cheliped of males (Fig. 3A–D) massive, not particularly elongate. Chela subovate in dorsal view, 1.6–1.9 times longer than broad. Dactylus 0.7–0.9 of palm length; dorsomesial margin not delimited; surfaces with low protuberances or ridges; cutting edge with two very low calcareous teeth in proximal half and with trace of corneous teeth in distal half, terminating in calcareous claw. Palm slightly longer than carpus; convex dorsal surface apparently smooth but microscopically granular; dorsolateral margin varying from distinctly ridged to rounded; dorsomesial margin sharply to bluntly ridged in specimens of SL 0.9–1.5 mm, rounded in specimens of SL 1.3–1.9 mm; lateral, mesial and ventral surfaces also microscopically granular, occasionally with few tufts of short setae on ventral surface. Fixed finger with faintly delimited dorsolateral margin; cutting edge with row of low calcareous teeth, terminating in calcareous claw. Carpus subequal in length to merus, about 1.2 length of distal width; dorsolateral margin not delimited; dorsomesial margin weakly delimited by irregular row of small spines and/or low protuberances; all surfaces microscopically granular, lateral surface lacking longitudinal ridge; ventral surface notably convex, occasionally bluntly ridged laterally. Meral-carpal articulation lacking any pronounced clockwise rotation; dorsal surface of merus almost smooth, dorsodistal margin with row of stiff setae; lateral face microscopically granular, ventrolateral margin smooth; mesial face smooth, convex ventromesial margin smooth; ventral surface convex, smooth, only with few short setae. Ischium with smooth ventromesial margin; surfaces unarmed.

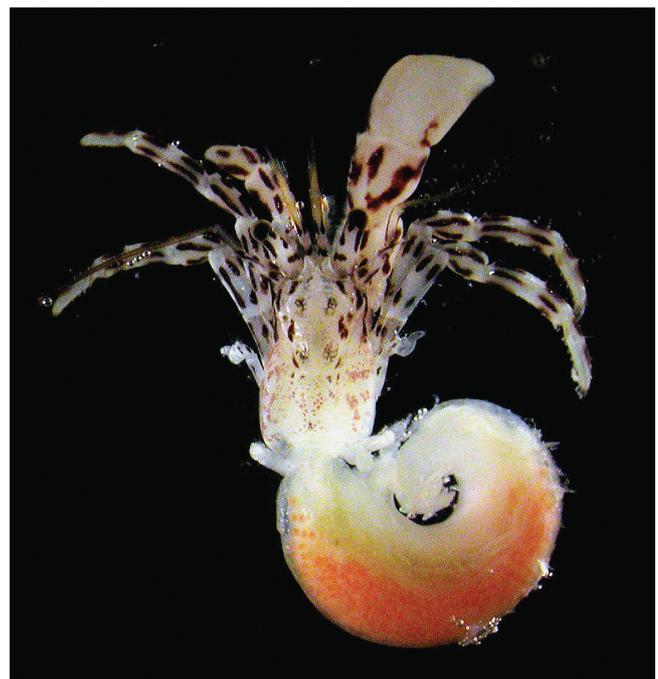


Fig. 1. *Pagurixus haigae*, new species: Holotype male (sl 1.9 mm), Okinawa Island, Ryukyu Islands (CBM-ZC 8406). Photo: T. Komai.

