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J2667

Rhynchocinetes concolor, a New Shrimp (Caridea:
Rhynchocinetidae) from the Indo-West Pacific

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Reprinted from

the Proceedings of the Japanese Society of Systematic Zoology

No. 52

Issued December 25, 1994

Rhynchocinetes concolor, a New Shrimp (Caridea: Rhynchocinetidae) from the Indo-West Pacific

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ABSTRACT A new rhynchocinetid shrimp, *Rhynchocinetes concolor* sp. nov., is described and illustrated on the basis of 12 specimens from the Ryukyu Islands of southern Japan, Papua New Guinea and the northern Australian waters. It is characterized and readily distinguished from the close congeners by having the distinctive life-coloration, the unique arrangement of ventral rostral teeth and the combination of the morphological characters in the antennular peduncle, the antennal scale and the carpi and the dactyli of ambulatory pereopods.

The shrimps belonging to the monogeneric caridean family Rhynchocinetidae are distinguishable from the other carideans by having the typically movable rostrum articulated with carapace and the transverse fine striae covering the carapace and abdominal somites. The genus of *Rhynchocinetes* has been represented by twelve species from the Indo-Pacific region and a single species from the Atlantic Ocean.

In recent publications with beautiful underwater photographs (KAMEZAKI *et al.*, 1988; STEENE, 1990) has been recorded an unidentified rhynchocinetid species, which is characterized by a uniform orange color with two pale white oblique bands on the abdominal somites. I have been able to examine several specimens corresponding to the species in question from various tropical and subtropical localities of the Indo-West Pacific. These materials cannot be assigned to any of the previously described species in regard to the morphology and the color in life. Therefore, the present species is described herein as new to science on the basis of 5 males, 3 females and 4 ovigerous females, under the name of *Rhynchocinetes concolor*.

Materials and Methods

All the specimens of the new species were captured at the rocky reefs shallower than 20 m depth with SCUBA diving. The type materials are deposited in the following institutions: NSMT—National Science Museum, Tokyo, Japan; NTM—Northern Territory Museum, Darwin, Australia; SUF—Shimonoseki University of Fisheries, Shimonoseki, Japan; YCM—Yokosuka City Museum, Yokosuka, Japan.

Comparative materials are as follows:

R. hendersoni: 2♂♂ 10.3 & 12.4 mm CL (NSMT-Cr 1717), Kawana Harbor, east coast of Izu Peninsula, Honshu, Japan.

R. hiatti: 1 ovig. ♀ 10.6 mm CL (NSMT-Cr 1723); 1♀ 12.7 mm CL (NSMT-Cr 1756), Guam Island, Mariana Islands.

R. rigens: 1♂ 9.4 mm CL (NSMT-Cr 2165); 1♂ 10.3 mm CL (NSMT-Cr 2158), Hizushi-hama, Aka-jima Islet, Kerama Group, Ryukyu Islands.

R. striatus: 1♂ 8.7 mm CL (YCM-CM 977), Nishikomi, Amami-Oshima Is-

land, Amami Islands. 1 ovig. ♀ 18.8 mm CL (NSMT-Cr 2159). Hizushi-hama, Aka-jima Islet, Kerama Group, Ryukyu Islands.

The postorbital carapace length is abbreviated as CL. The rostral length is measured from the apex to the proximal articulation.

Systematic Account

Rhynchocinetes H. MILNE-EDWARDS, 1837

Rhynchocinetes concolor sp. nov.

(New Japanese name: Hibotan Sarasa-ebi)

(Figs. 1-2, 3 A, 4 A-D)

Rhynchocinetes hiatti: KAMEZAKI *et al.*, 1988, p. 71, unnumbered fig. (non HOLTHUIS & HAYASHI, 1967).
Rhynchocinetes sp., STEENE, 1990, pp. 76, 313, unnumbered fig.

TYPE SERIES: *Holotype*. Female, 7.4 mm CL (NSMT-Cr 2166), 26°11.2' N, 127°16.8' E, Hizushi-hama, Aka-jima Islet, Kerama Group, Ryukyu Islands, 3 m depth, May 20, 1993.

