



A new species of *Odontozona* Holthuis, 1946 (Crustacea: Decapoda: Stenopodidea: Stenopodidae) from the Caribbean Sea

MARÍA M. CRIALES^{1,3} & RAFAEL LEMAITRE²

¹Rosenstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, Florida, 33149, U.S.A. E-mail: mcriales@rsmas.miami.edu

²Department of Invertebrate Zoology, National Museum for Natural History, Smithsonian Institution, 4210 Silver Hill Road, Suitland, MD 20746 U.S.A. E-mail: lemaitrr@si.edu

³Corresponding author

Abstract

A new shallow-water species of the stenopodid shrimp genus *Odontozona* is described based on a specimen collected on a coral reef environment in the San Bernardo Islands, Caribbean coast of Colombia. *Odontozona edyli* n. sp. can be separated from all other congeners by a combination of morphological characteristics, most notably the ornate abdomen with a distinct and complex pattern of spines, carinae and grooves, spination of the carapace, length of rostrum, armature of third cheliped, third maxilliped and telson. This new species is more similar to *O. arbur* and *O. sculpticaudata* from the Indo-Pacific than to any other species of *Odontozona* from the western Atlantic. An unreported male specimen of *O. striata* from Jamaica, Caribbean Sea revealed morphological differences with the female holotype described by Goy (1981), suggesting a possible sexual dimorphism or a high intra-specific variability as reported for some Indo-Pacific *Odontozona* species.

Key words: *Odontozona*, Stenopodidae, southern Caribbean, new species

Introduction

The genus *Odontozona* Holthuis, 1946 is one of 12 genera in the infraorder Stenopodidea Bate, 1888, and one of four in the family Stenopodidae Claus, 1872. The 19 known species of *Odontozona* are small shrimps distributed in tropical and subtropical waters around the world, exhibiting a wide range of life styles (Anker & Tavares 2013; Goy 2015; Saito *et al.* 2017). Most species of *Odontozona* occur in shallow waters at depths of 5–50 m, and live on hard or mixed hard-soft bottoms. Some species, such as *O. foresti* Hendrickx, 2002, *O. lopheliae* Goy & Cardoso, 2014, *O. joegoyi* Hendrickx & Ayon-Parente, 2014 and *O. edwardsi* (Bouvier, 1908), have been captured at much deeper depths of 459–1270 m (Hendrickx 2002; Goy & Cardoso 2014; Hendrickx & Ayon-Parente 2014; Bouvier 1908). Several species, such as *O. addaia* Pretus, 1990 and *O. fasciata* Okuno, 2003 are cave dwellers (Pretus 1990; Okuno 2003), while *O. spongicola* (Alcock & Anderson, 1899), *O. lopheliae* Goy & Cardoso, 2014 and *O. crinoidicola* Saito & Fujita, 2009, are known to live in association with sponges, deep-sea corals and crinoids, respectively (Goy 2015).

The phylogeny of the infraorder Stenopodidea was recently investigated by Chen *et al.* (2016) based on two mitochondrial and two nuclear genes, including all 12 nominal genera from the three stenopodidean families, Stenopodidae, Spongicolidae Schram, 1986 and Macromaxillocarididae Alvarez, Iliffe & Villabobos, 2006. Chen *et al.*'s study refuted the previous higher classification scheme of the Stenopodidea, and concluded that the three families are poly- or paraphyletic. In the same study, the genus *Odontozona* was shown to be polyphyletic, with *O. spongicola* distantly separated from other species of *Odontozona* and closer to species of Spongicolidae. Furthermore, *O. meloi* Anker & Tavares, 2013, the only western Atlantic species of *Odontozona* included in Chen *et al.*'s analysis, did not form a clade with species of *Odontozona* from the Indo-West Pacific. These results suggest that *Odontozona* is in need of revision, but until such study is conducted all species must remain in *Odontozona*.

Most species of *Odontozona* are known only from their type localities and often from a single type specimen. Four species are currently known from the western Atlantic, *O. striata* Goy, 1981, *O. libertae* Gore, 1981, *O. meloi* Anker & Tavares, 2013, and *O. lopheliae* Goy & Cardoso, 2014. One species is known from the central South Atlantic, *O. anaphorae* Manning & Chace, 1990, described exclusively from Ascension Island (Manning & Chace 1990). Three species have been described from the eastern Atlantic, *O. edwardsi*, *O. minoica* Dounas & Koukouras, 1989, and *O. addaia*; the latter two restricted to the Mediterranean Sea. Three species have been described for the eastern Pacific, *O. rubra* Wicksten, 1982, *O. foresti* and *O. joegoyi*. Eight species have been reported for the Indo-Pacific region, *O. ensifera* (Dana, 1852), *O. spongicola*, *O. sculpticaudata* Holthuis, 1946, *O. spinosissima* Kensley, 1981, *O. fasciata* Okuno, 2003, *O. crinoidicola*, *O. arbur* Saito, Okuno & Anker, 2017 and *O. stigmatica* Saito, Okuno & Anker, 2017.

In this study we describe a new species of *Odontozona*, the 20th in the genus and the fifth from the western Atlantic, based on a specimen collected at San Bernardo Island, on the Caribbean coast of Colombia, where it was found living among pieces of dead coral at a depth of 12 m. The holotype is deposited in the National Museum of Natural History, Smithsonian Institution, Washington D. C. (USNM). For comparative purposes, specimens of three other species of *Odontozona* have been examined from the collections of the USNM and the Invertebrate Museum of the Rosenstiel School of Marine and Atmospheric Science, University of Miami, Florida (UMML). Abbreviations used: PCL, postorbital carapace length, excluding rostrum; TL, total length; and RL, rostral length (all in mm).

Systematics

Infraorder Stenopodidea Bate, 1888

Family Stenopodidae Claus, 1872

Genus *Odontozona* Holthuis, 1946

Odontozona edyli n. sp.

(Figs. 1–4)

Type material. Holotype: male, TL 24 mm, PCL 5.7 mm, RL 5.8 mm, Isla Ceycen (09°42'N, 75°52'W), San Bernardo Islands, Caribbean coast of Colombia, 12 m, 4 October 1982, (USNM 1444805).