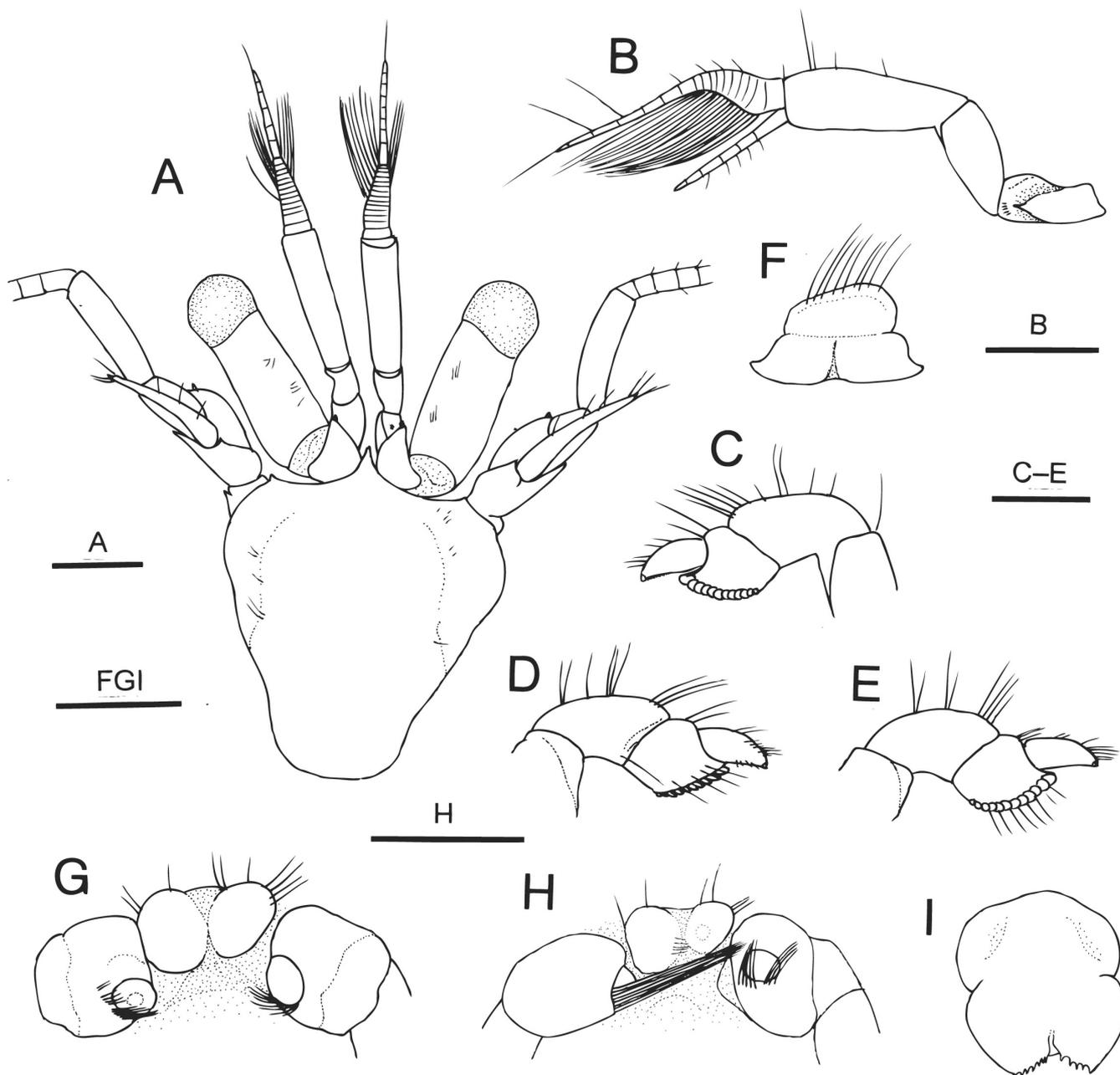


Fig. 2. *Pagurixus haigae*, new species: A, shield and cephalic appendages, dorsal view; B, left antennule, lateral view; C, left fourth pereopod, dactylus and propodus, lateral view; D, same, mesial view; E, right fourth pereopod, dactylus and propodus, lateral view; F, sixth thoracic sternite, ventral view; G, H, coxae of fifth pereopods and eighth thoracic sternite, ventral view; I, telson, dorsal view. A–G, I, holotype male (SL 1.9 mm), Okinawa Island (CBM-ZC 8409); H, paratype male (SL 1.3 mm), Yakushima Island (CBM-ZC 8348). Scale bars: 0.5 mm.