Paratypes. 11 specimens. **Japan**. Amami Islands. 1♂ 12.9 mm CL (YCM-CM 975), 28°11.0' N, 129°11.0' E, Hamasaki, Kakeroma-jima Island, 7 m depth, August 30, 1993; 1♂ 14.4 mm CL (YCM-CM 976), 28°13.9' N, 129°10.1' E, Nishikomi, Amami-Oshima Island, 15 m depth, August 31, 1993. Ryukyu Islands. 1♀ 16.0 mm CL (NSMT-Cr 2222), 26°23.2' N, 126°47.7' E, off Hiyajo, Kume-jima Island, 5 m depth, November 23, 1992; 1♂ 15.7 mm CL (SUF 530-2-1679), 24°25.8' N, 123°45.9' E, Unari-zaki, Iriomote-jima Island, Yaeyama Group, 10 m depth, September 5, 1982. — **Papua New Guinea**. 2 ovig. ♀♀ 14.8 & 15.6 mm CL (NTM. Cr. 009511), 5°8.5' S, 145°49.7' E, Pik Island, Madang, 12-17 m depth, October 31, 1991. — **Australia**. Queensland. 1♂ 10.8 mm, 1♀ 13.4 mm & 2 ovig. ♀♀ 11.7 & 13.7 mm CL (NTM. Cr. 010307), 9°58.8' S, 144°42.3' E, eastside of Boot Reef, Coral Sea, January 28, 1993. Western Australia. 1♂ 9.4 mm CL (NTM. Cr. W17528), 12°18' S, 123°17' E, Cartier Reef, Timor Sea.

Description. A rather robust rhynchocinetid shrimp of subcylindrical body form (Fig. 1). Carapace (Fig. 2 A) with many fine transverse striae; depth of carapace 0.8-0.9 times as long as carapace; its anterior width 0.6-0.7 times as long as length. Three acute teeth on dorsal carina behind rostral articulation, anterior tooth largest of all; antennal spine acutely produced, considerably exceeding anterior margin of carapace; pterygostomial angle rounded, without spine.

Rostrum (Fig. 3 A) well developed, incompletely articulated with carapace, distinctly exceeding antennal scale; length 1.3-1.8 times as long as carapace, distinctly upturned distally; lateral carina distinct, reaching proximal third of rostrum, continuous with upper orbital margin; dorsal margin with two large proximal teeth, second tooth at end of proximal one third of rostral length, two small teeth subterminally; ventral margin with 9-11 (usually 11) teeth, proximal 4 teeth sharply acute, directed distinctly forwards, third tooth exceeding well beyond tip of fourth tooth, separated by the considerable interval from proximal tooth of distal series, distal 5-7 (usually 7) teeth small, equidistant, ultimate tooth subterminal.

Abdominal somites (Fig. 2 B) also with fine striae similar to those of carapace; pleurae of first three somites rounded; fourth somite with small protrusion postero-