Comparative material. *Odontozona striata* Goy, 1981: 1 male, TL 18.2 mm, CL 4.5, Caribbean Sea, Jamaica, Discovery Bay, 54 m, 16 August 1971, using guinaldine (UMML32.5458); *O. ensifera* (Dana, 1852): 1 ovigerous female, TL 12.6 mm, PCL 3.7 mm, 36°E, station VGS-74-5, 2–5 m, using rotenone, 5 March 1974, coll. V. Springer (USNM 173942); *O. anaphorae* Manning & Chace, 1990: holotype male, TL 15.5, PCL 4.0 mm, South Atlantic Ocean, Ascension Island, off N Point, 07° 53' 30"S, 14° 22' 54"W, 10 m, 18 October 1980, coll. C. Koenig (USNM 221886).

Diagnosis. Heavy-clawed, spinose shrimp with long rostrum. Carapace with distinct cervical groove and weak postcervical groove bearing straight, sharply pointed spinules; antennal, branchiostegal, pterygostomial and hepatic spines present. Abdomen ornate with several distinct, thick carinae and grooves on tergites and pleurae; tergites of somites 2 to 5 each armed laterally with transverse row of 3 spines; pleura of abdominal somites 2–5 each with strong sharp teeth on ventral margin. Propodus of fourth and fifth pereopods with indistinct segmentation; pereopod 3 strong, longer than body length, heavily spinose. Propodus of third maxilliped, and propodus and carpus of first pereopod, with setigerous organs.

Description. Rostrum (Figs. 1, 2A) slender, horizontal and long, about as long as carapace, falling short of distal margin of scaphocerite; dorsal margin bearing 7 teeth, 2 most proximal situated behind postorbital margin; ventral margin bearing 5 subequal teeth; and 1 pair of teeth arising from lateral face of rostrum.

Carapace (Figs. 1, 2A) short, robust, with antennal, branchiostegal, pterygostomial and hepatic spines; antennal and branchiostegal spines strong, marginal, extending beyond orbital angle; branchiostegal spine preceded by 2 medium size spines; pterygostomial spine small, marginal, preceded by large submarginal spine and row of 6

spines decreasing in size posteriorly; hepatic spine large, preceded by oblique lateral groove sloping posteroventrally and with cincture of about 16 spinules; postorbital region armed with scattered medium sized spines; cervical groove well-marked, bearing cincture of 18 moderately large spines directed anteriorly and joined lateromedially by short longitudinal row of 3 well-spaced spines; postcervical groove poorly defined, bearing cincture of about 80 sharp spinules pressed against body and directed forward; with transverse row of medium-sized spines between cervical and postcervical grooves, joined lateromedially by short longitudinal row of 3 well-spaced spines; with 2 shallow grooves, one near posterior margin of carapace bearing cinctures of spinules, and another short, lateral and bearing about 50 spinules; carapace margin marked by carinae.

Eyes (Fig. 2A) large, corneae dilated, pigmented; peduncle with 8 small spinules on anteromesial face adjacent to corneal base, and additional pair of sharp mesial spines on anterior margin.

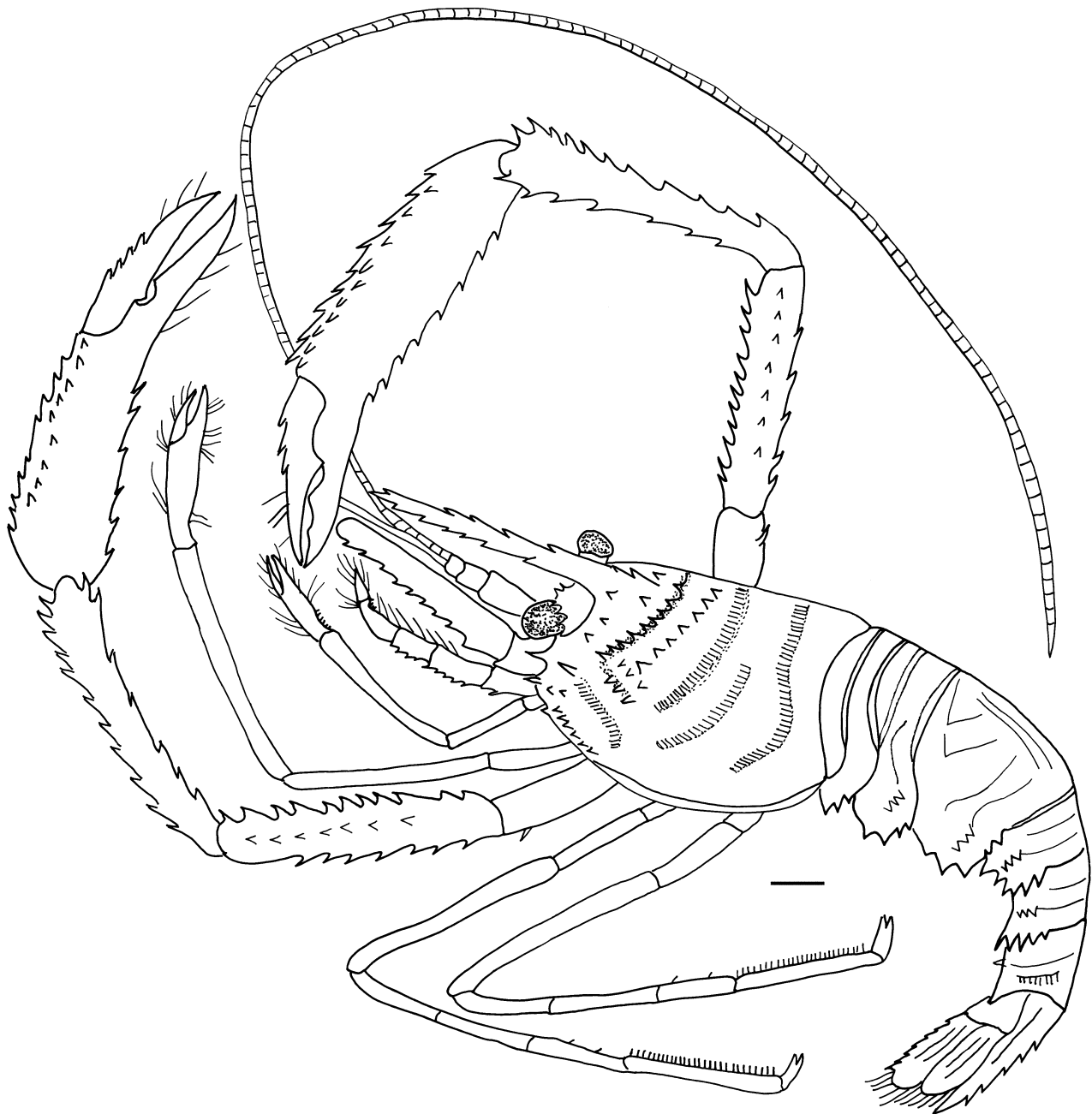


FIGURE 1. *Odontozona edyli* n. sp., holotype male, TL 24 mm, PCL 5.7 mm, RL 5.8 mm, San Bernardo Islands, Caribbean coast of Colombia (USNM 1444805), dorsolateral view (right pereopods not shown except for the third one). Scale bar = 1 mm.