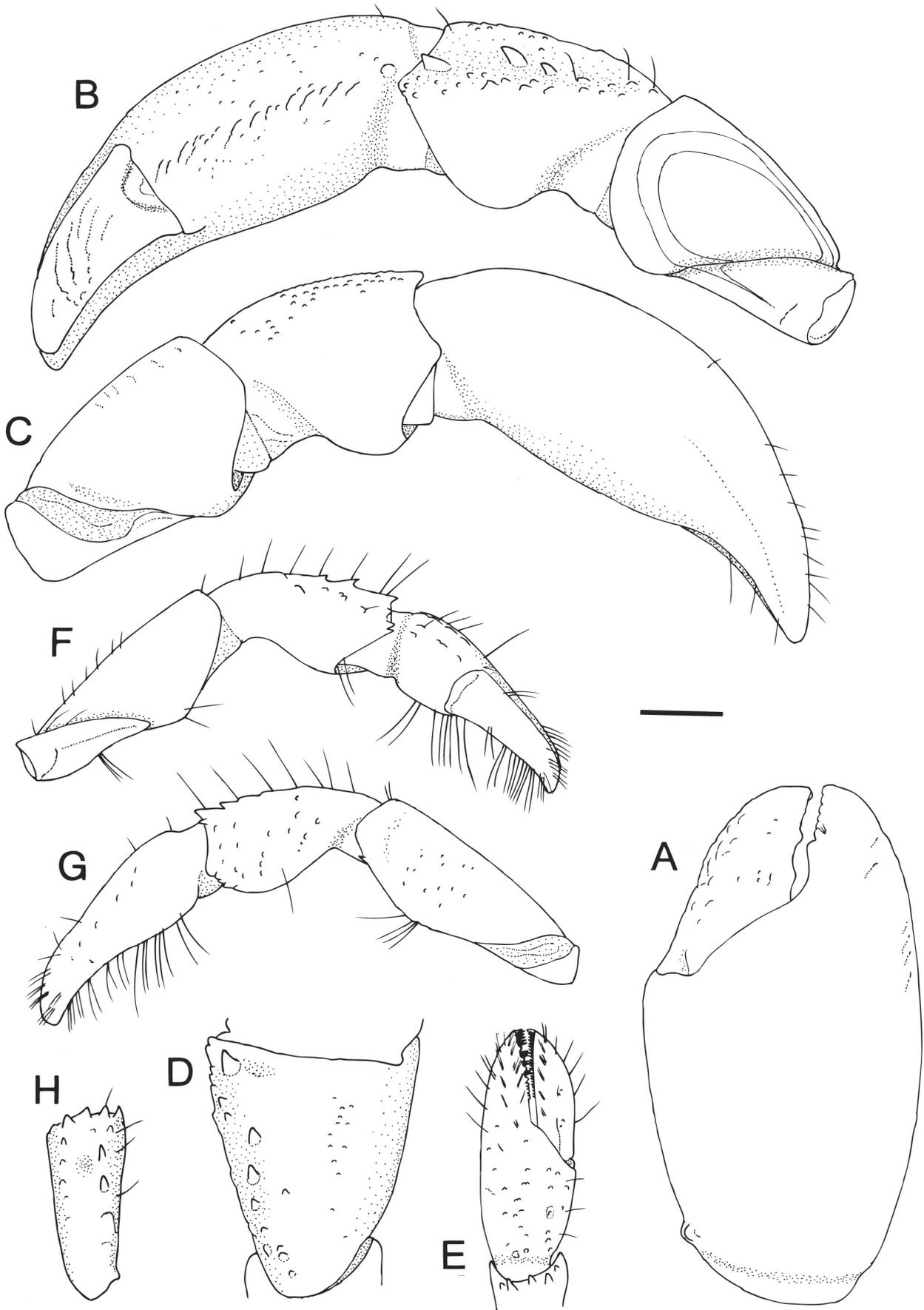


Fig. 3. *Pagurixus haigae*, new species, holotype male (SL 1.9 mm), Okinawa Island (CBM-ZC 8409): A, right chela, dorsal view; B, entire right cheliped, mesial view; C, same, lateral view; D, carpus of right cheliped, dorsal view; E, left chela; F, entire left cheliped, mesial view; G, same, lateral view; H, carpus of left cheliped. Scale bar: 0.5 mm.

