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Sea spiders (Arthropoda: Pycnogonida) collected during the Madibenthos Expedition from Martinique shallow waters

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Abstract. This study presents the inventory of sea spiders (Pycnogonida) sampled during the Madibenthos Expedition in Martinique (West Indies). Species were discriminated leaning on morphological and molecular data. A total of 761 specimens are classified in 72 species, 16 genera and nine families. Thirteen new species are described: *Ammothella dirbergi* sp. nov., *A. krappi* sp. nov., *Tanystylum boucheti* sp. nov., *T. ingrallis* sp. nov., *Ascorhynchus iguanarum* sp. nov., *Eurycyde kaiouti* sp. nov., *Nymphon dorlis* sp. nov., *N. ludovici* sp. nov., *N. martinicum* sp. nov., *N. timons* sp. nov., *Anoplodactylus madibenthos* sp. nov., *Pycnogonum cesairei* sp. nov. and *Rhynchothorax sidereus* sp. nov. We describe a neotype for *Anoplodactylus micros* Bourdillon, 1955 from the type locality. Martinique now includes 79 species of sea spiders, mostly endemic to the Tropical Northwestern Atlantic, cosmopolitan or shared with the South America Atlantic coast. Some species are potentially introduced. However, our knowledge of the distribution of species found in Martinique is probably biased by the scarcity of diagnostic morphological characters. Also, nine potentially cryptic species (discriminated on genetic data alone), are identified, shedding light on the overlooked diversity of sea spiders in the Tropical Northwestern Atlantic. Therefore, we call for a more widespread use of barcoding in sea spiders.

Keywords. Pantopoda, Caribbean, West Indies, biodiversity, integrative taxonomy.

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Introduction

Sea spiders (Arthropoda: Pycnogonida) of the Tropical Northwestern Atlantic (TNWA; Spalding *et al.* 2007) have been the focus of about 45 publications (listed in Sabroux *et al.* 2019b), with 132 species known from the region. Despite that this diversity already represents about 9% of the total of known species of Pycnogonida, we demonstrated in a previous account of Martinique fauna based on the

Madibenthos Expedition samples (Sabroux *et al.* 2019b) how lacunar our knowledge of TNWA sea spiders is regarding all together a high rate of undescribed species and the poor knowledge of species repartition. Species delimitation analyses performed with DNA barcoding data also give a hint on how abyssal the unexplored pit of cryptic species is.

While our previous work focused on the macroecology of Martinique's sea spiders and the knowledge bias regarding the Caribbean fauna, this study will present the taxonomic diversity of sea spiders collected during the Madibenthos Expedition in detail. This study presents several improvements from the former listing (recounting, updated taxonomic status), provides a detailed list of specimens and introduces the description of 13 new species. A total of 72 species is listed from the Madibenthos samples. This shallow water material from Martinique adds to the contributions of Bourdillon (1955) and Müller (1990a), which already included 20 species (of which 13 are recovered in the Madibenthos material; Table 1), including one undetermined species of *Ascorhynchus* and the so-far endemic species *Nymphon macabou* Müller, 1990, which was not recovered in the Madibenthos samples. It is also worth noting that two deep-water species were sampled by the research vessel 'Blake' in 1879 and described from off Martinique: *Ephyrogymna circularis* Hedgpeth, 1943 (1052 m) and *Heterofragilia fimbriata* Hedgpeth, 1943 (871 m).

Material and methods

Studied material

The material was collected in Martinique's shallow waters (mostly 0–100 m) during the Madibenthos expedition in September–October 2016. Sampling was performed by scuba-diving methods (catching, vacuum sampling, brushing sampling), sampling along the intertidal zone and dredging. Sampling stations with sea spider occurrences are presented in Fig. 1.

The 5′ region of the mitochondrial cytochrome c oxidase subunit 1 (CO1) gene was previously sequenced in Sabroux *et al.* (2019b) for most specimens examined herein in order to resolve taxonomic issues. The material was recounted after this study, and identifications were checked and updated. The list of species, with corresponding names in Sabroux *et al.* (2019b), is provided in Table 2.

Types and examined material are deposited in the Muséum national d'Histoire naturelle, Paris (collection numbers MNHN-IU-xxx-xxx). MK numbers correspond to GenBank accession numbers published in Sabroux *et al.* (2019b). Measurements of described holotypes were taken on drawings which were produced using a camera lucida; the trunk was measured from the chelifore insertion to the base of the abdomen, chelifores were measured as the cumulative size of the different articles and other measurements were performed measuring the distance from the proximal insertion to the tip.

Acronyms for the collections in which previously described material is hosted are as follow:

EMB-IOC = Estação de Biologia Marinha do Instituto Oswaldo Cruz, Rio de Janeiro, Brazil
MCZ = Museum of Comparative Zoology, Harvard University, Boston, MA, USA (Invertebrate Zoology Collection)
MNHN = Muséum national d'Histoire naturelle, Paris, France (Invertébrés marins, Collection Crustacés)
MOM = Musée Océanographique de Monaco, Monte-Carlo, Monaco
MP = Museu Paranaense, Curitiba, Paraná, Brazil
NHMD = Natural History Museum of Denmark, Copenhagen (Crustacea collection)
NHMUK = Natural History Museum, London, UK (LS Chelicerates)
NL = Naturalis Biodiversity Center, Leiden, the Netherlands (Collection Chelicerata and Myriapoda)

Table 1. List of the 20 species previously recorded from Martinique. Precise localities and references are indicated.

Family	Genus	Species	Localities	Reference	Recovered in present study
Ammotheidae Dohrn, 1881	***Achelia*** Hodge, 1864	*Achelia gracilis* Verrill, 1900	Fort-de-France port	Bourdillon 1955	X
		Achelia sawayai Marcus, 1940	Cap Chevalier	Müller 1990e	X
	Ammothella Verrill, 1900	*Ammothella appendiculata* (Dohrn, 1881)	Petite Anse du Diamant	Bourdillon 1955	X
		Ammothella exornata Stock, 1975	Ilet Cabrits, Petite Anse Macabou, Baie de Tartane	Müller 1990e	X
		Ammothella rugulosa Verrill, 1900	Fort-de-France port	Bourdillon 1955	
		Ammothella marcusi Hedgpeth, 1948	Baie de Tartane	Müller 1990e	X
		Ammothella spinifera Cole, 1904	Vauclin, Petite Anse Macabou, Baie de Tartane	Müller 1990e	X
	Tanystylum Miers, 1879	*Tanystylum acuminatum* Stock, 1954	Petite Anse Macabou	Müller 1990e	X
		Tanystylum birkelandi Child, 1979	Petite Anse Macabou	Müller 1990e	X
		Tanystylum geminum Stock, 1954	Ilet Cabrit, Petite Anse Macabou, Baie de Tartane	Bourdillon 1955, Müller 1990e	
		Tanystylum isthmiacum Stock, 1955	Petite Anse Macabou	Müller 1990e	
		Tanystylum tayronae Müller & Krapp, 2009	Petite Anse Macabou	Müller 1990e, Müller & Krapp 2009	X
Ascorhynchidae Hoek, 1881	***Ascorhynchus*** Sars, 1877	*Ascorhynchus* sp.	Fort-de-France port	Bourdillon 1955	
Callipallenidae Hilton, 1942	***Callipallene*** Flynn, 1929	*Callipallene emaciata* (Dohrn, 1881)	Petite Anse Macabou	Müller 1990e	
Nymphonidae Wilson, 1878	***Nymphon*** Fabricius, 1794	*Nymphon macabou* Müller, 1990	Petite Anse Macabou	Müller 1990e	
Phoxichilidiidae Sars, 1891	***Anoplodactylus*** Wilson, 1878	*Anoplodactylus batangensis* (Helfer, 1938)	Petite Anse du Diamant, Ilet Cabrits, Cap Chevalier, Petite Anse Macabou, Baie de Tartane	Bourdillon 1955, Müller 1990e	X
		Anoplodactylus californicus Hall, 1912	Saint-Pierre, Petite Anse Macabou	Bourdillon 1955, Müller 1990e	(cf.)
		Anoplodactylus digitatus (Böhm, 1879)	Baie de Fort-de-France	Bourdillon 1955	X
		Anoplodactylus micros Bourdillon, 1955	Petite Anse Macabou	Bourdillon 1955	X
		Anoplodactylus monotrema Stock, 1979	Petite Anse Macabou	Müller 1990e	X

SMF = Senckenberg-Museum Frankfurt am Main, Germany (Marine Zoology, Crustacean Collections)
UFPB = Universidade Federal da Paraíba, Brazil (Pycnogonida collection)
USNM = Smithsonian National Museum of Natural History, Washington D.C., USA (Invertebrate Zoology Collections)
YPM = Yale Peabody Museum of Natural History, New Haven, CT, USA (Invertebrate Zoology Dept)
ZMH = Zoological Museum Hamburg, Germany (Zoological collections, Arachnology)
ZMB = Museum für Naturkunde, Berlin, Germany (Arachnida, Myriapoda and stem-group Arthropoda)