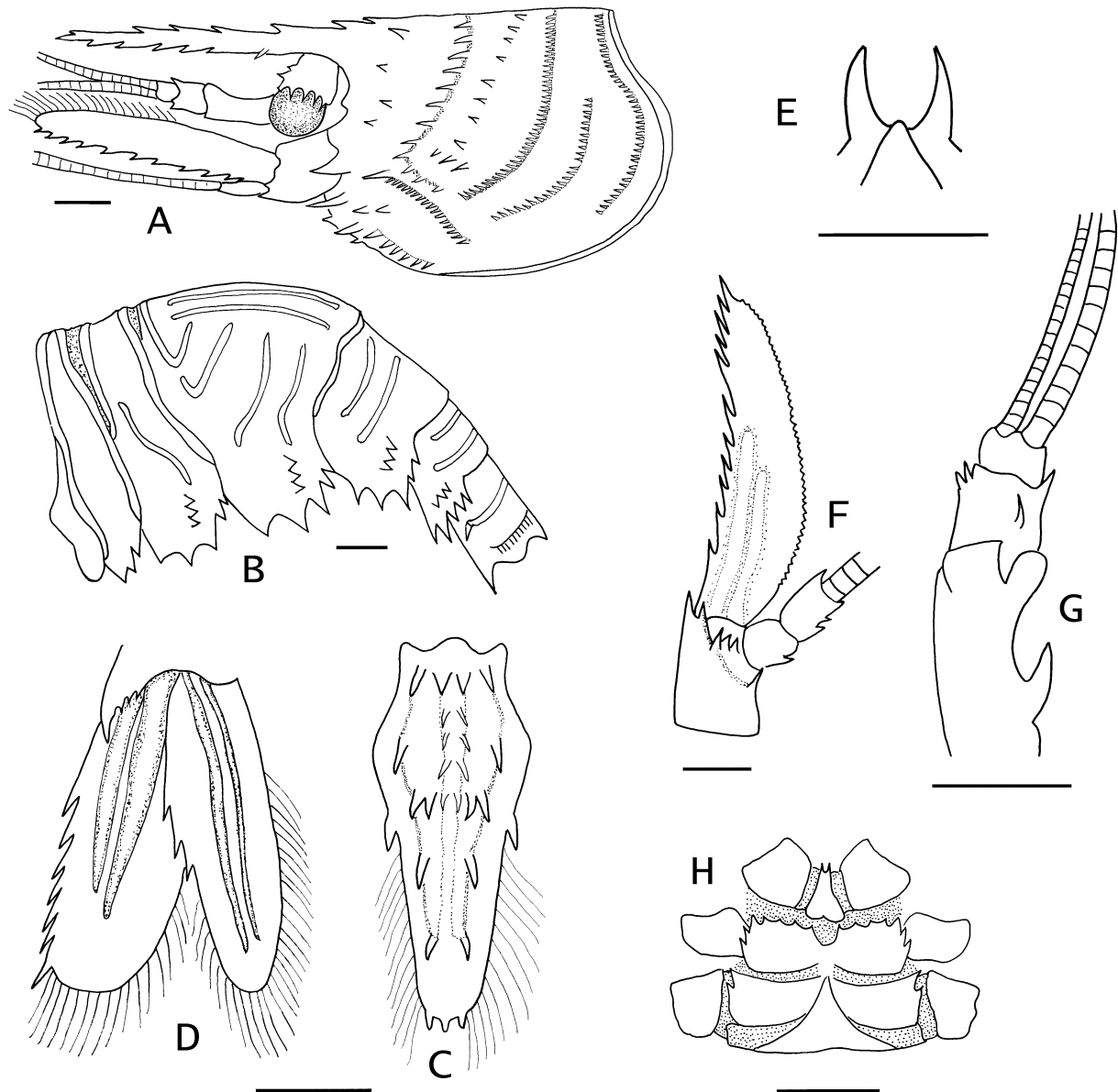


FIGURE 2. *Odontozona edyli* n. sp., holotype male, TL 24 mm, PCL 5.7 mm, RL 5.8 mm, San Bernardo Islands, Caribbean coast of Colombia (USNM 1444805): A, carapace and cephalic appendages, lateral view; B, abdomen, lateral view; C, telson, dorsal view; D, left uropod, dorsal view; E, anterior portion of epistome, ventral view; F, right antennal peduncle and scaphocerite, dorsal view; G, left antennular peduncle, dorsal view; H, sixth to eighth thoracic sternites, ventral view. Scale bars = 1 mm.

Abdominal tergites with transverse and longitudinal grooves (Figs. 1, 2B). First somite with tergite divided into 2 plates, 1 short, lateroventrally, and 1 posteriorly and delimited by carinae; pleura unarmed on lateral surface, ventral margin ending in 3 sharp teeth. Second somite with tergite having 2 transverse dorsal carinae and 1 short transverse lateral carina on each lateral surface. Second to fifth somites each with pleura having short transverse row of 3 small spines on lateral surface. Third somite longest; pleuron having broadly rounded posterodorsal margin, with 2 longitudinal dorsolateral grooves, and 5 transverse carinae as follows: most anterior V-shaped (in lateral view), followed posteriorly by short checkmark-shaped carina, 2 short carinae laterally, and 1 forming posterior margin of tergite. Second to fourth somites with ventrolateral margin of pleura each armed with 3 strong, sharp teeth followed by 2 teeth on posteroventral angle. Fourth and fifth somites with tergites each having 2 dorsal rounded, transverse carinae. Sixth somite with tergite having 1 transverse dorsal, rounded carina with 1 anterolateral spine just behind pleura of fifth somite, and transverse row of about 20 sharp spinules on posterior

half; pleura with posteroventral angle formed by strong, acute tooth adjacent to base of uropod, posteromedian margin forming rounded lobe. Sternites of first to fifth abdominal somites armed with 1 median anteroventrally directed spine.