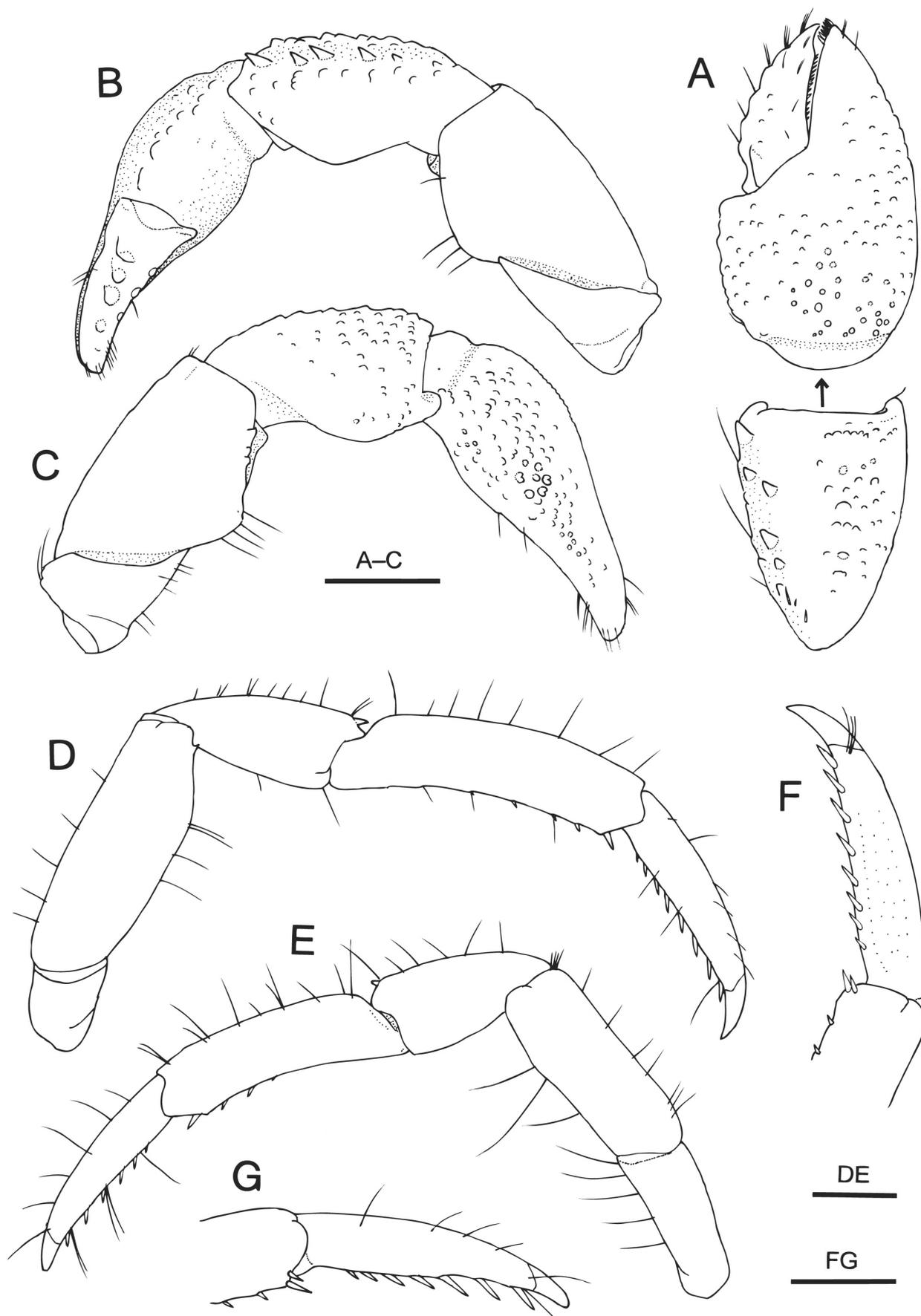


Fig. 4. *Pagurixus haigae*, new species: A, right cheliped, chela and carpus, dorsal view; B, entire right cheliped, mesial view; C, same, lateral view; D, right second pereopod, lateral view; E, left third pereopod, lateral view; F, right second pereopod, dactylus and distal part of propodus, mesial view; G, left third pereopod, dactylus and distal part of propodus, mesial view. A–C, paratype female (SL 1.7 mm), Okinawa Island (CBM-ZC 8348); D–G, holotype male (SL 1.9 mm), Okinawa Island (CBM-ZC 8409). Scale bar: 0.5 mm.

