

## A New Species of the Genus *Meractaea* (Crustacea, Decapoda, Xanthidae) from Japan

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**Abstract** A new species of the genus *Meractaea* Serène, 1984, is described and illustrated from Japan. *Meractaea takunan* sp. nov. can be distinguished from congeners by the more rugose regions of the carapace and the shape of the first male gonopod. *Meractaea takunan* is distributed along the Kuroshio Current and its counter current.

**Key words:** Decapoda, Xanthidae, *Meractaea*, new species, Japan, Kuroshio Current.

The genus *Meractaea* Serène, 1984, is rarely reported and currently contains only three species (Ng *et al.*, 2008): *M. brucei* Serène, 1984, from East Africa; *M. tafai* Davie, 1993, from French Polynesia; and *M. multidentata* Davie, 1997, from New Caledonia. In this paper, a fourth species, *M. takunan* sp. nov., is described and illustrated from Japan.

All the specimens examined are preserved in the National Museum of Nature and Science, Tokyo, and the Showa Memorial Institute, National Museum of Nature and Science, Tsukuba, as NSMT-Cr and NSMT-Cr S, respectively. The abbreviated terminology used for carapace regions follows that Serène (1984) and Dana (1852). Abbreviations used in text are: cb and cl=breadth and length of the carapace, respectively; G1 and G2=first and second male gonopods, respectively; P2–P5=second to fifth pereopods (first to fourth ambulatory legs); stn=station.

### Taxonomy

Family **Xanthidae** MacLeay, 1838  
Subfamily **Actaeinae** Alcock, 1898

### *Meractaea takunan* sp. nov.

[New Japanese name: Kuroshio-awatsubu-gani]

(Figs. 1–3)

*Material examined.* Holotype: male (cb 11.2×cl 7.3 mm), NSMT-Cr S 1141, top of Kaikata Seamount, Izu-Ogasawara Arch, 26°40.00'N 140°55.75'E–26°39.97'N 140°55.78'E, 166–173 m, RV *Tansei Maru* KT-09-2 cruise, stn KK1-2(1), dredge, coll. H. Komatsu, 16 March 2009.

Paratypes: 1 male (cb 9.5×cl 6.2 mm), NSMT-Cr S 1142, Kurose Bank, Izu Islands, 33°21.70'N 139°39.47'E–33°21.98'N 139°39.49'E, 151–147 m, RV *Takunan*, stn 5, rocky dredge, coll. H. Komatsu, 10 September 2007; 1 young male (cb 6.9×cl 4.8 mm), NSMT-Cr 21561, Zenisu Bank, Izu Islands, 34°00.8'N 138°50.8'E, 110 m, RV *Soyo Maru*, stn D22, dredge, coll. T. Okutani, 10 July 1969; 1 young female (cb 7.3×cl 5.1 mm), NSMT-Cr 21562, west of Iheya Island, Ryukyu Islands, 27°01.44'N 127°51.54'E–27°01.34'N 127°51.51'E, 82–81 m, coral block, TRV *Toyoshio Maru*, stn 7, dredge, coll. H. Komatsu, 24 May 2007; 1 young female (cb 8.3×cl 5.7 mm), NSMT-Cr 21563, north of Mage-jima Island, Osumi Islands, 30°49.60'N 130°50.20'E–