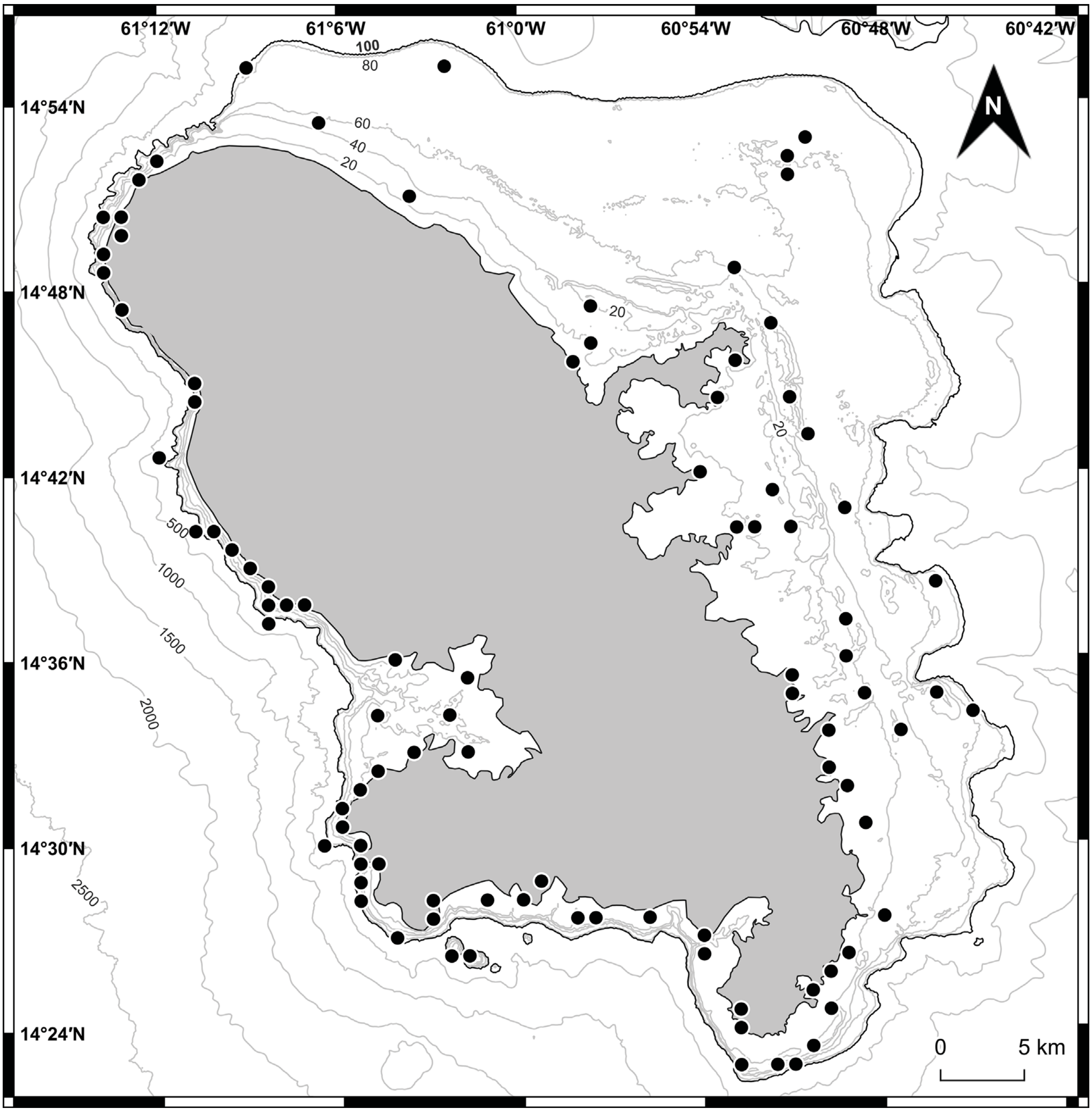

Fig. 1. Madibenthos sampling stations with occurrences of sea spiders in Martinique. Bathymetric range is shown by grey isolines each 20 m (0–100 m depth) and each 500 m (deeper than 500 m). The 100 m isobath (above which most samplings were performed) is marked by a black isoline. Sampling stations are indicated as black circles. See Sabroux *et al.* (2019b) for alternative representation.

Table 2 (continued on next 2 pages). List of species recorded from the Madibenthos Expedition. Corresponding names in Sabroux *et al.* (2019b) are indicated, as well as the number of suspected cryptic species. In column with number of potential cryptic species, the COI inter-cluster uncorrected p-distance is given in parentheses.

Family	Genus	Species	Name in Sabroux *et al.* 2019b	Potential cryptic species within
Ammotheidae Dohrn, 1881	***Achelia*** Hodge, 1864	*Achelia gracilis* Verrill, 1900		2 (0.105–0.112)
		Achelia sawayai Marcus, 1940		3 (0.133–0.191)
	Ammothella Verrill, 1900	*Ammothella appendiculata* (Dohrn, 1881)		
		***Ammothella dirbergi* sp. nov.**	*Ammothella* sp. 1 [pro parte]	
		Ammothella exornata Stock, 1975		
		***Ammothella krappi* sp. nov.**	*Ammothella* sp. 1 [pro parte]	
		Ammothella marcusi Hedgpeth, 1948		
		Ammothella aff. *krappi* sp. nov.	*Ammothella* sp. 1 [pro parte]	
		Ammothella spinifera Cole, 1904		
	Nymphopsis Haswell, 1884	*Nymphopsis duodorsospinosa* Hilton, 1942		
	Tanystylum Miers, 1879	*Tanystylum acuminatum* Stock, 1954		
		***Tanystylum boucheti* sp. nov.**	*Tanystylum hummelincki* Stock, 1954 [pro parte]	
		Tanystylum birkelandi Child, 1979		
		Tanystylum duospinum Hilton, 1939		
		Tanystylum hummelincki Stock, 1954	*Tanystylum hummelincki* Stock, 1954 [pro parte]	
		***Tanystylum ingrallis* sp. nov.**	*Tanystylum* sp. 3	
		Tanystylum orbiculare Wilson, 1878	*Tanystylum conirostre* (Dohrn, 1881)	
		Tanystylum tayronae Müller & Krapp, 2009		
Ascorhynchidae Hoek, 1881	***Ascorhynchus*** Sars, 1877	*Ascorhynchus castellioides* Stock, 1957		
		Ascorhynchus horologium Child, 1992		
		***Ascorhynchus iguanarum* sp. nov.**	*Ascorhynchus* sp. 4	
		Ascorhynchus latipes (Cole, 1906)		
		Ascorhynchus sp. 5		
	Eurycyde Schiödte, 1857	*Eurycyde clitellaria* Stock, 1955		
		***Eurycyde kaiouti* sp. nov.**	*Eurycyde raphiaster* Loman, 1912 [pro parte]	
		Eurycyde raphiaster Loman, 1912	*Eurycyde raphiaster* Loman, 1912 [pro parte]	

Table 2 (continued). List of species recorded from the Madibenthos Expedition. Corresponding names in Sabroux *et al.* (2019b) are indicated, as well as the number of suspected cryptic species. In column with number of potential cryptic species, the COI inter-cluster uncorrected p-distance is given in parentheses.

Family	Genus	Species	Name in Sabroux *et al.* 2019b	Potential cryptic species within
Callipallenidae Hilton, 1942	***Callipallene*** Flynn, 1929	*Callipallene brevirostris* (Johnston, 1837)		
		Callipallene cinto Müller & Krapp, 2009		
		Callipallene longicoxa Stock, 1955		
	Pallenoides Stock, 1951	*Pallenoides* cf. *amazonicus* Stock, 1974	*Pallenoides* sp. 1	
		Pallenoides spinulosum Stock, 1955		
	Parapallene Carpenter, 1892	*Parapallene bermudensis* Lebour, 1949		
Endeidae Norman, 1908	***Endeis*** Philippi, 1843	*Endeis flaccida* Calman, 1923		
		Endeis aff. *mollis* (Carpenter, 1904)	*Endeis* cf. *mollis* (Carpenter, 1904)	
		Endeis aff. *meridionalis* (Böhm, 1879)	*Endeis meridionalis* (Böhm, 1879)	
		Endeis sp. 3		
Nymphonidae Wilson, 1878	***Nymphon*** Fabricius, 1794	*Nymphon aemulum* Stock, 1975		
		***Nymphon dorlis* sp. nov.**	*Nymphon* sp. 1	
		***Nymphon ludovici* sp. nov.**	*Nymphon* sp. 3	2 (0.104–0.111)
		***Nymphon martinicum* sp. nov.**	*Nymphon* sp. 4	
		***Nymphon timons* sp. nov.**	*Nymphon* sp. 2	
Pallenopsidae Fry, 1978	***Pallenopsis*** Wilson, 1881	*Pallenopsis candidoi* Mello-Leitao, 1949		
		Pallenopsis schmitti Hedgpeth, 1943		
Phoxichilidiidae Sars, 1891	***Anoplodactylus*** Wilson, 1878	*Anoplodactylus* cf. *arcuatus* Child, 1977		
		Anoplodactylus batangensis (Helfer, 1938)		
		Anoplodactylus bahamensis Child, 1977	*Anoplodactylus micros* Bourdillon, 1955 [pro parte]	
		Anoplodactylus cf. *californicus* Hall, 1912	*Anoplodactylus* sp. 2	
		Anoplodactylus digitatus (Böhm, 1879)		
		Anoplodactylus evelinae Marcus, 1940		
		Anoplodactylus ganchiformis Lucena & Christoffersen, 2018	*Anoplodactylus stictus* Marcus, 1940	
		Anoplodactylus glandulifer Stock, 1954		
		Anoplodactylus imswe Child, 1982		