Right cheliped of females (Fig. 4A–C) moderately stout for genus. Chela subovate in dorsal view, 1.5–1.7 times longer than broad. Dactylus subequal in length to palm; dorsal surface weakly convex, with few small tubercles, dorsomesial margin delimited by row of short, oblique ridges or low protuberances; mesial and ventral surfaces smooth; cutting edge with row of small corneous teeth on distal 0.8, terminating in small corneous claw. Palm shorter than carpus; weakly convex dorsal surface with few very small tubercles; dorsolateral margin delimited by distinct ridge extending to tip of fixed finger, dorsomesial margin delimited by row of short oblique ridges or entire, occasionally granular ridge; lateral and mesial faces smooth. Cutting edge of fixed finger with row of small calcareous teeth over entire length, terminating in small corneous claw. Carpus slightly shorter than merus and 1.4–1.5 times longer than distal width; dorsal surface with small spines or granules laterally and two or three prominent spines distomesially followed by row of small tubercles; dorsolateral margin not clearly delimited; lateral face nearly perpendicular, devoid of longitudinal ridge. Merus smooth on dorsal surface; ventrolateral and ventromesial margins smooth. Ischium unarmed.

Left cheliped (Fig. 3E–H) moderately short and stout, generally similar between male and female. Chela 2.5–2.6 length of width, 1.2–1.4 length of carpus. Dactylus longer than palm, with sparse tufts of setae on surfaces; dorsal surface smooth or with few very small tubercles; cutting edge with row of small corneous teeth, terminating in small corneous claw. Palm about half length of carpus; dorsal surface convex, with irregular rows of small, low tubercles on midline and adjacent to dorsomesial margin; dorsolateral margin not delimited, dorsomesial margin weakly delimited by row of low tubercles; lateral, mesial and ventral surfaces nearly smooth, with scattered long setae on ventral surface. Cutting edge of fixed finger with short row of small calcareous teeth interspersed by small corneal teeth, terminating in small corneous claw. Carpus moderately slender, somewhat compressed laterally, 0.7–0.8 length of chela and shorter than merus; length 2.2–2.5 of distal width and 1.8–2.1 of greatest height; dorsolateral margin with row of small tubercles, dorsomesial margin with row of three or four small spines; dorsodistal margin with three to five small spines; lateral face nearly perpendicular, with scattered very low, small tubercles but without trace of median ridge, ventrolateral distal margin with two or three small tubercles; mesial face with some low, small protuberances adjacent to dorsomesial margin; scattered long setae on mesial and ventral surfaces. Merus smooth on dorsal surface, dorsodistal margin unarmed; lateral face faintly granular, ventrolateral margin usually with small subdistal spine; mesial face smooth, ventromesial margin smooth; ventral surface weakly convex, smooth, with few long setae. Ischium unarmed.

Ambulatory legs (Fig. 4D, E) moderately slender, similar from right to left. Dactyli (Fig. 4F, G) 0.8–1.0 length of propodi, 4.5–5.2 times longer than high, terminating in large corneous claws; dorsal surfaces each with sparse short setae; lateral and mesial faces each with few tufts of short setae, mesial faces unarmed; ventral margins each with five to eight

long corneous spines notably increasing in size distally. Propodi not tapering distally, 3.4–4.2 times longer than high; dorsal surfaces nearly smooth, each with row of sparse long setae; lateral faces smooth; ventral margins each with row of two or three corneous spinules, ventrodistal margins each with paired corneous spines. Carpi each usually with small dorsodistal spine; dorsal surfaces smooth, each with row of sparse short setae. Meri with smooth dorsal and ventral margins each bearing row of sparse setae; lateral surfaces nearly smooth; ventrolateral distal margins each with small subdistal spine (second) or unarmed (third).

Fourth pereopods (Fig. 2C–E) subequal and similar from right to left in both males and females. Dactyli moderately broad, terminating in small corneous claws; dorsal margins with some short setae. Propodi with few setae on dorsal margins; mesial faces nearly flat or slightly convex, with few short setae. Carpi without prominent tufts of setae on mesial faces near ventrodistal margins.

Anterior lobe of sixth thoracic sternite (Fig. 2F) subrectangular, occasionally skewed to left, with row of short setae on anterior margin. Eighth thoracic sternite (Fig. 2G) composed of two slightly unequal, closely set, rounded lobes (right lobe larger than left); ventral surface of each lobe flattened.

Males with coxae of fifth pereopods slightly unequal (Fig. 2G, H); right with prominent tuft of setae passing to left coxa (Fig. 2H) or greatly reduced tuft of setae not reaching to left coxa in largest specimens (Fig. 2G); papilla-like protrusion of vas deferens occasionally present. Left coxa with gonopore partially masked by tuft of short setae. Female with unpaired left gonopore.

Telson (Fig. 2I) with terminal margins nearly horizontal to oblique, each bearing three to five very small spines.