Telson (Fig. 2C) elongated, lance-shaped, posterior three-fourth narrowing distally, anterior one-fourth narrowing anteriorly; margins densely fringed with plumose setae. Distal margin armed with 3 well-spaced spines of similar size. Lateral margins each with strong spine at approximately midlength of lateral margin. Dorsal surface with deep median groove flanked by 2 longitudinal carinae, each carina bearing row of 5 strong, posteriorly directed spines on lateral margin of carina and pair of strong dorsomedian spines. Mesial groove with pair of strong spines anteriorly, followed by 4 pairs of smaller, sharp slender spines, the last pair of which aligned with pairs of dorsomedian spines on longitudinal carinae.

Uropods (Fig. 2D) well developed, basal segment with 3 small teeth on dorsodistal angle; outer margin of uropodal exopodite armed with 7 acute teeth including strong terminal tooth; uropodal endopodite with 3 acute teeth on anterior half of outer margin; exopodite and endopodite each with 2 longitudinal, unarmed carinae on dorsal surface.

Antennular peduncle (Fig. 2G) relatively short, extending for about one-fourth length of scaphocerite, somewhat sculptured. Basal segment longest, bearing well-developed acute stylocerite, distomesial border with flat projection on inner side, and oval projection on outer side. Intermediate segment longer than distal segment, bearing strong dorsal spine, 2 dorsomesial spines, and 1 large dorsolateral spine. Distal segment shortest, unarmed. Flagella slender, long.

Antenna (Fig. 2F) with scaphocerite about 4 times as long as broad. Scaphocerite with mesial margin convex; lateral margin with 11 strong teeth, apical tooth overreaching distal margin; dorsal surface with 2 longitudinal, shallow sulci fused basally and extending for about half length of scaphocerite; ventral surface unarmed. Basicerite stout, somewhat sculptured and armed with 2 moderately large spines on distolateral angle, 3 small spines mesially, and 1 spine posterolaterally. Carpocerite armed with 2 small spines on ventromesial margin, and 1 large laterodistal spine. Flagellum well developed, extending beyond tip of telson when bent posteriorly. Epistome (Fig. 2E) armed with pair of slender spines on anterior margin; lateral surface unarmed.

Sixth thoracic sternite (Fig. 2H) with subtriangular plate armed with pair of anteromesial spines distally. Seventh thoracic sternite incompletely divided by anteromedian U-shaped cleft into 2 broad lamellar plates, each armed with 4 spines on anterior margin and 3 larger spines on lateral margin. Eighth sternite divided into 2 lateral subrectangular plates, each armed with 2 large spines on anterolateral angle; with broad, triangular plate having apex extending anteriorly and dividing lateral subrectangular plates.

Mandible (Fig. 3A) robust, with short, partly fused molar and incisor processes, incisor bearing 3 large, 8 smaller teeth along outer margin; palp 3-segmented, distal segment oval with dense setae, intermediate segment with sparse setae, proximal segment naked.

Maxillule (Fig. 3B) with slender, undivided endopod and bearing setae on lateral and distal margins; proximal endite (coxal) moderately broad with numerous long setae; distal endite (basal) truncated, distal margin with rows of long, slender spiniform setae.

Maxilla (Fig. 3C) with long, narrow scaphognathite fringed with plumose setae; coxal and basal endites each divided into 2 partially fused lobes with plumose setae distally; endopod slender, fringed with marginal plumose setae.

First maxilliped (Fig. 3D) with 3-segmented endopod, proximal segment longest and widest, distal shortest and narrowest, proximal and central segments with long plumose setae; basipodite large, oval shaped, with dense plumose setae distally and sparse subdistal setae; epipod bilobed; exopod well developed, with long flagellum.

Second maxilliped (Fig. 3E) with segmented endopodite; dactylus suboval, with dense fringe of setae along dorsodistal margin and few setae on ventrodistal margin; propodus subrectangular, longer than dactylus, densely setose on dorsal margin and mesial surface, with hook-like proximal spine on ventral margin; carpus triangular, with tuft of long setae on dorsodistal angle; merus inner margin oval, margins bearing dense setae on mesial margins; ischium oval, short; basis with mesial spine and rounded projection on external surface near fusion with ischium; exopodite reaching beyond distal margin of carpus, distally setose.

Third maxilliped (Fig. 3F) with 7-segmented endopodite, moderately slender, reaching tip of scaphocerite when fully extended; dactylus and propodus similar in length but dactylus slenderer and tapering distally; propodus bearing setigerous organs on distomesial angle; carpus bearing row of 5 spines on outer margin; merus somewhat

twisted, outer margin with 1 strong distal spine and row of 10 slender spines; ischium armed with 1 strong distal spine on outer margin, and row of 7 spines on inner margin interspaced with thick, long setae; basis short, with spine on inner margin distally; exopodite short, 2-segmented, with setae distally.

First pereopod (Fig. 4A, B) slender, shortest of all five pereopods, overreaching tip of scaphocerite by length of dactylus; segments unarmed. Dactylus less than half as long as propodus, carpus longest segment. Ischium about half length of carpus. Fingers of chela terminating in hooked unguis, cutting edges each with low proximal ridge followed by row of minute, well-spaced teeth, and several tufts of setae distally. Carpus and chela with well-developed setigerous organs (carpo-propodal setal brush) on ventral surface.

Second pereopod (Fig. 4C, D) similar to first but longer and stronger. Fingers of chela terminating in hooked unguis, cutting edges with low proximal ridge followed by row of minute well-spaced teeth, and several tufts of setae distally. Carpus and propodus without setigerous organs.