Table 2 (continued). List of species recorded from the Madibenthos Expedition. Corresponding names in Sabroux *et al.* (2019b) are indicated, as well as the number of suspected cryptic species. In column with number of potential cryptic species, the COI inter-cluster uncorrected p-distance is given in parentheses.

Family	Genus	Species	Name in Sabroux *et al.* 2019b	Potential cryptic species within
Phoxichilidiidae Sars, 1891 (cont.)	***Anoplodactylus*** Wilson, 1878 (cont.)	*Anoplodactylus insignis* (Hoek, 1881)		
		Anoplodactylus justi Müller, 1992 ?	*Anoplodactylus* cf. *justi* Müller, 1992	
		***Anoplodactylus madibenthos* sp. nov.**	*Anoplodactylus* sp. 1	
		Anoplodactylus maritimus Hodgson, 1914		
		Anoplodactylus massiliformis Stock, 1975		
		Anoplodactylus micros Bourdillon, 1955	*Anoplodactylus micros* Bourdillon, 1955 [pro parte]	2 (0.077–0.1)
		Anoplodactylus monotrema Stock, 1979		
		Anoplodactylus pectinus Hedgpeth, 1948		
		Anoplodactylus petiolatus (Krøyer, 1844)		
		Anoplodactylus quadratispinosus Hedgpeth, 1943		
		Anoplodactylus robustus (Dohrn, 1881)		
		Anoplodactylus sp. 4		
		Anoplodactylus sp. 7		
		Anoplodactylus sp. 8		
Pycnogonidae Wilson, 1878	***Pentapycnon*** Bouvier, 1910	*Pentapycnon geayi* Bouvier, 1911		
	Pycnogonum Brünnich, 1764	***Pycnogonum cesairei* sp. nov.**	*Pycnogonum* sp. 1	
		Pycnogonum cf. *ornans* Stock, 1992		
		Pycnogonum cf. *pusillum* Dohrn, 1881		
Rhynchothoracidae D'Arcy Thompson, 1909	***Rhynchothorax*** Costa, 1861	*Rhynchothorax crenatus* Child, 1982		
		***Rhynchothorax sidereus* sp. nov.**	*Rhynchothorax* sp. 1	

Molecular distances

Molecular distances were calculated as uncorrected p-distances among CO1 sequences made available by Sabroux *et al.* (2019b). These calculations were performed with MEGA7 (Kumar *et al.* 2016), using pairwise deletion for missing data.

Integrative taxonomy

An integrative taxonomic approach, based on comparisons between morphological and molecular data, has been systematically followed for species delimitation. Specimens were first discriminated on a morphological base, then this was tested by barcoding a sample of the specimens within identified groups for mitochondrial marker of the cytochrome oxidase subunit 1 (CO1) gene. Species delimitation was then performed using the ABGD method (Puillandre *et al.* 2012). When the barcoding method suggested a different discrimination from the morphology-based hypothesis, specimens were reexamined in further detail. Following the recommandations of Dietz *et al.* (2015a), only groups which were discriminated both on morphological and molecular bases were identified as species. When further discrimination was suggested by molecular data alone and we could not identify discriminating morphological characters (i.e., potential cryptic species might be hidden under one umbrella name), we named the different identified clusters as groups 1, 2, 3, etc.

Results (description authority: Sabroux)

A total of 761 identified specimens is included in this study, with a total of exactly 800 specimens counting unidentified specimens (not included in the list). Differences from Sabroux *et al.* (2019b) are due to a very few specimens that were recounted, damaged or newly found in unsorted samples, etc.

The 9 families, 16 genera and 72 species recorded from the Madibenthos Expedition are listed in Table 2. Unless otherwise mentioned, all material was collected during the Madibenthos Expedition, Martinique (West Indies). Station codes indicate the sampling method (AB for brushing, AD for dredging, AM for intertidal catches, AR for sight catches, AS for vaccum) (see Bouchet *et al.* 2019).

The following abbreviations are used: " ♂ ov." designates ovigerous males, "♀ gr." designates gravid females, "juv." stands for juvenile specimens and "ind. (sex indet.)" stands for specimens for which sex or development could not be determined.

Subphylum Chelicerata Heymons, 1901
Class Pycnogonida Latreille, 1810
Order Pantopoda Gerstaecker, 1863
Family Ammotheidae Dohrn, 1881
Subfamily Achelinae Wilson, 1881
Genus ***Achelia*** Hodge, 1864

Type species

Achelia echinata Hodge, 1864, by subsequent designation (Child 1998a).

Achelia gracilis Verrill, 1900

Achelia (?) *gracilis* Verrill, 1900: 582, pl. 70 fig. 10.

Ammothea gracilis – Cole 1904a: 317–323, pl. 21 figs 4–14. — Helfer & Schlottke 1935: 285.
Ammothea (*Achelia*) *gracilis* – Giltay 1934b: 5.

Achelia gracilis – Marcus 1940: 79. — Hedgpeth 1948: 244. — Stock 1954a: 117; 1975a: 983; 1979: 10; 1986: 416, tab. 1; 1992a: 139 (list). — Bourdillon 1955: 597. — Müller 1992b: 43, fig. 1. — Child 1996a: 526. — Müller & Krapp 2009: 10–11, 14 (key), 14–17, 137 (list), tab. 1, figs 2–3. — Varela 2012: 2, fig. 1a. — Lucena & Christoffersen 2018a: 104. — Lucena *et al.* 2019: 3 (list), 20–21, figs 2a–c, 3–4. — Sabroux *et al.* 2019b: tab. 1, figs 3, 5. — León-Espinosa *et al.* 2021: tab. 1. — Ramírez-Tello *et al.* 2022: tab. 1.
Achelia (*Pigrolavatus*) *gracilis* – Fry & Hedgpeth 1969: 104, figs 152–153, 155.

Type material

Holotype: YPM IZ 003366.CR (not examined). Type locality: Flatts Inlet, Bermuda.

Material examined

MARTINIQUE • 1 ♂; Grande Anse d'Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-849/MK411162 • 1 ♂; Grande Anse d'Arlets; 14°30.5′ N, 61°06.1′ W; depth 20–23 m; 6 Sep. 2016; st. AB152; MNHN-IU-2016-851/MK411164 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-888/MK411197• 1 juv.; Baie de Fort-de-France; 14°32.6′ N, 61°04.7′ W; depth 0–1 m; 6 Sep. 2016; st. AM002; MNHN-IU-2016-85/MK411170 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2016-1193• 1 ♂; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 16 m; 18 Sep. 2016; st. AB189; MNHN-IU-2016-881/MK411191 • 1 ♂; Ste-Marie, 14°46.3′ N, 60°57.5′ W; depth 20 m; 20 Sep. 2016; st. AB260; MNHN-IU-2016-1062/MK411040 • 1 juv.; Les Anses-d'Arlet; 14°29.7′ N, 61°05.4′ W; depth 19 m; 7 Sep. 2016; st. AB155; MNHN-IU-2016-1114/MK411053 • 1 ♀ gr.; E of Le Vauclin; 14°34.7′ N, 60°45.9′ W; depth 22 m; 16 Sep. 2016; st. AB181; MNHN-IU-2016-1180/MK411073 • 1 ♀ gr.; Le Robert; 14°41.1′ N, 60°51.4′ W; depth 10 m; 19 Sep. 2016; st. AB195; MNHN-IU-2016-1182 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1330/MK411104 • 2 ♂♂, 1 juv.; same collection data as for preceding; MNHN-IU-2016-1408 • 1 ♀; Trois Rivières; 14°27.7′ N, 60°57.8′ W; depth 4–5 m; 25 Sep. 2016; st. AB354; MNHN-IU-2016-1276/MK411095 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1380/MK411108 • 1 ♂ ov.; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1379/MK411107 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1384.