**Variation.** – High degree of variability in the delineation of the dorsomesial margin of the right palm and in the development of the setal tuft on the coxa of the male right fifth pereopod is seen in this new species. The dorsomesial margin of the right palm of males is distinctly ridged in the specimens of SL 0.9–1.5 mm, while it is bluntly ridged or rounded in specimens of SL 1.3–1.9 mm. The setal tuft of the coxa of the right fifth pereopod is prominent in the specimens of SL 0.9–1.7 mm, but it is markedly reduced in the largest specimens of SL 1.7–1.9 mm. It can be said that the reduction of the delineation of the dorsomesial margin of the right palm and of the development of the setal tuft on the coxa of the right fifth pereopod are related to increases in animal size.

**Colouration.** – In life (Fig. 1). Body and appendages generally white with dark brown markings. Shield with four or five pairs of dark brown spots or short longitudinal bars; anterior part of branchiostegite with brown longitudinal stripe along dorsal margin. Ocular peduncles each with three short longitudinal stripes (one mesial and two lateral) in distal half and one short transverse band basally. Ultimate segment of

antennular peduncle with lateral and mesial stripes dorsally; penultimate segment with brown blotch basally. Fifth segment of antennal peduncle with lateral and mesial stripes; first to fourth segments of antennal peduncle each with one or two spots; antennal flagellum light brown. Palm of right cheliped with longitudinal stripe on mesial surface and large blotch on ventral surface mesially; carpus with three short longitudinal stripes on dorsal surface (one lateral and two mesial); lateral and mesial faces of carpus each with oblique broad stripe; lateral and mesial faces of merus at least with two longitudinal stripes respectively (dorsal stripes adjacent to dorsal margin, second stripes occasionally interrupted at middle); ischium with scattered spots on surfaces. Marking of left cheliped generally similar to that of right cheliped; dactylus with spot basally; palm with two or three dorsal and one lateral stripes. Dactyli of ambulatory legs each with dorsal stripes at least in proximal half; propodi with two or three pairs of separated stripes visible in lateral view (one on dorsal surface, one on lateral surface and one on ventral surface); carpi each with three stripes visible on lateral view, dorsal stripe interrupted at middle; meri each with two dorsal spots and one lateral median stripe and one or two ventral spots visible in lateral view.

**Distribution.** – Southern Japan (Osumi Islands to Ryukyu Islands), Mariana Islands (Guam) and New Guinea in the western Pacific; Phuket, Thailand in the eastern Indian Ocean; intertidal to nine meters.

**Etymology.** – This new species is dedicated to the late J. Haig, for her valuable contributions to the systematics of the anomuran Crustacea.

**Remarks.** – *Pagurixus haigae*, new species, belongs to the *P. anceps* group (Komai & Osawa, 2006), characterized by the absence of setal rows on the ultimate segment of the antennular peduncle. The group includes the following ten known species: *P. amsa* Morgan, 1993, *P. anceps* (Forest, 1954), *P. fasciatus* Komai & Myorin, 2005, *P. granulimanus* Morgan, 1993, *P. handrecki* Gunn & Morgan, 1992, *P. hectori* (Filhol, 1883), *P. jerviensis* McLaughlin & Haig, 1984, *P. kermadecensis* de Saint Laurent & McLaughlin, 2000, *P. longipes* Osawa, Fujita & Okuno, 2006, and *P. stenops* Morgan, 1993. Since morphological variations partially overlap among particular species, differences between all other known species in this group and *P. haigae*, new species, are discussed below.

*Pagurixus amsa* differs from *P. haigae* in the more numerous ventral spines on the ambulatory dactyli (eight to 11 versus five to eight) and much stronger spines on the terminal margins of the telson (Morgan, 1993). Furthermore, the dorsomesial surface of the right palm is always rounded in *P. amsa*. The coloration in life is also quite different between the two species. The ambulatory legs of *P. amsa* are banded in cream and salmon-brown with deep-red brown longitudinal stripes dorsally and ventrally on the dactylus, propodus, carpus and merus and dorsolaterally on the carpus (Morgan, 1993).