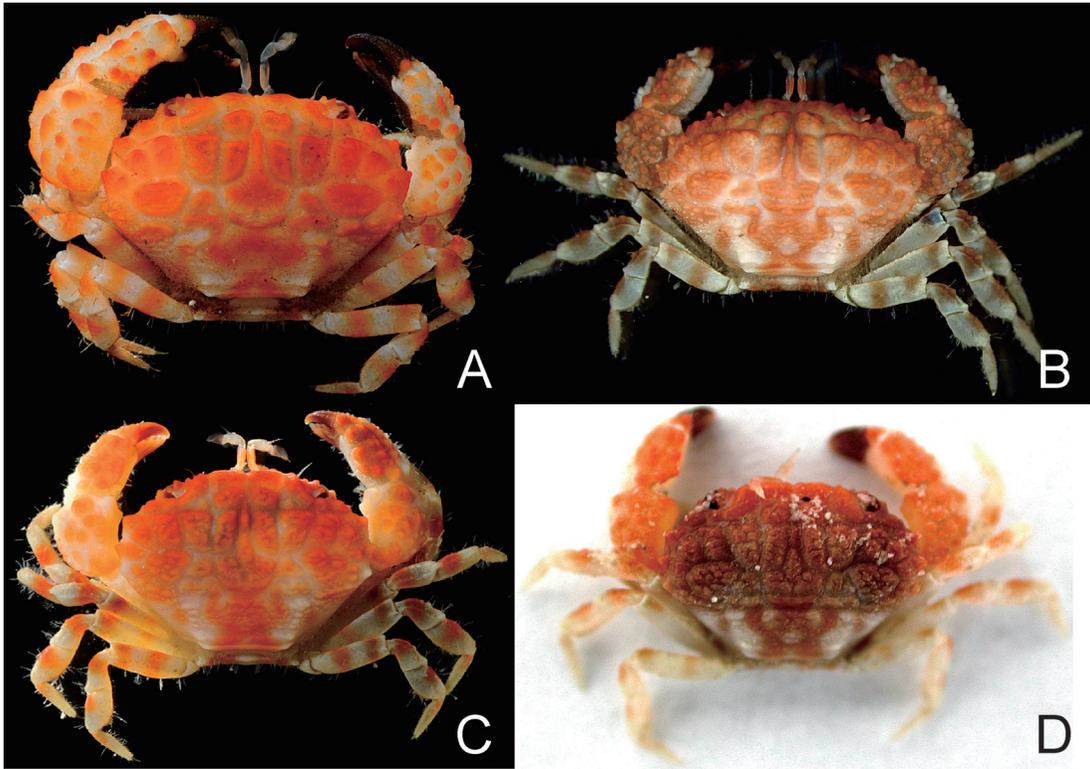


Fig. 1. Color photographs of *Meractaea takunan* sp. nov. — A, Holotype male (cb 11.2×cl 7.3 mm), NSMT-Cr S 1141; B, paratype male (cb 9.5×cl 6.2 mm), NSMT-Cr S 1142; C, paratype young female (cb 8.3×cl 5.7 mm), NSMT-Cr 21563; D, paratype young female (cb 7.3×cl 5.1 mm), NSMT-Cr 21562.

30°49.66'N 130°50.34'E, 125–124 m, sledge, TRV *Toyoshio Maru*, stn 2S, coll. H. Komatsu, 19 May 2009.

**Description.** Carapace (Figs. 1, 2A) ovoid, about 1.4–1.5 times broader than long (1.53 in holotype). Carapace convex anteriorly, slightly convex laterally across postero-branchial regions. Upper surface of carapace glabrous. Regions distinct, well separated by narrow furrows, each region transversely rugose or tuberculate; 1F and 2F (frontal region) fused, rising abruptly from just behind frontal margin; 1M (epigastric region) separated from 2F; 1M separated from 2M (protogastric region); 2M separated from 3M (meso- and metagastric regions); 2M longitudinally divided; 3M undivided or divided into 3 parts, a narrow anterior projection (mesogastric region) and 2 basal rectangular lobes (metagastric region); 4M (urogastric region) distinct, nar-

row, arcuate or transverse; 1P (cardiac region) anteriorly separated, but indistinctly separated from 2P and 3R; 2P (intestinal region) with 2 strong transverse crests, anterior one divided medially; 1L just behind 1st tooth of anterolateral margin excluding exorbital lobe; 2L, 3L distinct; 4L present as tubercles; 5L, 6L distinct; postero-branchial regions undivided, with small tubercles anteriorly. Front about 0.3 times carapace breadth; frontal margin with narrow projecting medial and lateral lobes separated by broad, weakly convex margin; upper orbital border evenly concave, with 3 rounded lobes separated by vestigial median and lateral fissures; lower orbital border concave medially, with inner and outer triangular lobes, granulated between lobes. Anterolateral margin convex, armed with 4 evenly separated, teeth behind triangular exorbital lobe; 1st tooth low, rounded; 2nd and 3rd teeth