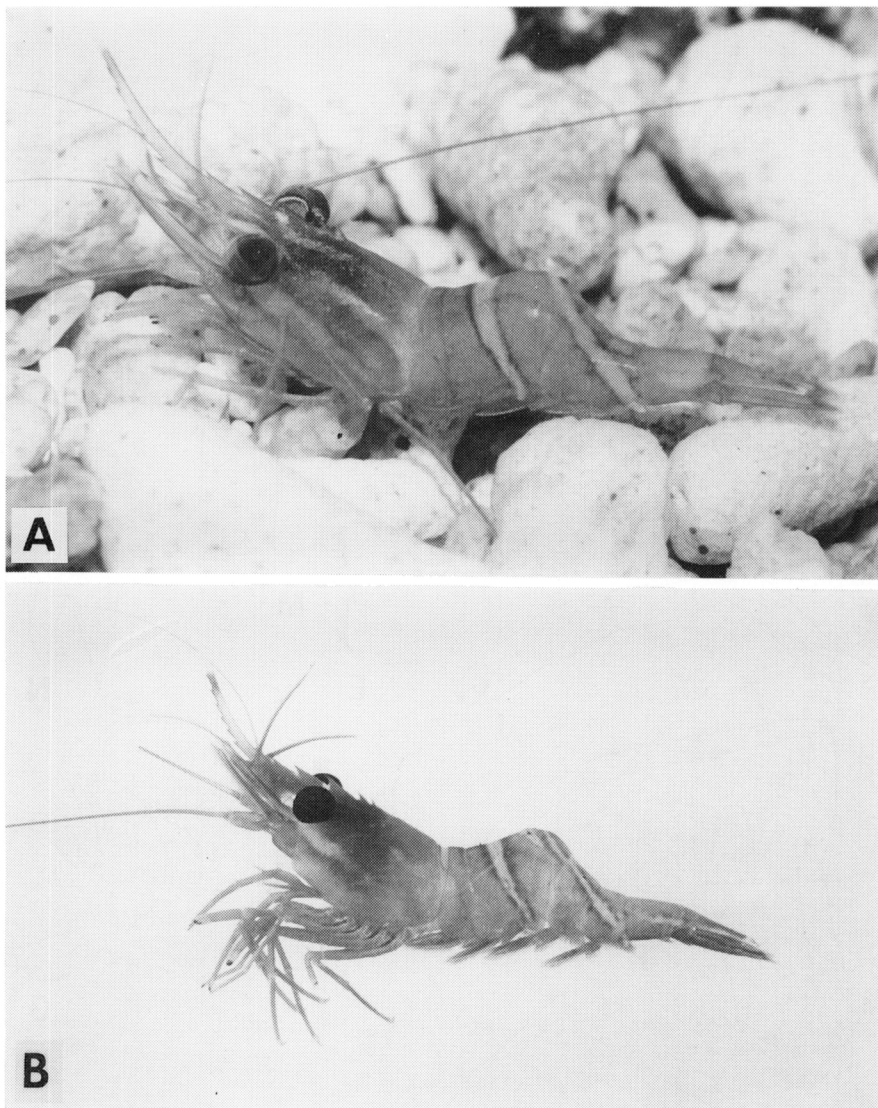


Fig. 1. *Rhynchocinetes concolor* sp. nov.—A, Holotype, alive, in aquarium (NSMT-Cr 2166, 7.4 mm CL); B, male paratype, fresh, lateral view (YCM-CM 975, 12.9 mm CL).

ventrally; fifth somite with an acute posteroventral protrusion directed posteriorly; posterolateral margin of fourth and fifth somites each with acutely pointed tooth directed backwards respectively; sixth somite more or less compressed, 0.5–0.6 times as long as carapace, with a sharply acute spine directed obliquely backwards just in front of base of uropod, with a sharply acute anal spine between uropodal basicerites.

Telson (Fig. 2 C) 0.6–0.7 times as long as carapace, 1.1–1.3 times as long as sixth abdominal somite, rather convex dorsally; dorsal surface with three pairs of small