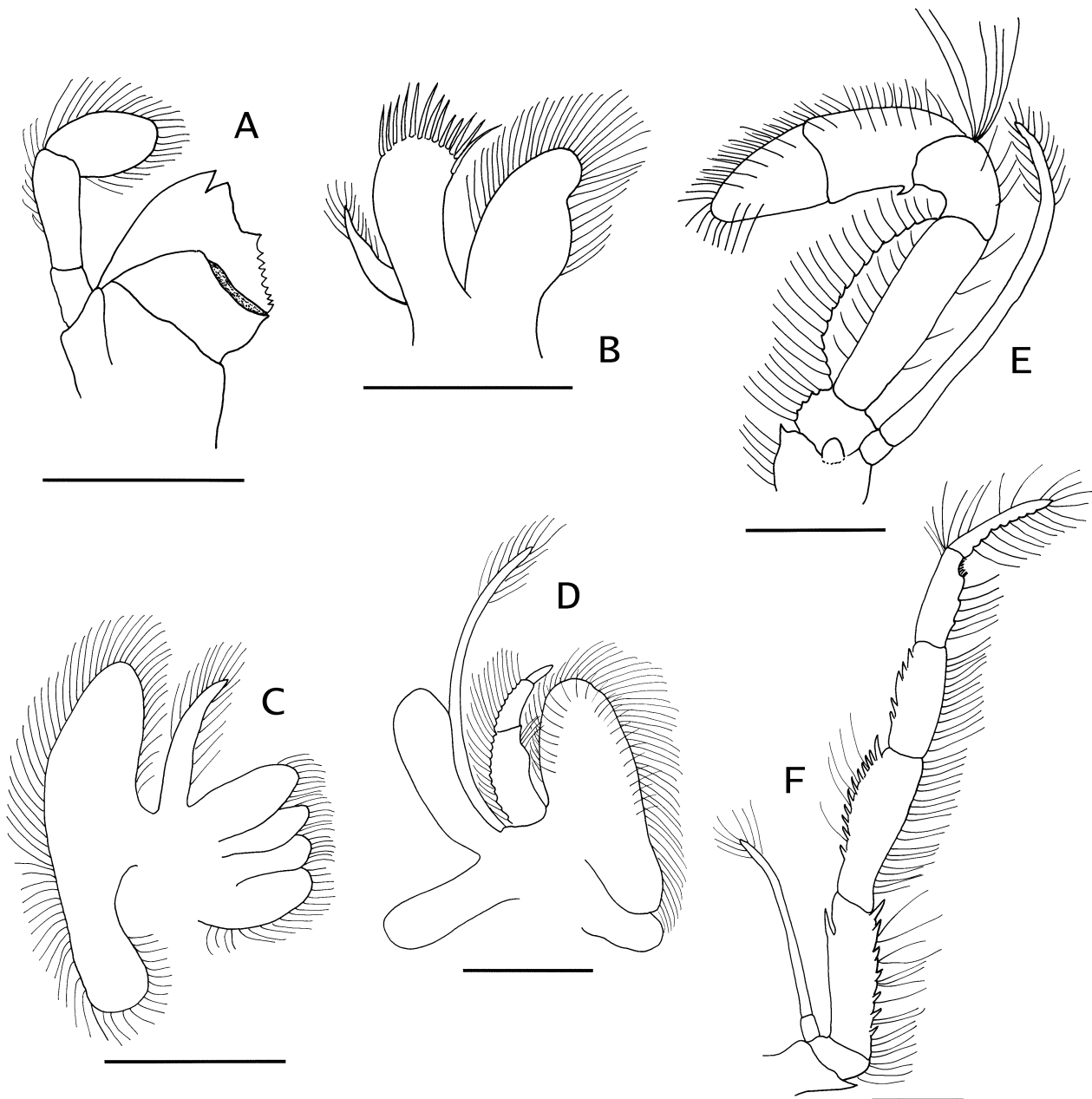


FIGURE 3. *Odontozona edyli* n. sp., holotype male, TL 24 mm, PCL 5.7 mm, RL 5.8 mm, San Bernardo Islands, Caribbean coast of Colombia (USNM 1444805). Right mouthparts, internal view: A, anterior portion of mandible; B, maxillule; C, maxilla; D, first maxilliped; E, second maxilliped; F, third maxilliped. Scale bars = 1 mm.

Third pereiopod (Fig. 4E, F) strongest and largest, longer than entire body, left and right equal in size, with only slight variations left from right in number of spines. Fingers shorter than palm; carpus, palm and merus subequal in length, ischium shortest. Dactylus and fixed finger terminating in hooked unguis, cutting edge armed with minute, indistinct teeth fused by thick chitinous, transparent lamella; cutting edge of left and right dactyli each with stout triangular tooth basally and fitting on cleft on fixed finger, cutting edge of right fixed finger with large triangular tooth on distal third. Dactylus bearing 3 (right) or 4 (left) spines on dorsal margin. Palm subcylindrical, armed with 2 irregular longitudinal rows of paired sharp, spines on dorsal margin, most proximal spines smallest; ventral margin armed with 9 spines. Carpus narrowing proximally, armed with 2 rows of spines, 11 on marginal row, 6 on ventromesial region, 2 large spines and a subacute lobe on dorsomesial region distally; ventral margin with 6 spines. Merus armed with 5 (right) or 7 (left) spines on dorsal margin, row of 7 spines on dorsomesial surface, and 11 spines on ventral margin gradually increasing in size distally. Ischium short, bearing 1 large, curved spine on dorsal surface. Basis and coxa short, unarmed.

Fourth and fifth pereiopods (Fig. 4 G, H) slender, similar in shape except fifth slightly longer. Dactylus short, biunguiculate, compressed laterally, with slender unguis not demarcated from dactylar corpus. Propodus about half as long as carpus, with few long setae dorsally; ventral margin armed with about 26 (fourth pereiopod) or 30 (fifth pereiopod) minute, closely set movable spines. Carpus obscurely subdivided into 3 articles of somewhat dissimilar length, with few long setae dorsally; with 2 small spinules on ventral margin distally. Merus lacking spines, with few long setae dorsodistally and ventrally. Ischium about half as long as merus, with few long setae ventrally. Basis short.