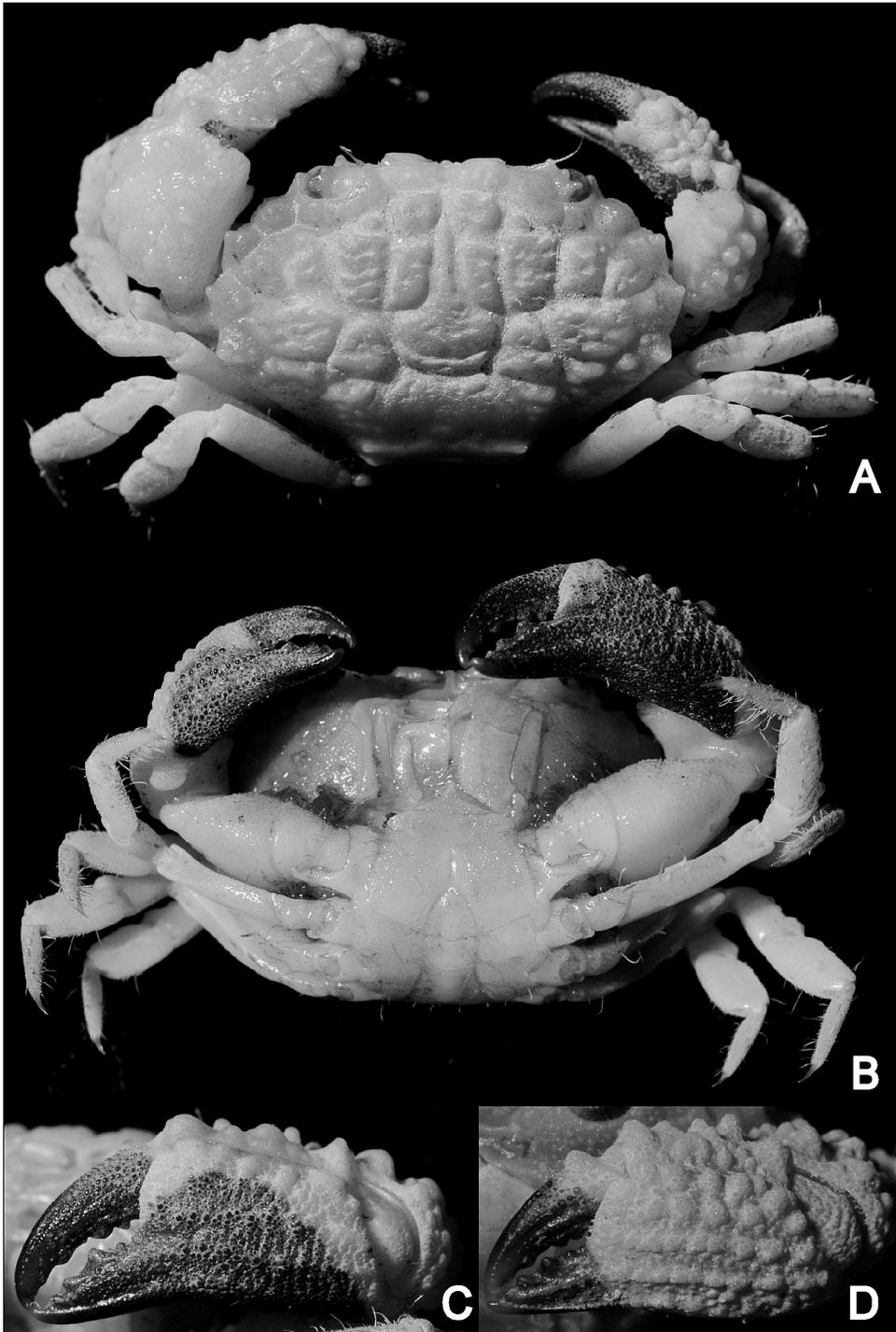


Fig. 2. *Meractaea takunan* sp. nov. — A–C, Holotype male (cb 11.2×cl 7.3 mm), NSMT-Cr S 1141; D, paratype male (cb 9.5×cl 6.2 mm), NSMT-Cr S 1142. A, carapace, dorsal view; B, same, ventral view; C, D, left chela, outer view.