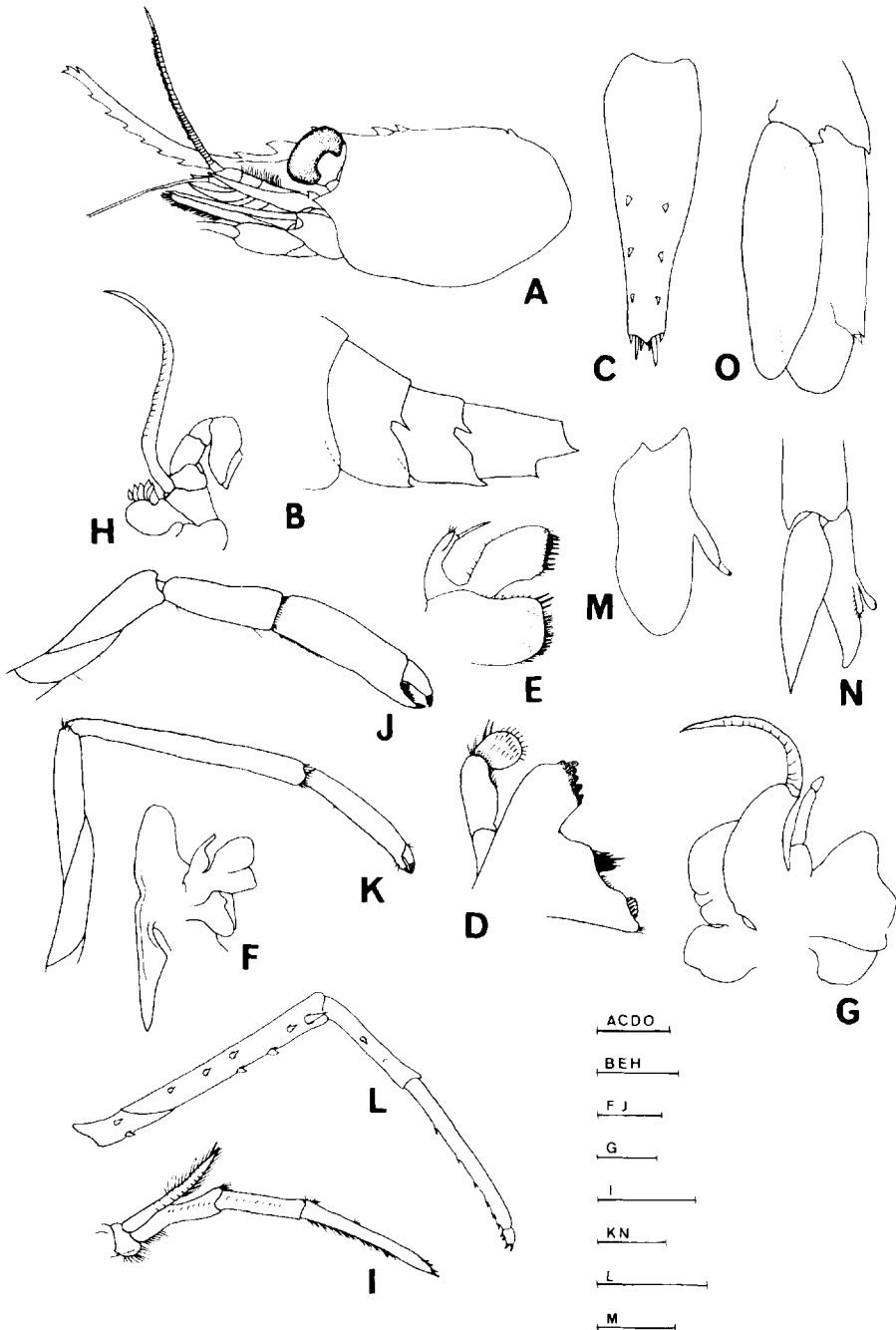


Fig. 2. *Rhynchocinetes concolor* sp. nov., male paratype (YCM-CM 975, 12.9 mm CL). — A, Anterior part of body; B, fourth to sixth abdominal somites; C, telson; D, mandible; E, first maxilla; F, second maxilla; G, first maxilliped; H, second maxilliped; I, third maxilliped; J, first pereopod; K, second pereopod; L, third pereopod; M, endopod of first pleopod; N, second pleopod; O, uropod. Scales for A, B, I, L: 5 mm; C, F, J, K, M, N: 2 mm; D, E, G, O: 1 mm.