*Pagurixus anceps* is distinguished from *P. haigae*, new species, in the relatively stout ambulatory legs and the distinctly produced ventrodiscal margin of the carpus of the left third pereopod (Forest, 1954; McLaughlin & Haig, 1984; personal observation). Furthermore, the carpus of the right cheliped of full grown males of *P. anceps* is devoid of dorsomesial spines, which are present in *P. haigae*, new species. The dorsomesial surface of the right palm is always rounded in *P. anceps*. The coloration in life is also different between the two species (personal observation). The base color of the ambulatory legs is white in both species, but the legs of *P. anceps* have tan rings each with darker dorsal and ventral borders (the numbers of the rings are: one proximal ring on the dactyli, two on the propodi, one or two on the carpi and one or two on the meri).

*Pagurixus fasciatus* closely resembles *P. haigae*, new species, in many diagnostic aspects. However, the ocular peduncles are proportionally more slender in *P. fasciatus* than in *P. haigae*, new species (3.0–3.5 times longer than the corneal width versus 2.5–3.0 times). The dorsolateral margin of the carpus of the left cheliped is armed with a row of several small spines in *P. fasciatus*, whereas it is armed only with one or two subdistal spines in *P. haigae*, new species. Supplemental characters that can help to differentiate the two species are the conformation of the dorsomesial margin of the right palm in males and the number of the ventral spines on the ambulatory dactyli. The dorsomesial margin of the right palm is strongly produced and sharply crested in *P. fasciatus*, but it is not markedly produced, and varies from distinctly carinate to rounded in *P. haigae*, new species. Although the numbers of the ventral spines on the ambulatory dactyli greatly overlap between the two species, *P. fasciatus* can have nine spines at most, rather than eight in *P. haigae*, new species. Despite the high degree of morphological similarities, the coloration in life is quite distinct between the two species. The ambulatory legs of *P. fasciatus* are banded in white and dark brown (see Komai & Myorin, 2005).

Morgan (1993) pointed out that his new species, *P. granulimanus*, resembled *P. laevimanus* of McLaughlin & Haig (1984), which we interpret to represent the present new species, in many respects. Nevertheless, *P. granulimanus* is easily distinguished from *P. haigae* by characters of the right cheliped and ambulatory legs. The chela and carpus of the right cheliped of *P. granulimanus* are covered with small, acute granules, particularly notable on the ventral surface of the palm. The counterparts of *P. haigae* are at most very weakly granular. The ventral spines on the ambulatory dactyli are more numerous in *P. granulimanus* than in *P. haigae* (eight to 11 versus five to eight). As Morgan (1993) noted, *P. granulimanus* attains larger sizes than *P. haigae*; the largest specimen of the former species recorded is 3.4 mm in shield length, but that of the latter is 2.1 mm. The coloration in life is also different between the two species. The ambulatory legs of *P. granulimanus* are mostly cream or pale orange-pink, and are provided with thin red longitudinal stripes and deeper orange shading on the lateral surfaces (Morgan, 1993).

*Pagurixus handrecki* is differentiated from *P. haigae*, new species, by the more spinose carpus of the right cheliped and the more numerous (eight to 14) spines on the ambulatory dactyli (Gunn & Morgan, 1992). The dorsodistal margin of the carpus of the right cheliped is armed with varying numbers and sizes of spines in *P. handrecki*, whereas it is nearly smooth in *P. haigae*, new species; spines on the dorsomesial margin are stronger in *P. handrecki* than in *P. haigae*, new species; the dorsal surface lateral to the midline is armed with irregular row of spines in *P. handrecki*, rather than very small granules in *P. haigae*, new species. Furthermore, the palm of the female right cheliped is armed with a row of large spines on both dorsolateral and dorsomesial margins in *P. handrecki*, in contrast to almost smooth on both margins in *P. haigae*, new species. The coloration in life is also different between the two species. The ambulatory legs of *P. handrecki* have distinct longitudinal red or red-brown stripes on the paler pink background; the dactyli are cream distally and other segments are cream distally and proximally.

*Pagurixus hectori* is immediately separated from *P. haigae*, new species, by the carpus of the right cheliped that is armed with a prominent row of tubercles on the dorsomesial margin, the rounded dorsomesial surface of the right palm, and the more numerous ventral spines on the ambulatory dactyli (there are seven to 14 spines) (McLaughlin & Haig, 1984; de Saint Laurent & McLaughlin, 2000). Furthermore, the ocular peduncles seem to be proportionally shorter in *P. hectori* than in *P. haigae*, new species (0.5–0.6 of the shield length versus 0.6–0.8), although the length increases with the growth; and *P. hectori* attains a much larger size than *P. haigae*, new species, does (the largest specimen recorded in 6.7 mm in SL versus 2.1 mm). The coloration in life is also quite different between *P. hectori* and *P. haigae*. The ambulatory legs of *P. hectori* have pale blue, dark brown, and pale orange bands distally on each segment (Schembri & McLay, 1983; de Saint Laurent & McLaughlin, 2000).