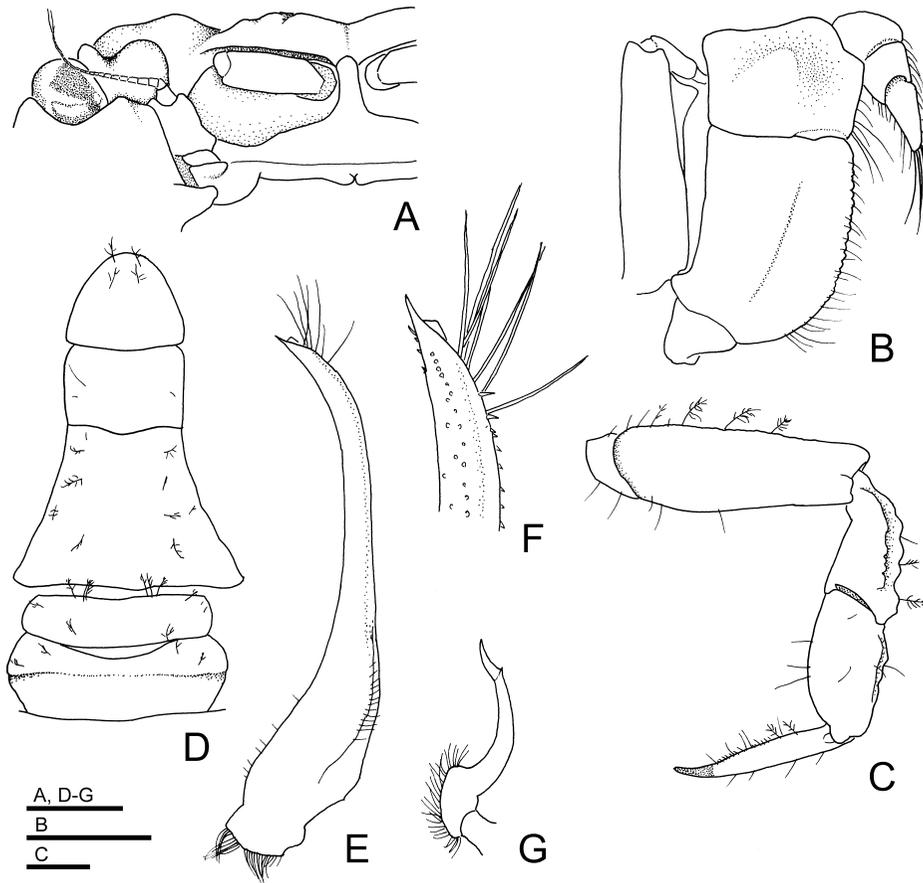


Fig. 3. *Meractaea takunan* sp. nov., holotype male (cb 11.2×cl 7.3 mm), NSMT-Cr S 1141.—A, Frontal region, frontal view; B, right third maxilliped, external view; C, right P4, posterior view; D, abdomen, ventral view; E, right G1, abdominal view; F, tip of same; G, right G2, abdominal view. Scales for A–D: 1 mm; E, G: 0.5 mm; F: 0.2 mm.

prominent, triangular, pointed at tip, equal in size; 4th tooth triangular, pointed at tip, smaller than 2nd and 3rd teeth. Posterolateral border almost straight in outline, convergent towards posterior carapace margin. Posterior margin about 0.3 times carapace width.

Ocular peduncle (Fig. 3A) short, dorsal extension onto cornea tongue-shaped, with triangular tooth just anterior to dorsal extension. Basal segment of antennule swollen, occupying ventral 0.5; flagellum folding slightly obliquely. Basal antennal segment robust, smooth, touching front, occupying entire space between antennular fossa and internal suborbital angle.

Third maxilliped (Fig. 3B) with merus length

about 0.7 times width, about 0.55 times length of ischium; external surface covered with microscopic granules, with single large low tubercle. Ischium rectangular, about 1.5 times longer than wide, covered with microscopic flat granules on external surface. Carpus with low tubercle on external surface (inconspicuous in holotype).