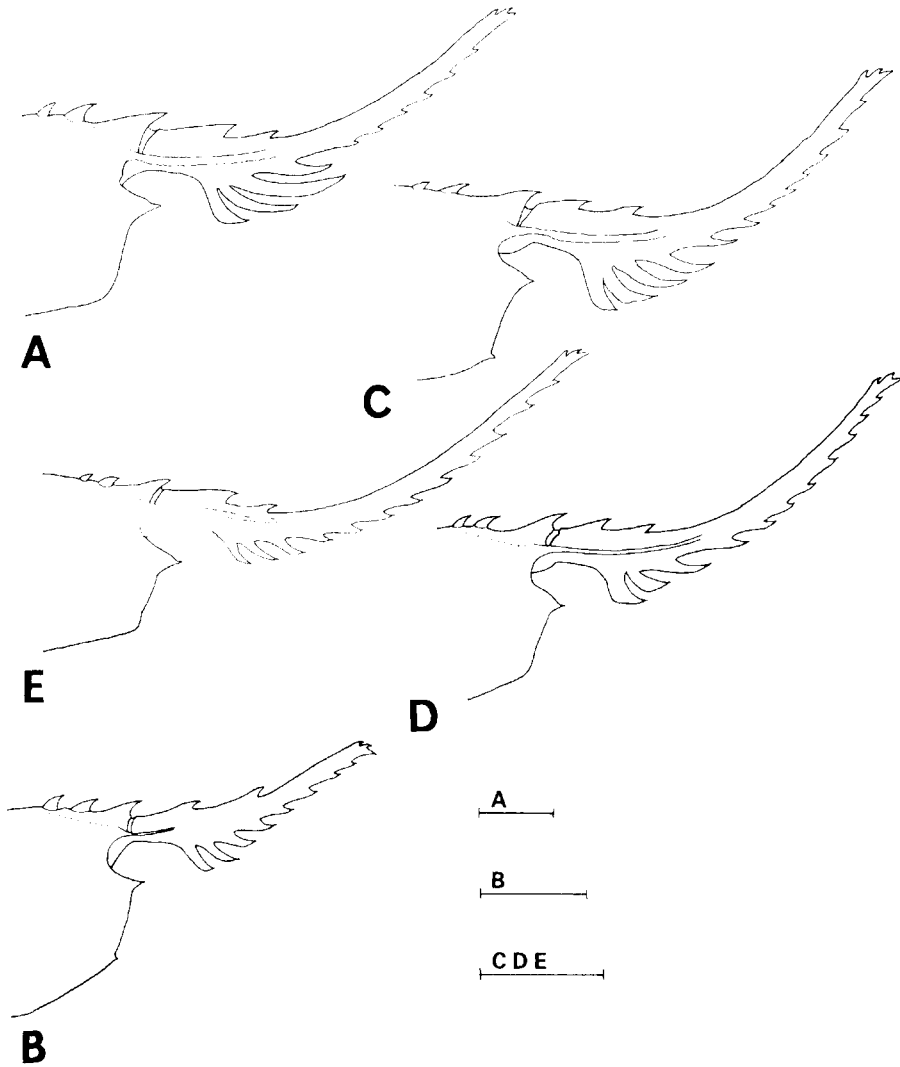


Fig. 3. Comparison of rostrum.—A, *Rhynchocinetes concolor* sp. nov., male paratype (YCM-CM 975, 12.9 mm CL); B, *R. hendersoni* KEMP, 1925, male (NSMT-Cr 1717, 10.3 mm CL); C, *R. hiatti* HOLTHUIS et HAYASHI, 1967, ovigerous female (NSMT-Cr 1723, 10.6 mm CL); D, *R. rigens* GORDON, 1936, male (NSMT-Cr 2165, 9.4 mm CL); E, *R. striatus* NOMURA et HAYASHI, 1992, male (YCM-CM 977, 8.7 mm CL). Scales: 5 mm.

spines, anterior pair at midlength, posterior pair at distal end of proximal three quarters of telson length; median part of posterior margin bluntly produced, directed backwards, with three pairs of posterior spinules, lateral spinula very small, intermediate spinula longest and robustest, exceeding tip of posterior apex of telson, innermost spinula slightly longer than lateral spinula.

Cornea rounded, much longer and broader than eyestalk.