Remarks

This species was distinguished from *Achelia sawayai* Marcus, 1940 based on the key in Müller & Krapp (2009), relying on the number of palp articles (7 in *A. gracilis*, 8 in *A. sawayai*) and the number of dorsolateral tubercles on coxae 1 on the first and second legs of males (4 in *A. gracilis*, 3 in *A. sawayai*). *Achelia gracilis* was previously recorded from Martinique by Bourdillon (1955) on the hulls of scows in Fort-de-France port. Madibenthos sampling reveals that this species is present on both the Atlantic and Caribbean coasts of Martinique. *Achelia gracilis* is a common species in the Caribbean, almost as common as its close congener, *Achelia sawayai* (Child 1996a).

DNA barcoding data (Sabroux *et al.* 2019b) suggest that this species name hides two potential cryptic species (intracluster p-distance = 0–0.010; intercluster p-distance = 0.105–0.112), here named group 1 (MNHN-IU-2016-849, -851, -857, 881, -888, -1114, -1180, -1276, -1379 and -1380) and group 2 (MNHN-IU-2016-1062 and -1330) (Table 2 and Appendix).

Distribution

Tropical West Atlantic (Bermuda, Caribbean and Brazil).

Depth range

0–18 m. One record at 157 m is regarded as a likely contamination by shallow fouling on the hull of a ship. We extend this depth-range to 28 m.

Achelia sawayai Marcus, 1940

Achelia sawayai Marcus, 1940: 81–86, figs 10a–f, 17.

Achelia sawayai – Hedgpeth 1948: 244. — Stock 1954a: 117; 1955: 245; 1966a: 46; 1974: 14; 1975a: 982–983; 1979: 9–10; 1989: 87–89; 1990: 218–219; 1992a: 118–119, 139; 1994: 18 (list), 36. — Fage & Stock 1966: 317. — Child 1974: 497; 1979: 7–8; 1982a: 356–357; 1992b: 7 (key), 11–12, tabs 3, 12, fig. 3; 2004: 143–144; 2009: 818 (list). — Birkeland *et al.* 1976: 133. — Krapp & Kraeuter 1976: 342–343, fig. 3. — Müller 1989: 124, fig. 10; 1990a: 277; 1990b: 186–188; 1990e: 105–106; 1992b: 43. — Varoli 1996: 42, tabs 1–2. — Bamber 2004: tab. 2. — Arango & Wheeler 2007: appendix 1, tab. 1, figs 1–4 (phylogeny), 8 (phylogeny). — Montoya Bravo *et al.* 2009: 10, figs 1–4. — Müller & Krapp 2009: 10–12, 14 (key), 17–21, 132–133, 137 (list), tabs 1– 4, figs 4–5. — Gul & Ghani 2012: 202. — Varela 2012: 2, fig. 1b. — Vassallo *et al.* 2014: 351, tab. 2. — Sabroux *et al.* 2017: appendix 1–2, figs 3–5 (phylogeny); 2019b : 1531, tab. 1, figs 3, 5. — Lucena & Christoffersen 2018a: 102, 104. — Lucena *et al.* 2019: 3 (list), 4–5, 20–21. — Prata *et al.* 2020: 34944, 34949, tab. 1, fig. 2b–c. — León-Espinosa *et al.* 2021: tab. 1. — Ramírez-Tello *et al.* 2022: 152, 162, tab. 1.
Achelia Sawayai – Fage 1949: 28.
Achelia (*Pigroglavatus*) *sawayai* – Fry & Hedgpeth 1969: 104, figs 152–153 (morphological similarities), 155 (distribution).
Achelia sawayai f. *typica* – Stock 1986: tab. 1.

nec *Tanystylum calcirostre* Schimkewitsch, 1890 – Kraeuter 1973: 496.

Type material

Holotype not designated (see Lucena & Christoffersen 2018a). Type locality: Baía de Santos, São Paulo, Brazil.

Material examined

MARTINIQUE • 1 ♂; Canal de Ste Lucie; 14°22.7′ N, 60°51.3′ W; depth 65 m; 11 Sep. 2016; st. AD223; MNHN-IU-2016-850/MK411163 • 1 ♂; Pointe du Diamant; 14°27.5′ N, 61°02.9′ W; depth 3 m; 15 Sep. 2016; st. AB126; MNHN-IU-2016-859/MK411172 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1037 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1329/MK411103 • 1 ♂; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 2 m; 24 Sep. 2016; st. AB452; MNHN-IU-2016-884/MK411193 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-885/MK411194 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1073/MK411044 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1378 • 1 ♂; Canal de Ste Lucie; 14°22.7′ N, 60°51.3′ W; depth 65 m; 11 Sep. 2016; st. AD223; MNHN-IU-2016-886/MK411195 • 1 ♀ gr.; N of Presqu'Île de la Caravelle; 14°52.9′ N, 60°50.6′ W; depth 61 m; 19 Sep. 2016; st. AD249; MNHN-IU-2016-1083 • 1 ♀ gr.; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1108/MK411051 • 1 ♀ gr.; Les Anses-d'Arlet; 14°28.5′ N, 61°05.1′ W; depth 29 m; 26 Sep. 2016; st. AD271; MNHN-IU-2016-1136/MK411060 • 1 ♂; Trois Rivières; 14°27.7′ N, 60°57.8′ W; depth 4–5 m; 25 Sep. 2016; st. AB354; MNHN-IU-2016-1172 • 1 ♀; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1249 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1385 • 1 ♂, 1 ♀ gr.; N of Presqu'Île de la Caravelle; 14°52.5′ N, 60°51.1′ W; depth 58 m; 19 Sep. 2016; st. AD248; 1 ♀ gr.; MNHN-IU-2016-1297 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1331/MK411105 • Le François; 14°38.5′ N, 60°46.3′ W; depth 63 m; 15 Sep. 2016; st. AD234; MNHN-IU-2016-1314 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1332/MK411106 • 1 ♂ ov.; Pointe Baham; 14°25′ N, 60°50.4′ W; depth

0–2 m; 17 Sep. 2016; st. AM021; MNHN-IU-2016-1381 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1383/MK411109.

Remarks

DNA barcoding (Sabroux *et al.* 2019) suggests that *A. sawayai* is an umbrella-name including three potential cryptic species (intracluster p-distance = 0–0.013; intercluster p-distance = 0.133–0.191) here designated as group 1 (MNHN-IU-2016-859 and -1329), group 2 (MNHN-IU-2016-850, -886, -1108, -1136, -1331 and -1332) and group 3 (MNHN-IU-2016-884, -885, -1073 and -1383) (Table 2, Appendix).

Achelia sawayai was previously recorded from Martinique by Müller (1990a) at Cap Chevalier (South-East Martinique), and the present sampling reveals that this species is found on both the Atlantic and Caribbean coasts. The three possible cryptic species here detected in Martinique suggest that *A. sawayai* may represent a species complex including many more species. Indeed, it is a common species of the Tropical Western Atlantic, and its distribution extends to the Eastern Atlantic, the Mediterranean, the Indian Ocean and the Pacific.

Distribution

Apparently a circumtropical species, mostly found in the West Atlantic (US Georgia, Caribbean, Gulf of Mexico and Brazil), occasionally recorded in the East Atlantic (Gulf of Guinea, Mauritania, Cap Verde), West Mediterranean, Indian Ocean (Papua-New Guinea, Indonesia, Pakistan, Madagascar) and Pacific Ocean (French Polynesia, Fiji).

Depth range

0–115 m. One record at 157 m is regarded as a likely contamination by shallow fouling on the hull of a ship.

Genus ***Ammothella*** Verrill, 1900

Type species

Ammothea (*Ammothella*) *rugulosa* Verrill, 1900, by original designation.

Ammothella appendiculata (Dohrn, 1881)

Ammothea appendiculata Dohrn, 1881: 7, 15, 18, 22, 24, 49, 51, 135 (text, key), 152–155, 159, 165, pl. 7 figs 1–5.