Chelipeds (Figs. 1, 2) subequal (right cheliped of holotype may have regenerated and so unnaturally smaller), robust, moderately large; height of palm about 0.5 times length of palm including fixed finger. Merus short, broad, almost concealed beneath carapace, triangular in cross-section, minutely granulate on outer surface. Carpus with inner angle produced into conical tubercle;

upper surface of carpus covered with well-separated, conical tubercles of various sizes. Outer surface of palm coarsely granular, granules arranged in 7 major rows; uppermost 2 rows formed by large, conical tubercles; ventral 2 rows continuing onto fixed finger as strong, more-or-less smooth ridges, reaching to tip. Inner surface of palm smooth. Length cutting edge about 0.4 times length propodus. Ventral border of chela weakly concave at base of fixed finger. Dorsal surface of dactylus microscopically granular. Fingers pointed at tip, without a noticeable gape between the cutting edges; cutting edges with some small triangular teeth. Fingers dark-brown; color not extending onto palm in most specimens, but in holotype, color of fixed finger extends behind gape in broad arc, reaching obliquely backwards almost to postero-ventral corner; inner surface of palm with coloring of fixed finger extending ventrally for most of length, extending dorsally to base of tubercles on dorsal border as trapezoidal shape leaving cream stripe behind gape.

Walking legs (Fig. 3C) relatively long, flattened, slender, with sparse plumose setae; P2 and P3 longest, P4 slightly shorter than P3. Merus of P4 about 3.0 times longer than wide; carpus about twice as long as wide; propodus about 1.7 times longer than wide; dactylus 1.4 times longer than propodus. Upper and lower borders of merus unarmed. Carpus with accessory carinae on upper surface; upper margin bearing row of 2–5 large blunt tubercles, continuing to a lesser extent onto propodus. Dactylus straight; terminating in acute slightly recurved chitinous tip.

Male thoracic sternum (Fig. 2B) relatively narrow, smooth, with sparse plumose setae; telson reaching about half length of sternite 4; sternite 4 with median longitudinal suture; median longitudinal suture extending from sternite 7 to 8. Suture between sternites 1/2 completely absent; suture between sternites 2/3 complete; suture between sternites 3/4 vestigial, present on lateral 0.2, marked as shallow furrow on mesial part; sutures between sternites 4/5 and 5/6 medially interrupted; sutures between sternites 6/7 and 7/8

complete.

Male abdomen (Fig. 3D) relatively narrow, smooth, with sparse plumose setae; somites 3–5 completely fused. Somites 1 and 2 transversely rectangular; somite 1 slightly wider than 2, slightly narrower than 3. Somites 3–5 trapezoidal, lateral margins weakly concave. Somite 6 rectangular, about 1.4 times wider than long. Telson tongue-shaped, about 1.2 times as long as somite 6, about 1.1 times wider than long.

G1 (Fig. 3E, F) long, slender, curved laterally; some long, feathered setae present on dist-mesial margin; tip tapering on abdominal face with row of very short spinules, with rectangular process on sternal face. G2 (Fig. 3G) short, about 0.4 times as long as G1; distal segment short, recurved.

*Etymology.* Named after RV *Takunan* of the Hachijo Branch, Tokyo Metropolitan Islands Area Research and Development Center of Agriculture, Forestry and Fisheries; used a noun in apposition.

*Remarks.* *Meractaea takunan* sp. nov. is similar to *M. brucei* Serène, 1984, in possessing relatively low and not prominently inflated regions of the carapace, but can be distinguished from *M. brucei* by the transversely rugose carapace regions (vs. tuberculate in *M. brucei*) and the rectangular process of the sternal face of G1 tip (vs. simply tapering in *M. brucei*) (Serène, 1984: 103, Fig. 63, pl. 19C).

This new species is distributed at the sea along the Kuroshio Current in southern and central Japan (Fig. 4). The Kuroshio Current is one of the strongest warm currents globally, and starts from the eastern part of the Philippines, flows northwards, passes through the channel between Yonaguni-jima Island at the southernmost part of the Ryukyu Islands and Taiwan, then flows northeast along the western side of the Ryukyu Islands, passes through again the Tokara Channel between the Osumi Islands and the Tokara Islands, winds its way eastward along the south coast of the Japan Islands. The Ogasawara Islands where this new species is also recorded is remote from the Kuroshio Current, but its