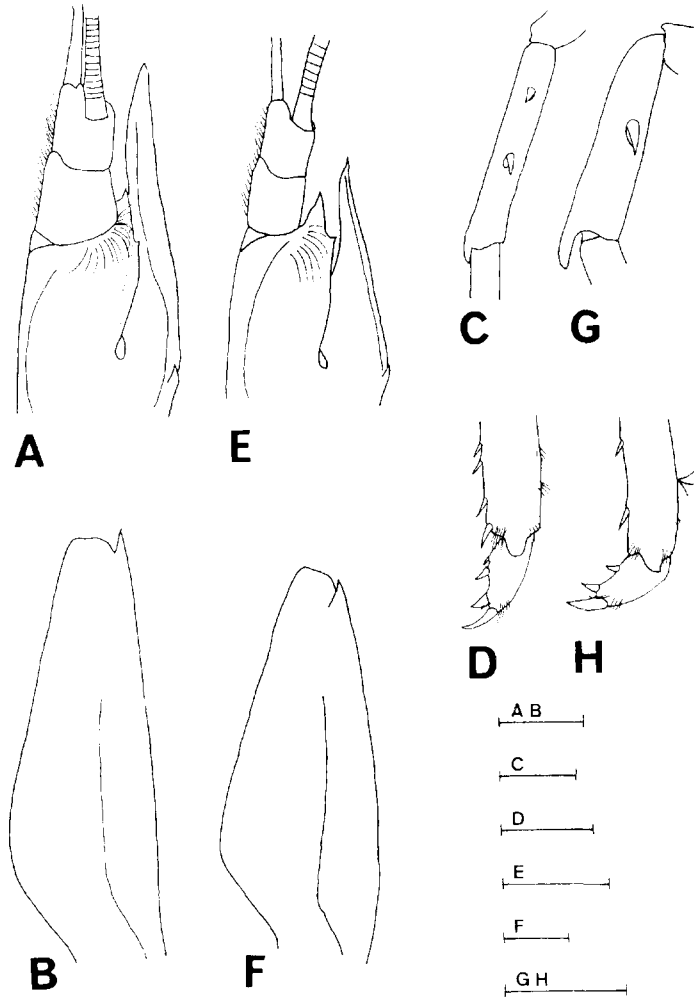


Fig. 4. Comparisons of the diagnostic characters.—A–D, *Rhynchocinetes concolor* sp. nov., male paratype (YCM-CM 975, 12.9 mm CL); E, *R. hendersoni* KEMP, 1925, male (NSMT-Cr 1717, 10.3 mm CL); F, *R. striatus* NOMURA et HAYASHI, 1992, ovigerous female (NSMT-Cr 2159, 18.8 mm CL); G, *R. hiatti* HOLTHUIS et HAYASHI, 1967, ovigerous female (NSMT-Cr 1723, 10.6 mm CL); H, *R. rigens* GORDON, 1936, male (NSMT-Cr 2165, 9.4 mm CL). A & E, Antennular peduncle; B & F, antennal scale; C & G, carpus of third pereiopod; D & H, dactylus of third pereiopod. Scales for A–C, E–G: 2 mm; D, H: 1 mm.

Antennular peduncle (Fig. 4 A) reaching proximal third of rostrum; surface of proximal segment concave, with distal margin pointed sharply; stylocerite well developed, with strongly pointed distal end, exceeding beyond tip of distal spine of proximal segment, overreaching external margin of ultimate segment; statocyst longitudinally oval; median and distal segments short, together equal to length of proximal segment, length of ultimate segment almost equal to that of intermediate segment.

Antennal scale (Fig. 4 B) well developed, reaching midlength of rostrum, 0.7–0.9 spine as long as carapace, 2.8–3.9 times as long as maximum width; external distal tooth strongly acute, overreaching tip of more or less truncate lamella; basicerite with a strongly acute spine directed anteriorly and a terminal rounded lobe just above the spine.

Mandible (Fig. 2 D) with three-segmented palp, distal segment rounded distally, with short dense spinules, intermediate segment longest of all the segments, distal margin with long sparse setae; incisor process stout, with acute teeth distally; molar process subcylindrical, broad, with feeble setae distally. First maxilla (Fig. 2 E) with feebly bifid slender palp, with denticulate long seta distally, with sparse setae distolaterally; distal lacinia broad, lateral margin convex, distal margin straight, with short, stout spinules; proximal lacinia broader than distal lacinia, rounded distally, with short, spiniform distal setae. Second maxilla (Fig. 2 F) with distinct palp, proximally broad, distally slender, with sparse setae distally; coxal endite broad, distal margin truncate, with numerous long setae distally; distal endite bilobed, upper lobe rounded distally, broader than lower lobe, with dense setae distally, lower lobe with more or less straight distal margin, with dense setae; scaphognathite well developed, anterior lobe with feebly square distal end, posterior lobe very slender, inner margin convex. First maxilliped (Fig. 2 G) with elongate, three-segmented palp, intermediate segment longest of all, distal segment very small; distal endite expanded distally, broader than proximal endite, with dense setae at distal margin; proximal endite rounded, with dense setae distally; exopod well developed, caridean lobe slender, flagellum with numerous setae distally; epipod large, rounded. Second maxilliped (Fig. 2 H) with oval epipod with podobranch laterally; distal margin of dactylus almost straight, with long dense setae; propodus with external margin rounded, with inner margin feebly expanded. Third maxilliped (Fig. 2 I) reaching midlength of rostrum, subequal to tip of antennal scale; exopod well developed, overreaching antepenultimate segment; ultimate segment 0.5–0.6 times as long as carapace, 1.3–1.8 times as long as carpus, 5–7 dark horny teeth at its apex; penultimate segment 0.3–0.4 times as long as carapace; antepenultimate segment with sparse setae on outer surface in large male, with an acute spine distolaterally.

The branchial formula is shown in Table 1.

First pereopod (Fig. 2 J) stout, reaching midlength of antennal scale; chela slightly compressed, 0.4–0.5 times as long as carapace, 1.5–1.7 times as long as carpus, palm with short dense setae on ventral margin proximally, both fingers with dark claws terminally; carpus short, 0.2–0.3 times as long as carapace, distal margin truncate, with short dense setae.

Second pereopod (Fig. 2 K) slenderer than first pereopod, reaching slightly

Table 1. Branchial formula of *Rhynchocinetes concolor* sp. nov.