*Pagurixus jerviensis* is distinguished from *P. haigae*, new species, by the proportionally shorter dactyli of the ambulatory legs (about 0.6–0.8 of the propodi length versus 0.8–1.0) and the terminal margins of the telson each of which is armed with two to four moderately large spines and one to three smaller spines (McLaughlin & Haig, 1984; Gunn & Morgan, 1991). The dorsomesial surface of the right palm is always rounded in *P. jerviensis*. The ventral spines on the ambulatory dactyli tend to be more numerous in *P. jerviensis* than in *P. haigae* (five to eight versus seven to 10), although the ranges of variation partially overlap. The coloration in life is also distinct between the two species. The ambulatory legs of *P. jerviensis* have dark orange dorsal and ventral stripes, and additional orange bands distally on the meri, medially on the propodi and proximally on the dactyli (McLaughlin & Haig, 1984).

*Pagurixus kermadecensis* is readily separated from *P. haigae*, new species, by the lack of a dorsomesial row of spines on the carpus of the right cheliped and by the more numerous

ventral spines on the ambulatory dactyli (there are nine to 12 spines) (de Saint Laurent & McLaughlin, 2000). The dorsomesial surface of the right palm is always rounded in *P. kermadecensis*. The coloration in life is also quite different between the two species. In preservative, the greater part of the ambulatory legs of *P. kermadecensis* are red (de Saint Laurent & McLaughlin, 2000).

*Pagurixus longipes* is immediately distinguished from other species of the *P. anceps* group by the very elongate chelipeds and ambulatory legs. The coloration in life is very different between *P. longipes* and *P. haigae*, new species. The chelipeds and ambulatory legs of *P. longipes* are pale brown or semitransparent reddish brown, with no distinct markings (Osawa et al., 2006).

*Pagurixus stenops* is distinctive in having exceptionally elongate and slender ocular peduncles for the genus, which are only slightly shorter than the shield; the length attains 4.0 times the corneal width. Furthermore, the dorsomesial margin of the right palm provided with a spinulose ridge and the spinulose dorsolateral surface of the carpus of the right cheliped distinguish *P. stenops* from *P. haigae*, as well as most other species of the *P. anceps* group. The colouration in life is unknown for *P. stenops*.

Although we have not examined the specimens identified as *P. laevimanus* by McLaughlin & Haig (1984), the diagnosis given by them agrees well with our specimens of *P. haigae*, new species, including those from Guam initially identified as *P. laevimanus* by Dr. P. A. McLaughlin. McLaughlin & Haig (1984) showed that specimens referred to *Pagurus (Pagurixus)* sp. by Ball & Haig (1972) from New Guinea represented the same species as they believed to be *P. laevimanus*. Therefore, the reference is included in the synonymy of this new species. Minei (1973) recorded *Pagurixus laevimanus* (as *Pagurus laevimanus*) from Okinawa Island, the Ryukyu Islands. He gave no morphological information of the Okinawa specimen. Minei's specimen could not be located, and therefore, it is impossible to assume what species he was actually reporting. Nevertheless, the present new species is common in shallow coral reefs in Okinawa Island, and therefore, it is likely that Minei's specimen actually represents *P. haigae*.

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## NOTE:

After this manuscript was accepted for publication, two new species of the *Pagurixus anceps* group have been described (Komai, 2006; Komai & Takada, 2006). *Pagurixus patiae* Komai, 2006, can be distinguished from *P. haigae*, new species, by the markedly dissimilar fourth pereopods, of which the left has a prominent tuft of setae on the dactylus, and the proportionately shorter dactyli of the ambulatory legs. *Pagurixus nanus* Komai & Takada, 2006, differs from *P. haigae* in the possession of one or two subproximal dorsal spines on the carpi of the second pereopods. The coloration in life is also different among the three species (see Komai, 2006; Komai & Takada, 2006).

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