Ammothella appendiculata – Cole 1904a: 323. — Marcus 1940: 89–91, pl. 11 fig. 11a–e. — Hedgpeth 1948: 247 (key). — Stock 1954a: 116; 1954b: 116–118, 120 (key), fig. 56a–b; 1955: 250–252, fig. 18; 1975a: 973; 1979: 8; 1986: 400; 1992a: 116; 1994: 18, 27. — Child 1974: 497; 1979: 9; 1982a: 357–358; 1992b: 8 (key), 12–15, 76, fig. 4; 2004: 149 (key); 2009: 818 (list). — Birkeland *et al.* 1976: 133. — Arnaud 1987: 39–40.— Munilla 1993: 452, tabs 2, 4. — Varoli 1996: tabs 1–2. — Bamber 1997: 144–145, fig. 1a; 2000: 621–622; 2004: 2–3, tab. 2; 2007: 256 (list). — Chimenz Gusso & Lattanzi 2003: tab. 1. — Montoya Bravo *et al.* 2006: 88–89; 2009: 22. — Arango & Wheeler 2007: appendix 1, tab. 1, figs 1–4 (phylogeny), figs 5g, 8 (phylogeny). — Dunlop *et al.* 2007: 47, fig. 4. — Fahrenbach & Arango 2007: 919–920, fig. 1e (anatomy). — Krapp *et al.* 2008: 58–59, 61. — Müller & Krapp 2009: 10–13, 21 (key), 21–24, 132 (phenology), 137 (list), tab. 1, fig. 6. — Arabi *et al.* 2010: 448, tab. 2, figs 1–3 (phylogeny). — Bartolino & Chimenz 2010:

396 (list). — Gul & Ghani 2012: 201, fig. 1. — Koçak & Alan 2013: 367, 369–371, figs 8–9. — Lehmann *et al.* 2014: 165 (list), 166, figs 3, 13–14; 2017: figs 1f, 5f, 8k, 9c (biology). — Munilla & Soler-Membrives 2014: 95 (key), 96–97, fig. 49. — Koçak 2015: 190, tab. 1; 2019: 49 (list); 2020: 375. — Soler-Membrives & Munilla 2015: tab. 2. — Dietz *et al.* 2018: figs 1e, 2f. — Lucena & Christoffersen 2018a: 105. — Lucena *et al.* 2019: 6, 8, 21. — Sabroux *et al.* 2019b: 1531, tab. 1, figs 3, 5. — Wang *et al.* 2020: tab. 1. — Ramírez-Tello *et al.* 2022: 165, tab. 3.
Ammothea appendiculata – Norman 1908: 226. — Loman 1912: 8.
Ammothea (Ammothella) appendiculata – Bouvier 1917: 39; 1923a: 52. — Giltay 1934b: 4.

Type material

Syntypes (?) (see Stock 1955; Dunlop *et al.* 2007): ZMB_Pyc_46 (not examined). Type locality: Santa Lucia, Naples Bay, Italy.

Material examined

MARTINIQUE • 1 juv.; Canal de Ste Lucie; 14°23.9′ N, 60°52.6′ W; depth 0–2 m; 12 Sep. 2016; st. AM012; MNHN-IU-2016-1278/MK411096 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1310/MK411098 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2016-1573 • 1 ♀; Baie de Sans-Souci; 14°34.7′ N, 60°50.7′ W; depth 0–1 m; 9 Oct. 2016; st. AM325; MNHN-IU-2016-1279 • 1 ♀; Le Prêcheur; 14°47.2′ N, 61°13.1′ W; depth 10–17 m; 3 Oct. 2016; st. AR383; MNHN-IU-2017-220.

Remarks

This species was already recorded in Martinique by Bourdillon (1955) from the Petite Anse du Diamant, and was sampled during Madibenthos from both the Atlantic and Caribbean coasts. It is commonly sampled in the Atlantic, and available illustrations (e.g., Dohrn 1881; Stock 1955; Child 1982a; Müller & Krapp 2009) show significant morphological variations. Stock (1955) considered that a slender form and a stout form co-exist, which he suspected to correspond to two adult stages separated by a moult, though this theory was proven invalid by observations of Child (1982a) on Belize material. Madibenthos material corresponds to the stout form and strongly resembles the drawing of Child (1992b); this stout form is the one represented by the type material according to the drawings in Stock (1955) (although the type status of this material is not totally clear). The slender form mentioned by Stock (1955) may correspond to one of the hereafter newly described species, *Ammothella dirbergi* sp. nov. or *A. krappi* sp. nov., or to *A.* aff. *krappi*, most likely the first given Stock’s drawing. Species delimitation based on CO1 data support the distinction of these three species from *A. appendiculata* (Sabroux *et al.* 2019b). The p-distances between *A. appendiculata* and these species are very high and vary between 0.172 and 0.197 (see Appendix).

Another harsh debate regarding this species is the possible synonymy of *Ammothella appendiculata* and *A. rugulosa.* Lucena *et al.* (2019) suggested that the two species can be differenciated by the length of their appendages.

Distribution

Rather cosmopolitan, with records in the West and East Mediterranean, West Atlantic (Florida, Gulf of Mexico, Caribbean, French Guiana, Brazil) and Indo-Pacific (Pakistan, Indonesia, Hong-Kong, New Caledonia).

Depth range

0–76 m.

Ammothella dirbergi sp. nov.

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Fig. 2

Amothella sp. 1 – Sabroux *et al.* 2019b (pro parte): 1522, 1525, 1531, tab. 1, figs 3, 5.

Material examined

Holotype

MARTINIQUE • ♂; Pointe du Diamant; 14°27.5′ N, 61°02.9′ W; depth 3 m; 15 Sep. 2016; st. AB126; MNHN-IU-2016-833/MK411148.

Paratypes

MARTINIQUE • 3 ♂♂; 2 ♀♀, 3 ♀♀ gr.; Case-Pilote; 14°38.3′ N, 61°08.4′ W; depth 12 m; 8 Sep. 2016; st. AB159; MNHN-IU-2016-554 • 1 ♂, 3 ♀♀, 2 ♀♀ gr., 1 juv.; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-577 • 1 ♂ ov., 1 juv.; same collection data as for preceding; MNHN-IU-2016-1252 • 3 ♀♀, 1 ♀ gr., 1 juv.; same collection data as for preceding; MNHN-IU-2016-1253 • 1 ♀ gr.; Fond Boucher; 14°39.3′ N, 61°09.6′ W; depth 37–40 m; 1 Oct. 2016; st. AD283; MNHN-IU-2016-1054 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1224 • 2 ♂♂, 1 juv.; Baie de St-Pierre; 14°45.1′ N, 61°11′ W; depth 17 m; 4 Oct. 2016; st. AB388; MNHN-IU-2016-1058 • 2 juvs; same collection data as for preceding; MNHN-IU-2016-1308 • 1 ♂; Ste-Marie; 14°46.3′ N, 60°57.5′ W; depth 20 m; 20 Sep. 2016; st. AB260; MNHN-IU-2016-1066 • 1 ♀; Presqu'Île de la Caravelle; 14°47.5′ N, 60°57.4′ W; depth 14 m; 4 Oct. 2016; st. AB562; MNHN-IU-2016-1091/MK411047 • 1 ♀, 1 juv.; Baie du Robert; 14°40.3′ N, 60°52.8′ W; depth 1–8 m; 25 Sep. 2016; st. AR455; MNHN-IU-2016-1095 • 1 ♀ gr., 1 juv.; same collection data as for preceding; MNHN-IU-2016-1275 • 2 ♀♀ gr., 1 juv.; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2016-1120 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2016-1399 • 1 juv.; Baie de Fort-de-France; 14°36.1′ N, 61°04′ W; depth 0–1 m; 29 Sep. 2016; st. AM034; MNHN-IU-2016-1153 • 2 ♂♂, 1 ♂ ov.; Rocher du Diamant; 14°26.5′ N, 61°02.4′ W; depth 24 m; 14 Sep. 2016; st. AB173; MNHN-IU-2016-1158 • 1 ♀; Bellefontaine; 14°39.7′ N, 61°09.6′ W; depth 9 m; 30 Sep. 2016; st. AS373; MNHN-IU-2016-1174/MK411070 • 1 ♂; E of Le Robert; 14°40.1′ N, 60°51.1′ W; depth 16 m; 18 Sep. 2016; st. AS255; MNHN-IU-2016-1176 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-1315 • 1 juv.; Baie de St-Pierre; 14°44.5′ N, 61°10.8′ W; depth 44–47 m; 8 Oct. 2016; st. AS572; MNHN-IU-2016-1208 • 1 ♀; Grande Anse du Diamant; 14°27.9′ N, 61°01.4′ W; depth 17 m; 26 Sep. 2016; st. AB358; MNHN-IU-2016-1210 • 1 ♂; Rocher du Diamant; 14°26.7′ N, 61°02.2′ W; depth 12 m; 21 Sep. 2016; st. AS092; MNHN-IU-2016-1226 • 1 ♂; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1238 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-1239 • 1 ♂; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1260/MK411088 • 1 ♀ gr.; Le Robert; 14°41′ N, 60°49.4′ W; depth 23 m; 24 Sep. 2016; st. AB401; MNHN-IU-2016-1266/MK411092 • 1 juv.; Anse Noire; 14°32′ N, 61°05.3′ W; depth 2–8 m; 6 Sep. 2016; st. AR100; MNHN-IU-2016-1286 • 1 ♂ ov.; Presqu'Île de la Caravelle; 14°46.5′ N, 60°51.5′ W; depth 15 m; 22 Sep. 2016; st. AB350; MNHN-IU-2016-1303 • 1 ♀ gr.; Le Prêcheur; 14°47.2′ N, 61°13.1′ W; depth 10–17 m; 3 Oct. 2016; st. AR383; MNHN-IU-2016-1306.