	I	II	III	I	II	III	IV	V
Pleurobranches				1	1	1	1	1
Arthrobranches			2	1	1	1		
Podobranchs		1						
Epipods	1	1	1	1	1	1	1	
Exopods	1	1	1					

beyond midlength of antennal scale; chela 0.2–0.3 times as long as carapace, both fingers with dark terminal claws, carpus 0.5–0.6 times as long as carapace, 1.6–2.0 times as long as chela.

Ambulatory pereopods slender, similar to each other; dactyli (Fig. 4 D) of these pereopods with three small horny claws posterior to terminal dark horny claw, proximal one smallest, indistinct; propodus with short setae at proximal to median parts of ventral margin, distinct spinules distally; ischia with articulated spine on outer surface and on lower margin. Third pereopod (Fig. 2 L) overreaching antennal scale; merus 0.7–0.9 times as long as carapace, 1.8–2.2 times as long as carpus, with 4–8 (usually 5) equidistant, acute articulated spines on outer surface, 2–4 (usually 2) acute articulated spines on lower margin; carpus (Fig. 4 C) 0.4 times as long as carapace, with two acute articulated spines on outer surface; propodus 0.5–0.6 times as long as carapace, 1.5–1.7 times as long as carpus. Fourth pereopod reaching distal third of antennal scale; merus 0.6–0.7 times as long as carapace, 1.8–2.2 times as long as carpus, with 4–6 (usually 5) equidistant, acute articulated spines on outer surface, 1–3 (usually 2) acute articulated spines on lower margin; carpus 0.3–0.4 times as long as carapace, dentition quite agreeing with that of third pereopod; propodus 0.6–0.7 times as long as carapace, 1.6–2.0 times as long as carpus. Fifth pereopod reaching midlength of antennal scale; merus shorter than those of third and fourth pereopods, 0.5–0.6 times as long as carapace, 1.3–1.6 times as long as carpus, with 3–4 (rarely 5) equidistant, acute articulated spines on outer surface, usually 1–2 (rarely 3) acute articulated spines on lower margin; proportion and dentition of carpus resembling those of fourth pereopod; propodus 0.5–0.7 times as long as carapace, 1.5–1.8 times as long as carpus.

In male, endopod of first pleopod (Fig. 2 M) broad, rounded distally; appendix interna slender, narrower distally, with numerous granules terminally.

Endopod of male second pleopod (Fig. 2 N) with both appendices masculina and interna. Appendix masculina slightly shorter than appendix interna, with dense setae at its apex and outer margin; appendix interna with numerous granules distally.

Uropodal exopod (Fig. 2 O) with both articulated and non-articulated spines at proximal two thirds of outer margin; former more acute and longer than latter.

Coloration (Fig. 1). Ground color of carapace, abdomen, telson, antennal scale, pereopods and uropod reddish orange. Median part of rostrum pale red, apex white. Carapace with indistinct, two pale white longitudinal bands on lateral surface anteriorly. Abdomen with two oblique pale white bands bordered by red lines; anterior band situated on posterior margin of the second somite; posterior band extending from the summit of the third somite to posterolateral end of the fifth somite.

Distribution. The present new species is known from various localities of the Indo-West Pacific, from the Amami Islands of the northern Ryukyu Archipelago to Cartier Reef of Western Australia. Through the kindness of Dr. A. J. BRUCE, I could confirm a color slide of the new species from Zanzibar on the eastern coast of Africa. Therefore, this new species seems to be widely distributed in the Indo-West Pacific.

Etymology. The specific name, *concolor*, means "same color" in Latin. This is derived from the life-coloration of the new species, which is almost uniformly orange except for two pale white bands on the abdominal somites.

Ecology. *Rhynchocinetes concolor* hides in the submarine crevices and caves of

coral rocks at day. However, it feeds actively on the surface of the rocks at night. This cryptic behavior strongly resembles those of *R. rigens* reported by MANNING (1961) and of *R. hendersoni* by OKUNO (1993).

Remarks. The genus *Rhynchocinetes* is split into two clear species groups as pointed out by KEMP (1925) and GORDON (1936). One of them, the *typus* group, has two teeth on the median carina of the carapace, the supraorbital spine directed anteriorly, the rostral articulation complete, and no posterolateral spine on the posterior margins of fourth and fifth abdominal somites, while the other, the *rigens* group, has three teeth on the median carina of the carapace, no supraorbital spine, the rostral articulation indistinct, and a posterolateral spine on the posterior margin of fourth and fifth abdominal somites, except *R. hendersoni*, which has this spine only on the fifth somite in some specimens. These distinctive characters will justify the assignment of the two species groups into separate genera.