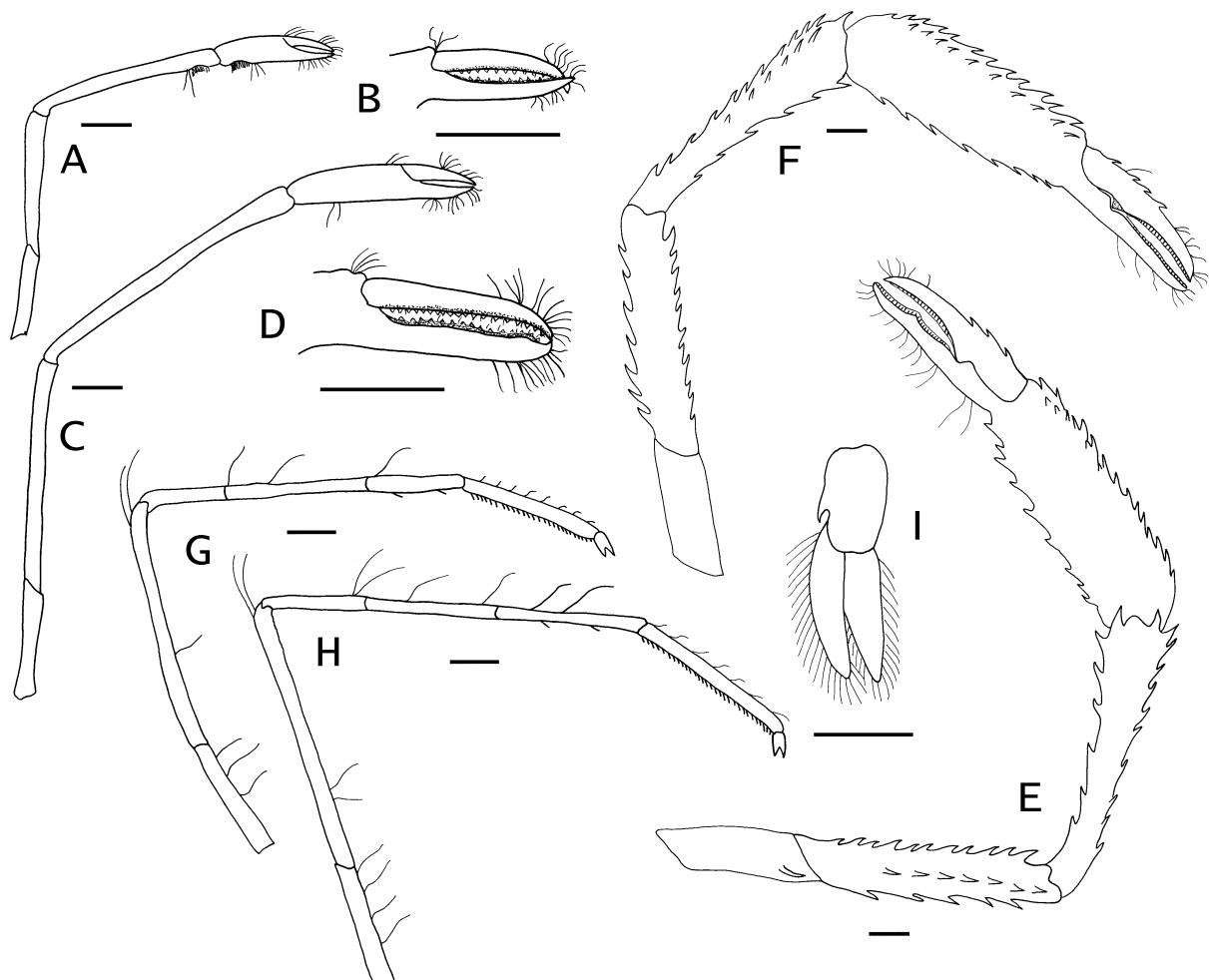


FIGURE 4. *Odontozona edyli* n. sp., holotype male, TL 24 mm, PCL 5.7 mm, RL 5.8 mm, San Bernardo Islands, Caribbean coast of Colombia (USNM 1444805): A, left first pereiopod, lateral view; B, fixed finger and dactylus of same, mesial view; C, left second pereiopod, lateral view; D, fixed finger and dactylus of same, mesial view; E, right third pereiopod, dorsal view; F, left third pereiopod, ventral view; G, right fourth pereiopod, lateral view; H, right fifth pereiopod, lateral view; I, left second pleopod, dorsal view. Scale bars = 1mm.

Pleopods (Fig. 4I) lacking appendices internae, second pleopod lacking appendix masculina. First pleopod uniramous, smaller than other pleopods. Second to fifth pleopods biramous, with rami somewhat unequal; second to fourth pleopods armed with short acute spine on protopod margin near base of endopod.

Branchial formula.

	Maxillipeds			Pereiopods				
	I	II	III	I	II	III	IV	V
Pleurobranchs	--	--	1	1	1	1	1	1
Arthrobranchs	--	1	2	2	2	2	2	--
Podobranchs	--	1	--	--	--	--	--	--
Epipods	1	1	1	1	1	1	1	--
Exopods	1	1	1	--	--	--	--	--

Color pattern. Not recorded, unknown.

Etymology. The name of the species is to acknowledge the encouragement and support to MMC during her scientific career by her husband, Edward A. Licitra. The specific name is a combination of his nickname “Edy” with the first syllable of his last name.

Remarks. *Odontozona edyli* n. sp. is more similar to *O. arbur*, recently described from the Indo-West Pacific by Saito *et al.* (2017), than to any other species of *Odontozona* from the western Atlantic. These two species resemble each other in the dense spination of the carapace, ornate abdominal carinae and spination and size of the third pereiopod. However, *O. edyli* n. sp. can be easily distinguished from *O. arbur* by the following morphological features: the lack of posterior spines on the telson—*O. edyli* n. sp. has the telson armed with one posterior and two marginal spines of similar size, whereas *O. arbur* has two long submarginal spines and the posterior and marginal spines are missing; the third maxilliped—*O. edyli* n. sp. has setigerous organs on the propodus, carpus with a row of 5 spines, and ischium with 1 strong spine on the ventral margin, while *O. arbur* does not possess setigerous organs, and the spines on the carpus and ischium are missing; the cutting edge of the chela of the third pereiopod—*O. edyli* n. sp. is armed with minute teeth while *O. arbur* has none; the propodus of the fourth and fifth pereiopods—in *O. edyli* n. sp. it is unsegmented and bears 26–30 movable spines while in *O. arbur* it is divided with 6–8 joints and bears 12–17 spines.