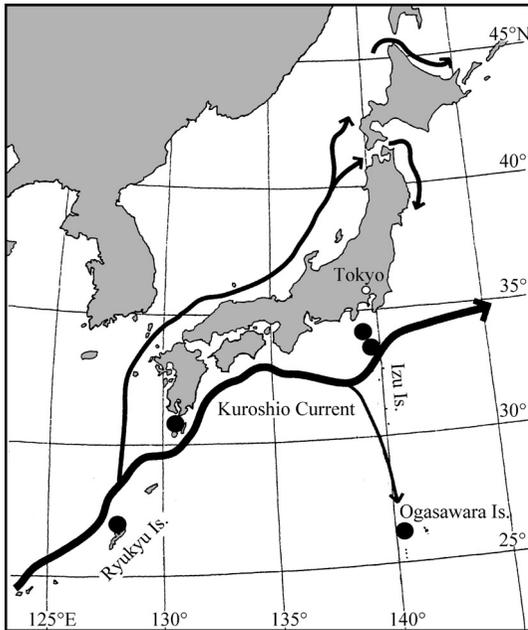


Fig. 4. Distribution of *Meractaea takunan* sp. nov.

counter current is arising southwards to the Ogasawara Islands. The Kuroshio Current is well known to have a role in dispersing the marine animals from south to north. The present species also distributes south from Okinawa north-eastwards to the Izu Islands and the Ogasawara Islands along the Kuroshio Current and its counter current, this evokes strong influence of the Kuroshio Current.

A key to the species of the genus *Meractaea* is provided.

*Distribution.* Known only from Japan, occurring at the depths of 81–173 m.

**Key to the species of *Meractaea* Serène, 1984**

- 1. Anterolateral teeth of carapace with accessory teeth. . . . . *M. multidentata*  
Anterolateral teeth of carapace without accessory teeth . . . . . 2
- 2. Regions of upper surface of carapace prominently inflated; surface smooth . . . . . *M. tafai*  
Regions of upper surface of carapace gently convex, not prominently inflated; surface tu-

- berculate or rugose . . . . . 3
- 3. Tip of G1 with triangular process on sternal face . . . . . *M. brucei*  
Tip of G1 with rectangular process on sternal face . . . . . *M. takunan*

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**References**

Alcock, A. 1898. Materials for a carcinological fauna of India. No. 3. The Brachyura Cyclometopa. Part I. The family Xanthidae. Journal of the Asiatic Society of Bengal, 67: 67–233.

Dana, J. D. 1852. Crustacea. United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842 under the command of Charles Wilkes, U.S.N., 13: 1–685. Atlas (1855): 1–27, pls. 1–96. C. Sherman, Philadelphia.

Davie, P. J. F. 1993. Deepwater xanthid crabs from French Polynesia (Crustacea, Decapoda, Xanthoidea). Bulletin du Muséum national d’Histoire naturelle, Section A, Zoologie, Biologie et Ecologie Animales, Paris, 4ème série, 14: 501–561.

Davie, P. J. F. 1997. Crustacea Decapoda: deep water Xanthoidea from the south-western Pacific and the Indian Ocean. In Crosnier A. (ed.), Résultats des Campagnes MUSORSTOM, Volume 18, pp. 337–387. Muséum national d’Histoire naturelle, Paris.

MacLeay, W. S. 1838. On the brachyurous decapod Crus-

- tacea brought from the Cape by Dr. Smith. In Smith A. (ed.), *Illustrations of the Annulosa of South Africa; being a portion of the objects of natural history chiefly collected during an expedition into the interior of South Africa, under the direction of Dr. Andrew Smith, in the years 1834, 1835 and 1836; fitted out by "The Cape of Good Hope Association for Exploring Central Africa"*, pp. 53–71. Smith, Elder, and Co., London.
- Ng, P. K. L., D. Guinot and P. J. F. Davie 2008. *Systema Brachyurorum* : Part I. An annotated checklist of extant brachyuran crabs of the world. *Raffles Bulletin of Zoology (Supplement)*, 17: 1–286.
- Serène, R. 1984. Crustacés Décapodes Brachyours de l'Océan Indien Occidental et de la Mer Rouge, Xanthoidea: Xanthidae et Trapeziidae. Avec un addendum par Crosnier, A.: Carpiliidae et Menippidae. *Faune Tropicale*, 24: 1–349.