Rhynchocinetes concolor is referred to the *rigens* group and represents the fifth species, because NOMURA and HAYASHI (1992) recognized four species in the most recent taxonomic study on the group.

The present new species is readily distinguished from the related species by having four sharply acute rostral teeth on ventral margin proximally which are distinctly isolated from the distal smaller teeth, directed anteriorly, and the third tooth distinctly overreaches the four one (Fig. 3 A). The ventral rostral teeth of the close congeners decrease more regularly in size distally (Fig. 3 B–E).

In addition to the best diagnostic character mentioned just above, *R. concolor* also differs from the related species in some morphological characters as follows: stylocerite of antennular peduncle (Fig. 4 A) distinctly overreaching ultimate segment (vs. in *R. hendersoni* KEMP, stylocerite (Fig. 4 E) not reaching distal margin of antennular ultimate segment); antennal scale (Fig. 4 B) slender, with distal spine reaching or overreaching tip of lamella and fifth pereopod reaching midlength of antennal scale (vs. in *R. striatus* NOMURA et HAYASHI, antennal scale (Fig. 4 F) broad, with distal spine not reaching beyond margin of lamella of antennal scale and fifth pereopod overreaching tip of antennal scale); each carpus (Fig. 4 C) of the posterior three pereopods slender, with two spines on outer surface (vs. in *R. hiatti* HOLTHUIS et HAYASHI, these carpi (Fig. 4 G) stout, with a single spine); each dactylus (Fig. 4 D) of ambulatory pereopods with three claws posterior to terminal claw (vs. in *R. hiatti* and *R. rigens* GORDON, the dactyli (Fig. 4 H) each with two claws posterior to terminal claw).

There is no difference in color pattern between the sexes or within the development in *R. concolor*; thus, the color in life represents one of the best diagnostic characters. As the present new species has been identified in the literature with *R. hiatti* (KAMEZAKI *et al.*, 1988), its life-coloration closely resembles that of the latter on account of the orange ground color on the whole body, with white transverse bands on the abdominal somites. However, *R. concolor* has two oblique bands on the abdominal somites, whereas there are five or six transverse white bands on those somites in *R. hiatti* (HOLTHUIS & HAYASHI, 1967; OKUNO, 1993).

Acknowledgements

I wish to express my sincere gratitude to Dr. A. J. BRUCE (NTM) for sending me on loan several specimens deposited in the collection of NTM, and Dr. K.-I. HAYASHI

(SUF) who kindly supported my investigation in his laboratory. I am grateful to Dr. F. A. CHACE, Jr. of the National Museum of Natural History, Smithsonian Institution, Washington, D. C., and Dr. M. TAKEDA (NSMT) for giving me valuable suggestions for the draft. I sincerely thank Messrs. K. HAGIWARA of the Hayama Marine Laboratory, Kajima Technical Research Institute, and M. HAYASHI (YCM) and T. HAYASHIBARA of the Akajima Marine Science Laboratory for kindly supporting my efforts to collect materials on the coast of southern Japan with SCUBA diving, and Mr. K. NOMURA of Kushimoto Marine Park Center for donating to me the specimen of the new species from Kume-jima Island.

摘 要

奥野淳兒（日本大学農獣医学部水産学科）——インド・西太平洋産サラサエビ属の1新種，ヒボタンサラサエビ（新称）。

サラサエビ属の新種，ヒボタンサラサエビ（新称） *Rhynchocinetes concolor* を奄美諸島，琉球諸島，パプアニューギニアおよびオーストラリア北部で得られた12個体に基づいて記載した。本新種は同属近似種からは生時の色彩が一樣に橙黄色で，腹節に2本の淡白色の斜横帯を有すること，ならびに額角下縁の基部に備わる4歯が強大で著しく前方を向き，中央から末端にかけて等間隔に並ぶ小さな5—7歯から著しく隔離されていることによって容易に識別される。また，本種は第1触角柄部の触角棘，第2触角の触角鱗，第3—5歩脚の腕節外面上の棘数，ならびに同脚指節の内縁に備わる爪数にみられる標徴形質の組合せによっても近似種から区別できる。本種はインド・西太平洋の熱帯および亜熱帯域の浅い岩礁に生息し，日中は岩の亀裂内などに隠れているが，夜間岩の表面などに出て積極的に摂餌する。

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