Odontozona edyli n. sp. also resembles *O. sculpticaudata* from the Indo-Pacific in the dense spination of the carapace, ornate abdomen, and presence of setiferous organs on the third maxilliped and first pereiopod. *Odontozona sculpticaudata* was described by Holthuis (1946) based on one specimen collected in Indonesia, and subsequently was redescribed by Goy (2015) based on 16 specimens collected in New Caledonia, the Red Sea, and northwestern Australia. Goy (2015) reported in his specimens of *O. sculpticaudata* a high variability in the number of teeth, spines or spinules, as follows: rostral teeth, 5–9 (dorsal) and 0–6 (ventral); spines on cervical groove cincture, 16–32; spinules on postcervical groove cincture, 44–78; teeth on outer margin of scaphocerite, 7–14; teeth on outer margin of merus and carpus of third maxilliped, 1–5 and 0–3, respectively; and propodal spines of fourth and fifth pereiopod, 9–26. The meristics on the same structures in *O. edyli* n. sp., are as follows: rostral teeth are 7 dorsal and 5 ventral; spines on the cervical groove cincture, 18; spinules on postcervical groove cincture, 80; spines on ventral margin of propodus of fourth and fifth pereiopods, 25 and 30, respectively; and teeth on the outer margin of the scaphocerite, 11. Thus, there is considerable overlap in the number of teeth and spines of *O. edyli* n. sp. and *O. sculpticaudata*, and separation of the two based on these meristics can be difficult or lead to identification inaccuracies. However, *O. edyli* n. sp. can be easily distinguished from *O. sculpticaudata* by using the following characters: length and shape of rostrum—being long and slender in *O. edyli* n. sp., whereas it is short in *O. sculpticaudata*; the pleura of the third abdominal somite—*O. edyli* n. sp. has 5 transverse carinae and 2 longitudinal grooves, whereas there are 3 transverse and 8 longitudinal carinae in *O. sculpticaudata*; dorsal spines on uropodal endopod—unarmed in *O. edyli* n. sp., whereas armed with row of 3 dorsal spines in *O. sculpticaudata*; armature of the scaphocerite—unarmed in *O. edyli* n. sp., whereas armed with 1–10 spines in *O. sculpticaudata*; and the palm and carpus of the third pereiopod—which is armed with 2 irregular paired rows of sharp spines on the dorsal margin in *O. edyli* n. sp., whereas armed with 1 row of spines in *O. sculpticaudata*.

Besides *O. arbur* and *O. sculpticaudata*, three other species have sculptured abdominal tergites with carinae

and grooves: *O. spinosissima* from the western Indian Ocean, *O. rubra* from the eastern Pacific, and *O. ensifera* from the Indo-Pacific. *Odontozona edyli* n. sp. can be distinguished from *O. spinosissima* in the shape and armature of the rostrum, and by the dense spination of the carapace. *Odontozona rubra* can be distinguished from *O. edyli* n. sp. in the number of spines on the cervical groove cincture (70 in *O. rubra*, 18 in *O. edyli* n. sp.), the number of carinae and grooves on the pleura of the third abdominal somite (5 longitudinal grooves in *O. rubra*, 2 longitudinal and 5 transverse carinae in *O. edyli* n. sp.), the spines on the lateral surface of the tergites of the second to fifth abdominal somites (missing in *O. rubra*, 3 present in *O. edyli* n. sp.), and segmentation of the propodus of the fourth and fifth pereopods (5–7 in *O. rubra*, unsegmented in *O. edyli* n. sp.). *Odontozona ensifera* can be distinguished from *O. edyli* n. sp. by the smaller number of spines on the postcervical groove cincture (41–70 in *O. ensifera*, 80 in *O. edyli* n. sp.), the number of carinae on the third abdominal somite (2 longitudinal and 1 transverse), the lack of carinae on the fourth abdominal somite, the lack of spines on the ischium of the third maxilliped, and the slender palm of the third pereopod against a much larger and robust palm in *O. edyli* n. sp., with different arrangement of spines.

Odontozona edyli n. sp. can be distinguished from the other western Atlantic congeners, *O. striata*, *O. libertae*, *O. meloi*, and *O. lopheliae*, by the following characters present in all four of the latter species: lack of carinae and grooves on tergites third to fifth abdominal somites; relatively short rostrum, which usually reaches only the antennular peduncle; reduced number of spines on carapace, especially on the postcervical groove cincture; reduced number of spines on lateral surface of the tergites and ventrolateral margin of the pleurae of second to fifth abdominal somites; and segmentation of propodus of the fourth and fifth pereopods. Goy (1981) described *O. striata* based on an ovigerous female collected off Cabo San Antonio, Cuba, as having transverse longitudinal grooves on the abdominal somites similar to those in *O. sculpticaudata*. However, Okuno (2003) reexamined the holotype of *O. striata* and found that the grooves of the abdominal somites described by Goy (1981) actually correspond to muscle tissues visible through the transparent body integument. Okuno (2003) also noted that the scaphocerite in this holotype does not possess spinules on the dorsal surface, and that the merus of the fourth pereopod is entire and not three-segmented as described by Goy (1981). We examined one unreported *O. striata* male specimen (UMML 32.5458), collected in Discovery Bay, Jamaica, and this specimen has transverse carinae on the first and second abdominal somites but lacks the sculptured grooves on the tergites of the abdominal somites as described by Goy (1981), lacks spinules on the dorsal surface of the scaphocerite, and has a segmented merus on the fourth pereopod (although the number of segments is not clearly visible because the specimen has only one pereopod in poor condition). This male *O. striata* presents other differences from Goy's (1981) holotype as well, i. e., the rostrum is longer; the pleurae of the second and third abdominal somites each ends in one anterolateral and two posterolateral spines instead of a rounded smooth margin; and the tergite of the second abdominal somite has three lateral spines, whereas no spines are shown in Goy's drawing. Only by examining more *Odontozona* material from this region can it be determined whether the differences observed between these two specimens are related to sexual dimorphism or to intra-specific variability as reported in some Indo-Pacific species of *Odontozona*.

As previously mentioned, Chen *et al.*'s (2016) recent phylogenetic study of the Stenopodidea, questioned the validity of the three families currently in this infraorder, and suggested that all families might need to be merged into a single family, Stenopodidae. Such action, however, would require a revision and redefinition of the various genera and species in the infraorder. These authors also suggest that *Odontozona* is polyphyletic and possibly contains cryptic species. Saito *et al.* (2017) in the recent description of two new *Odontozona* species, elaborated a key for the identification of the species of *Odontozona* and provided the color in life of four *Odontozona* species. Thus, attempts at this time to present a new key for the identification of the species of *Odontozona*, or to clarify the relationships between Atlantic and Indo-Pacific species, is premature until new morphological and genetic studies can be completed to clearly define generic boundaries in this infraorder.

Acknowledgements

Thanks to J. Garzón and A. Acero from the “Instituto de Investigaciones Marinas y Costeras”, INVEMAR, Santa Marta, Colombia, for helping in the collection of the specimen, to the Marine Biology & Ecology Department and the Invertebrate Museum of Rosenstiel School of Marine and Atmospheric Science, University of Miami, Florida,

for providing specimen material and logistic support; to R. Gullidge from USNM, for her assistance in the preparation of the final drawings, and to USNM for support to MMC in the form of a visitor grant through the Rathbun Fund.