Etymology

Latinized name, 2nd decl. (masc.), genitive singular. This species is named after Guillaume Dirberg (MNHN), who collected many specimens of this species by sight, which is remarkable when considering the inconspicuousity of these animals.

Description (holotype, ♂, MNHN-IU-2016-833)

BODY. Trunk completely segmented, cuticle smooth. No dorsomedian ornamentation. Ocular tubercle long, about 5.5 times as long as base width, distal part broad and ovoid carrying pigmented eyes, pointy tip and 2 small pointy lateral sense organs (see Lehmann *et al.* 2017; Brenneis 2022). Lateral processes about twice as long as wide, well separated by about half of their own diameter, unornamented.

PROBOSCIS. Pyriform, movable, longer than chelifore or trunk, with blunt tip.

ABDOMEN. Long, not extending beyond coxa 2, distal part inflated, then tapering at anus. Dorsally with club-shaped setae and simple setae medially and distally. Abdomen insertion articled on trunk.

CHELIFORE. 3-articled. Scape 2-articled, 1st scape article about half as long as 2nd. 2nd article long, trumpet-shaped, carrying simple and club-shaped setae. Chela reduced as rounded buds, with distal seta on outer side.

PALP. 9-articled, carrying many setae mostly on last 5 articles. 1st article shortest, 2nd slightly shorter than 4th. 3rd article about as long as wide. 4th article longest, about as long as 2nd, about 6 times as long as wide, with scarce setae. 5th article about 2.5 times as long as wide. 6th article shorter than 5th and twice as long as 8th, about 4.5 times as long as wide. 7th to 9th articles shorter than 6th, 9th slightly longer.

OVIGER. 10-articled, with scarce setae. 1st article as long as wide. 2nd about 5 times as long as wide, 3rd about 3 times as long as wide. 4th article longest, slightly curved, about ⅙ longer than 2nd. 5th article slightly curved, about ⅔ of length of 4th article. 7th article longest within striglis, 10th shortest. Strigilis spines compound, formula 3 : 2 : 1 : 2.

LEGS. Slender, carrying several short, simple and club-shaped setae, some of them in bouquet. Coxa 1 about 1.5 times as long as wide, with 2 dorsodistal club-shaped setae and often 2 tiny normal setae laterally. Coxa 2 subequal to coxae 1 and 3 together. Coxa 3 about twice as long as wide. Femur 6 times as long as wide; cement gland opening standing on distal margin on dorsal surface, as long tube about ⅓ of femur length. Tibia 1 longest. Tibia 2 slenderer, slightly shorter than tibia 1 but longer than femur. Tarsus short, trapezoid. Propodus about ⅓ as long as tibia 2, with 3 large basal spines, and smaller spines and setae on distal half of sole; main claw about half as long as propodus; auxiliary claws present, thinner, about same size as main claw.

MEASUREMENTS (mm). Trunk 0.54; abdomen 0.62; proboscis 0.70; chelifore 0.47; coxa 1 0.14; coxa 2 0.40; coxa 3 0.30; femur 0.84; tibia 1 1.03; tibia 2 0.92; tarsus 0.05; propodus 0.34; main claw 0.17.

Sexual dimorphism

Oviger articles more elongated in males, legs inflated in mature females.

Individual variability

Number of ovigeral spines variable, 1 to 4 on 1st strigilis article, 1 or 2 on 2nd strigilis article, 1 or 2 on 3rd strigilis article. Lateral processes variable in length. Club-shaped setae sometimes slightly cleft, as on coxa 1 of left 2nd leg of holotype.

Remarks

This species has a strong affinity with *Ammothella indica* Stock, 1954, which is a common species in the Indo-Pacific, but never recorded in the Atlantic or Caribbean. The two species belong to the same group of *Ammothella* with club-shaped spines, and the lengths of the ocular tubercle, of leg and chelifore articles, and of the cement gland tube in males, are about the same. The relative lengths of palp articles

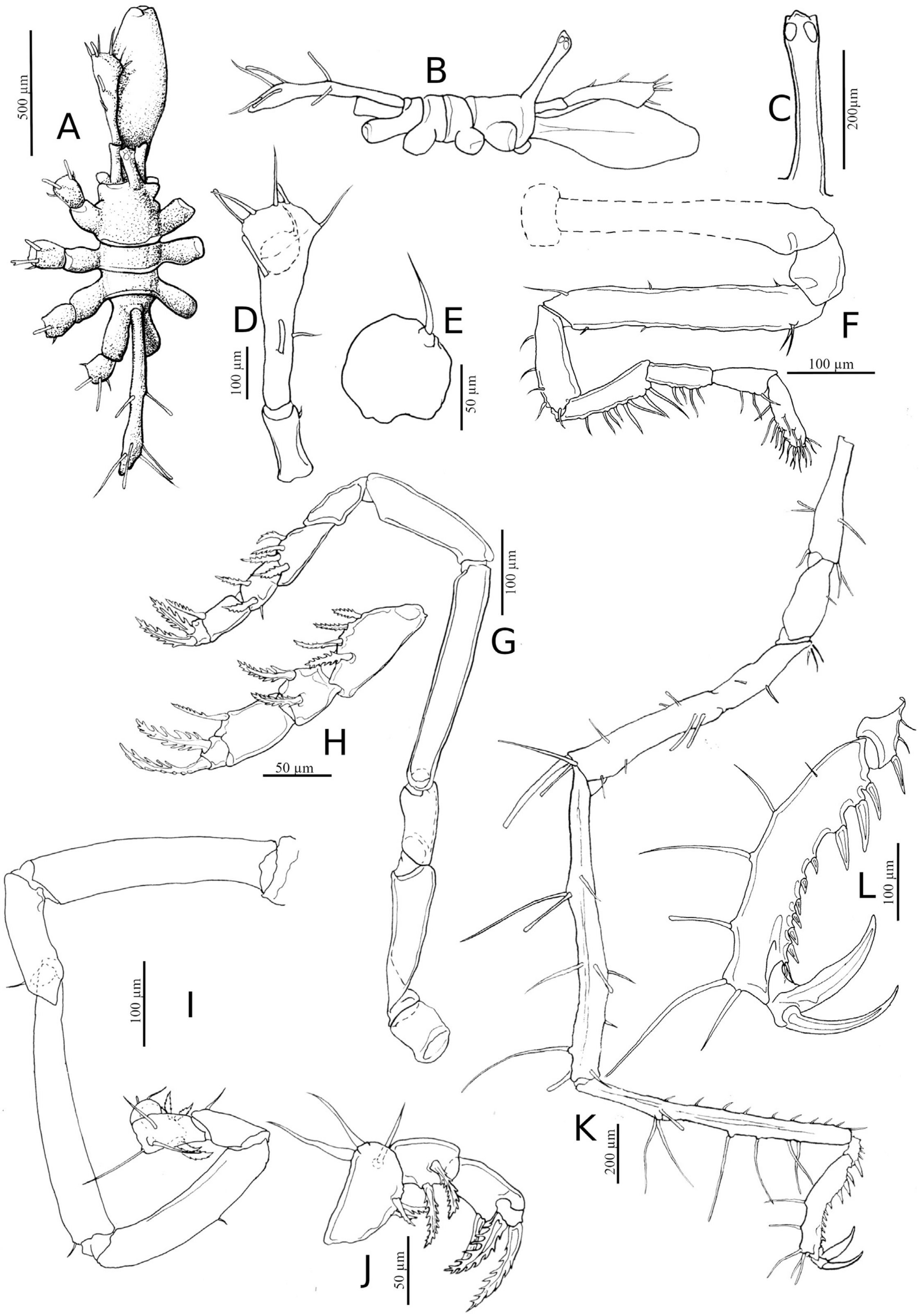

Fig. 2. *Ammothella dirbergi* sp. nov. **A–F, I–L**. Holotype, ♂, MNHN-IU-2016-83. **G–H**. Paratype, ♀, MNHN-IU-2016-1091. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Ocular tubercle, frontal view. **D**. Chelifore. **E**. Chela bud. **F**. Palp. **G**. Oviger. **H**. Oviger strigilis. **I**. Oviger. **J**. Oviger strigilis. **K**. Third leg. **L**. Tarsus and propodus of third leg.

are also similar between the two species. There are however some differences in the representations given by Stock (1954b) and Nakamura (1987). The three main morphological differences between *A. indica* and *A. dirbergi* sp. nov. are the following: (i) lateral sense organs are inconspicuous in *A. indica*; (ii) the abdomen of *A. dirbergi* does not present a diadem of setae as in *A. indica*; and (iii) the abdomen of *A. dirbergi* is not as curved as in *A. indica*.