Literature cited

- Alcock, A. & Anderson, A.R. (1899) An Account of the Deep-sea Crustacea dredged during the Surveying-season of 1897–98. Natural history notes from H.M. Royal Indian Marine Survey Ship 'Investigator', Commander T.H. Heming, R.N., commanding. Series III, No. 2. *Annals and Magazine of Natural History*, Series 7, 1–27, 278–292.
<https://doi.org/10.1080/00222939908678123>
- Alvarez, F., Iliffe, T.M. & Villalobos, J.L. (2006) Macromaxillocarididae, a new family of stenopodidean shrimp from an anchialine cave in the Bahamas, with the description of *Macromaxillocaris bahamaensis*, n. gen., n. sp. *Journal of Crustacean Biology*, 26, 366–378.
<https://doi.org/10.1651/C-2658.1>
- Anker, A. & Tavares, M. (2013) Description of a new deep-water stenopodid shrimp of the genus *Odontozona* Holthuis, 1946 (Crustacea: Decapoda) from Brazil. *Marine Biology Research*, 9 (4), 421–430.
<https://doi.org/10.1080/17451000.2012.745004>
- Bouvier, E.L. (1908) Sur les relations zoologiques des crevettes de la tribu des Sténopides. *Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences*, 146, 887–891.
- Chen, L.Ch, Goy, J.W., Bracken-Grissom, H.D., Felder, D.L., Tsang, L.M. & Chan, T.Y. (2016) Phylogeny of Stenopodidea (Crustacea: Decapoda) shrimps inferred from nuclear and mitochondrial genes reveals non-monophyly of the families Spongicolidae and Stenopodidae and most of their composite genera. *Invertebrate Systematics*, 30, 479–490.
<https://doi.org/10.1071/IS16024>
- Claus, C.F.W. (1872) *Grundzüge der Zoologie zum Gebrauche an Universitäten und höherem Lehranstalten sowie zum Selbststudium. Zweite vermehrte Auflage*. N.G. Elwert'sche Universitäts-Bihandlung, Marburg und Leipzig, 1170 pp.
<https://doi.org/10.5962/bhl.title.3783>
- Dana, J.D. (1852) *Conspectus Crustaceorum quae in Orbis Terrarum Circumnavigatione, Carolo Wilkes e Classe Republicae Foederate Duce, lexit et descripsit. Proceedings of the Academy of Natural Sciences of Philadelphia*, 1851, 10–28.
- Dounas, C. & Koukouras, A. (1989) *Odontozona minoica*, new species, from the eastern Mediterranean Sea (Decapoda: Stenopodidea). *Journal of Crustacean Biology*, 9, 341–348.
<https://doi.org/10.2307/1548509>
- Gore, R.H. (1981) Three new shrimps, and some interesting new records of decapod Crustacea from a deep-water coral-reef in the Florida Keys. *Proceedings of the Biological Society of Washington*, 94, 135–162.
- Goy, J.W. (1981) *Odontozona striata* new species from off the western coast of Cuba (Crustacea: Decapoda: Stenopodidea): Studies on West Indian Stenopodidae, 1. *Bulletin of Marine Science*, 31 (4), 843–852.
- Goy, J.W. (2015) Stenopodidean shrimps (Crustacea: Decapoda) from New Caledonian waters. *Zootaxa*, 4044 (3), 301–344.
<https://doi.org/10.11646/zootaxa.4044.3.1>
- Goy, J.W. & Cardoso, I.A. (2014) Redescription of *Odontozona edwardsi* (Bouvier, 1908) (Decapoda: Stenopodidea: Stenopodidae) and description of a new species of *Odontozona* commensal on the deep-water coral *Lophelia pertusa* (Linnaeus, 1758). *Zootaxa*, 3774 (6), 552–566.
<https://doi.org/10.11646/zootaxa.3774.6.4>
- Hendrickx, M.E. (2002) A new deep water species of *Odontozona* Holthuis (Decapoda, Stenopodidae) from the southern Gulf of California, Mexico. *Crustaceana*, 75, 405–412.
<https://doi.org/10.1163/156854002760095471>
- Hendrickx, M.E. & Ayón-Parente, M. (2014) A new deep-water species of *Odontozona* (Decapoda: Stenopodidea) from the East Pacific, a new record of *O. foresti* Hendrickx, 2002. *Zootaxa*, 3835 (3), 338–348.
<https://doi.org/10.11646/zootaxa.3835.3.3>
- Holthuis, L.B. (1946) Part I. The Stenopodidae, Nephropsidae, Scyllaridae and Palinuridae. In: The Decapoda Macrura of the Snellius Expedition. Part XIV in Biological Results of the Snellius Expedition. *Temminckia*, 7, pp. 1–178, 2 figs, 11 pls.
- Kensley, B. (1981) The South African Museum's Meiring Naude cruises, part 12. Crustacea Decapoda of 1977, 1978, 1979 cruises. *Annals of the South African Museum*, 83, 49–78.
- Manning, R.B. & Chace, F.A. Jr. (1990) Decapod and Stomatopod Crustacea from Ascension Island, South Atlantic Ocean. *Smithsonian Contributions to Zoology*, 503, 1–91.
<https://doi.org/10.5479/si.00810282.503>
- Okuno, J. (2003) A new species of the genus *Odontozona* Holthuis, 1946 (Crustacea: Decapoda: Stenopodidae) from submarine caves in southern Japan. *Natural History Research*, 7, 167–80.
- Pretus, J.L. (1990) Description of *Odontozona addaia* spec. nov. (Crustacea: Decapoda: Stenopodidae) from a marine cave in the island of Minorca, western Mediterranean. *Zoologische Mededelingen*, 63, 343–57.
- Saito, T. & Fujita, Y. (2009) A new species of the genus *Odontozona* (Decapoda: Stenopodidea: Stenopodidae) associated with

a comatulid crinoid from the Ryukyu Islands. *Bulletin of the National Museum of Natural Science*, Series A, Supplement 3, 123–135.

Saito, T., Okumo, J. & Anker, A. (2017) Two new species of the stenopodidean shrimp genus *Odontozona* Holthuis, 1946 (Decapoda: Stenopodidae) from the Indo-West Pacific. *Crustacean Research*, 46, 25–55.

https://doi.org/10.18353/crustacea.46.0_25

Schram, F.R. (1986) Euzygida. In: Schram, F.R. (Ed.), *Crustacea*. Oxford University Press, New York, 276–285.

Wicksten, M.K. (1982) Two species of *Odontozona* (Decapoda: Stenopodidea) from the eastern Pacific. *Journal of Crustacean Biology*, 2, 130–35.

<https://doi.org/10.2307/1548117>