This species can be differentiated from most other described species of *Ammothella* based on the long ocular tubercle and the club-shaped spines on the legs and abdomen. Species sharing these features are *Ammothella fistella* Lee & Arango, 2003, *A. gertrudae* Müller & Krapp, 2009, *A. panamensis* Child, 2004, *A. prolixa* Child, 1990 and *A. setacea* (Helfer, 1938). *Ammothella dirbergi* sp. nov. differs from *A. fistella* in lacking tubular spines on the lateral processes and cephalon, and by its longer ocular tubercle and leg articles; it differs from *A. gertrudae* in lacking long tubercles on the lateral processes; it differs from *A. panamensis* in lacking club-shaped setae on the lateral processes, has longer tibiae 2, and has shorter lateral processes; it differs from *A. prolixa* in having a shorter distance between the lateral processes and no dorsal ornamentation of the lateral processes; and it differs from *A. setacea* in lacking long tubercles on the lateral processes and in having a shorter ocular tubercle and a completely segmented trunk (Arnaud & Child 1988; Child 1990, 2004; Lee & Arango 2003; Müller & Krapp 2009).

Finally, *Ammothella krappi* sp. nov. is a close relative of *A. dirbergi* sp. nov. *Ammothella dirbergi* differs in having a shorter ocular tubercle (less than 6 times as long as wide in *A. dibergi*, more than 7 times in *A. krappi*) and a shorter cement gland tube (⅓ as long as the femur in *A. dirbergi*, half as long in *A. krappi*). The two species can be distinguished based on CO1 data (Sabroux *et al.* 2019): while in *A. dirbergi* intraspecific p-distances are between 0 and 0.012, the p-distances between the types of *A. dirbergi* and *A. krappi* are between 0.123 and 0.134, and those between *A. dirbergi* and *A.* aff. *krappi* are between 0.089 and 0.097.

Distribution

Only known from Martinique. *Ammothella dirbergi* was sampled on the Atlantic and Caribbean coasts.

Depth range

0.5–47 m.

Ammothella exornata Stock, 1975

Ammothella exornata Stock, 1975a: 975–978, figs 7c–d, 8.

Ammothella exornata – Stock 1979: 9, fig. 1b–c. — Child 1979: 9, fig. 3a–c; 2004: 144, 147 (key). — Müller 1990a: 278. — Montoya Bravo *et al.* 2009: 12–18, figs 5–7. — Müller & Krapp 2009: 10–13, 21 (key), 24–26, 128 (ecology), 130, 132–133, 137 (list), tabs 1, 3, fig. 7. — Sabroux *et al.* 2019b: tab. 1, figs 3, 5.

Type material

Holotype: NL ZMA.PYC.P.1062 (not examined). Type locality: southeast of Oyster Pond, St Martin.

Material examined

MARTINIQUE • 1 ♀ gr.; Grande Anse du Diamant; 14°28.5′ N, 61°01.1′ W; depth 7 m; 9 Sep. 2016; st. AD216; MNHN-IU-2016-829/MK411146 • 1 ♀ gr.; Canal de Ste Lucie; 14°23.9′ N, 60°52.6′ W; depth 0–2 m; 12 Sep. 2016; st. AM012; MNHN-IU-2016-830/MK411147 • 1 ♀ gr.; Baie de Fort-de-France; 14°33′ N, 61°03.7′ W; depth 2 m; 7 Sep. 2016; st. AB104; MNHN-IU-2016-831 • 1 juv.; Pointe du

Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-878/MK411188 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-555 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1285 • 1 ♂ ov., 1 ♀ gr.; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-556 • 1 ♂, 1 ♂ ov., 5 ♀♀ gr.; Baie de Sans-Souci; 14°34.7′ N, 60°50.7′ W; depth 0–1 m; 9 Oct. 2016; st. AM325; MNHN-IU-2016-1098 • 1 juv.; Banc du Diamant; 14°26.4′ N, 61°01.7′ W; depth 18 m; 15 Sep. 2016; st. AB177; MNHN-IU-2016-1105 • 1 ♀ gr.; Schœlcher; 14°37.7′ N, 61°07.2′ W; depth 4 m; 27 Sep. 2016; st. AB460; MNHN-IU-2016-1154 • 1 ♂, 1 ♀; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1217 • 1 ♀; Grande Anse du Diamant; 14°28′ N, 61°02.8′ W; depth 0–1 m; 27 Sep. 2016; st. AM033; MNHN-IU-2016-1464.

Remarks

Ammothella exornata was recorded from Martinique by Müller (1990a) from Ilet Cabrits, Petite Anse Macabou and Baie de Tartane. We found it on both the Atlantic and Caribbean coasts.

Distribution

Exclusively in the Caribbean area.

Depth range

0–10 m. We extend this depth range to 18 m.

Ammothella krappi sp. nov.

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Fig. 3

Ammothella sp. 1 – Sabroux *et al.* 2019b (pro parte): 1522, 1525, 1531, tab. 1, figs 3, 5.

Material examined

Holotype

MARTINIQUE • ♂; N of Le Lorrain, 14°55.1′ N, 61°02.4′ W; depth 63 m, 21 Sep. 2016; st. AD257, MNHN-IU-2016-1132/MK411059.

Paratypes

MARTINIQUE • 2 ♂♂, 4 ♀♀ gr.; Le Prêcheur; 14°49.1′ N, 61°13.8′ W; depth 20–25 m; 8 Oct. 2016; st. AS576; MNHN-IU-2016-1085 • 1 ♀ gr.; SW of Vétiver; 14°37.6′ N, 61°08.6′ W; depth 66 m; 7 Oct. 2016; st. AD612; MNHN-IU-2016-1113/MK411052 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1290 • 1 ♂; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17 m; 9 Oct. 2016; st. AB578; MNHN-IU-2016-1168/MK411069 • 1 ♂; Macouba; 14°55.1′ N, 61°09′ W; depth 80 m; 27 Sep. 2016; st. AD274; MNHN-IU-2016-1243 • 1 ♂; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17–19 m; 9 Oct. 2016; st. AS579; MNHN-IU-2016-1281 • 1 ♀, 1 ♀ gr.; Le Prêcheur; 14°48.5′ N, 61°13.8′ W; depth 0–56 m; 8 Oct. 2016; st. AS574; MNHN-IU-2016-1287 • 1 ♂, 1 ♀ gr., 1 juv.; Baie de St-Pierre; 14°44.5′ N, 61°10.8′ W; depth 44–47 m; 8 Oct. 2016; st. AS572; MNHN-IU-2019-3395.

Etymology

Latinized name, 2nd decl. (masc.), genitive singular. This species is named after Franz Krapp, who passed away in early 2022. Through this dedication, we wish to express not only our recognition of his important contribution to pycnogonid taxonomy, but also in memory of the great help he was to the first author.

Description (holotype, ♂, MNHN-IU-2016-1132)

BODY. Trunk completely segmented; cuticle smooth. No dorsomedian ornamentation. Ocular tubercle long, about 8.5 times as long as base width, distal part broad and round, carrying pigmented eyes, blunt tip and 2 small, rounded lateral sense organs. Lateral processes about 3 times as long as base width, well separated by more than their own diameter, sometimes carrying setae.

PROBOSCIS. Pyriform with slender elongated base, movable, longer than chelifore or trunk, with blunt tip.

ABDOMEN. Long, segmented at base, not extending beyond coxa 2, distal part inflated, then tapering at anus. Dorsally with club-shaped setae and with simple setae medially and distally.

CHELIFORE. 3-articled. Scape 2-articled, 1st scape article about half as long as 2nd. 2nd article long, trumpet-shaped, carrying simple and club-shaped setae. Chela reduced as rounded buds, with finger and distal seta on outer side.

PALP. 9-articled, carrying many setae mostly on last 5 articles. 1st article shortest, 2nd article slightly shorter than 4th. 3rd article about as long as wide. 4th article longest, about as long as 2nd, about 6 times as long as wide, with scarce setae. 5th article about 2.5 times as long as wide. 6th article shorter than 5th and twice as long as 8th, about 4.5 times as long as wide. 7th to 9th articles shorter than 6th, 9th longest among them.

OVIGER. 10-articled, with scarce setae. 1st article about as long as wide, 2nd about 7 times as long as wide, 3rd about 3 times. 4th article as long as 2nd but slenderer, slightly curved. 5th article about ⅔ of length of 4th article. 7th article longest within striglis, about as long as 6th, 10th shortest. Strigilis spines compound, formula 2 : 1 : 1 : 2.

LEGS. Slender, carrying several short, simple and club-shaped setae, some of them in bouquet. Coxa 1 about 5⁄4 as long as wide, with two dorsodistal club-shaped setae and often two tiny normal setae laterally. Coxa 2 longer than coxae 1 and 3 together. Coxa 3 about 3 times as long as wide. Femur about 8 times as long as wide, cement gland opening standing on distal margin on dorsal surface, as very long tube about half as long as femur. Tibia 1 longest. Tibia 2 slenderer, slightly shorter than tibia 1 but longer than femur. Tarsus short, trapezoid. Propodus about 0.4 times as long as tibia 2, with 3 large basal spines, and smaller spines and setae on distal half of sole; main claw about half as long as propodus; auxiliary claws present, thinner, more than ⅘ as long as main claw.

MEASUREMENTS (mm). Trunk 0.52; abdomen 0.78; proboscis 0.92; chelifore 0.56; coxa 1 0.17; coxa 2 0.53; coxa 3 0.26; femur 0.91; tibia 1 1.13; tibia 2 0.96; tarsus 0.06; propodus 0.37; main claw 0.19.

Sexual dimorphism

Oviger articles more elongated in males, legs inflated in mature females.

Individual variability

Ocular tubercle size from 7 to 9 times as long as base width. Number of ovigeral spines variable, 1 to 4 on 1st strigilis article, and 1 or 2 on 2nd–3rd strigilis articles.

Remarks

This species is distinguished from most other species of *Ammothella* using the same criteria as for *A. dirbergi* sp. nov., of which this species seems to be a close relative. Distinction from *A. dirbergi* is supported by CO1 data (Sabroux *et al.* 2019b): while for *A. krappi* sp. nov. intraspecific p-distances are

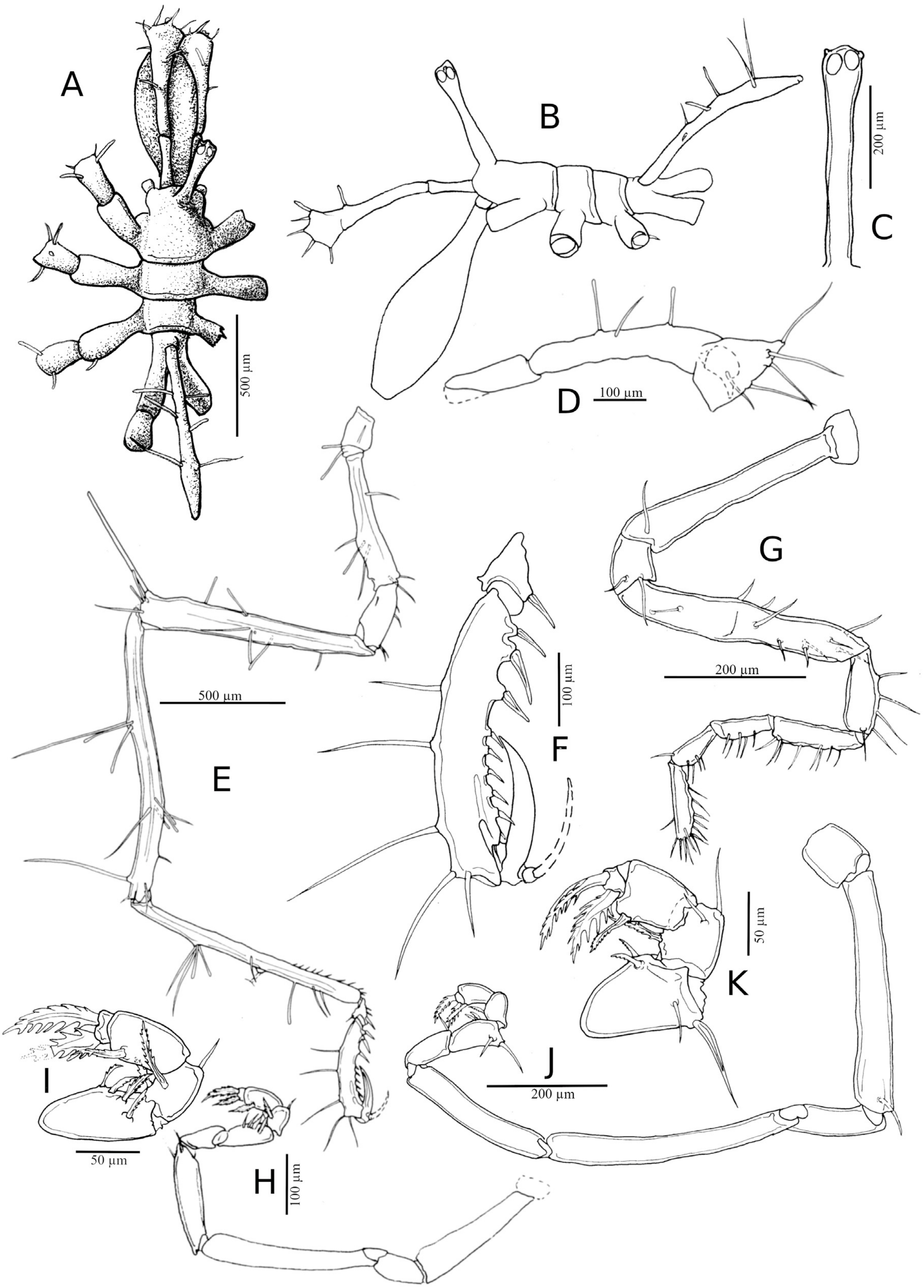

Fig. 3. *Ammothella krappi* sp. nov. **A–G, J–K**. Holotype, ♂, MNHN-IU-2016-1132. **H–I**. Paratype, ♀, MNHN-IU-2016-1113. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Ocular tubercle, frontal view. **D**. Chelifore. **E**. Third leg. **F**. Tarsus and propodus of third leg. **G**. Palp. **H**. Oviger. **I**. Oviger strigilis. **J**. Oviger. **K**. Oviger strigilis.

between 0.011 and 0.036, the p-distances in *A. dirbergi* are between 0.123 and 0.134. Morphologically, *A. krappi* has a longer ocular tubercle than *A. dirbergi* (more than seven times as long as wide in *A. krappi*, less than six times as long as wide in *A. dirbergi*), the tip of the ocular tubercle is blunt rather than acute, and the lateral sense organs are smaller than in *A. dirbergi*. The cement gland tube is also longer in *A. krappi*, as well as the leg articles.

The species was sampled on the Caribbean and northern coasts of Martinique.

Distribution

Only known from Martinique.

Depth range

17–80 m.

Ammothella aff. ***krappi*** sp. nov.

Fig. 4

Ammothella sp. 1 – Sabroux *et al.* 2019b (pro parte): 1522, 1525, 1531, tab. 1, figs 3, 5.

Material examined

MARTINIQUE • 1 ♂; Grande Anse d'Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-832 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-553 • 2 ♂♂; same collection data as for preceding; MNHN-IU-2016-567 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1316 • 1 juv.; Passe du Marin; 14°26.9′ N, 60°54′ W; depth 0–15 m; 11 Sep. 2016; st. AS066; MNHN-IU-2016-834/MK411149 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1147 • 1 ♂; Les Anses-d'Arlet; 14°28.1′ N, 61°05.3′ W; depth 72 m; 8 Oct. 2016; st. AD616; MNHN-IU-2016-1042 • 1 ♂; same collection data as for preceding; MNHN-IU-2019-3400 • 7 ♂♂, 2 ♀♀; Rocher du Diamant; 14°26.5′ N, 61°02.4′ W; depth 26–32 m; 14 Sep. 2016; st. AS071; MNHN-IU-2016-1050 • 1 ♂, 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1109 • 1 ♂; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 2 m; 24 Sep. 2016; st. AB452; MNHN-IU-2016-1075 • 1 ♂; Passe du Marin; 14°26.6′ N, 60°54.3′ W; depth 15 m; 9 Sep. 2016; st. AB058; MNHN-IU-2016-1131 • 1 ♀, 1 juv.; Baie de Fort-de-France; 14°33.2′ N, 61°01.6′ W; depth 1–8 m; 6 Oct. 2016; st. AR391; MNHN-IU-2016-1175 • 1 juv.; SW of Vétiver; 14°37.6′ N, 61°08.6′ W; depth 66 m; 7 Oct. 2016; st. AD612; MNHN-IU-2017-221 • 1 ♂; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2019-3393 • 1 ♂, 1 ♀ gr.; Baie de St-Pierre; 14°44.5′ N, 61°10.8′ W; depth 44–47 m; 8 Oct. 2016; st. AS572; MNHN-IU-2019-3394 • 1 juv.; Fond Boucher; 14°39.3′ N, 61°09.6′ W; depth 37–40 m; 1 Oct. 2016; st. AD283; MNHN-IU-2019-3396 • 1 ♂, 1 ♀; same collection data as for preceding; MNHN-IU-2019-3397 • 2 ♂♂ ov.; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2019-3398 • 1 ♂; Baie du Robert; 14°40.3′ N, 60°52.8′ W; depth 1–8 m; 25 Sep. 2016; st. AR455; MNHN-IU-2019-3399.

Remarks

The juvenile specimen MNHN-IU-2016-834 shows strong affinities to *A. krappi* sp. nov., even sharing with this species a taller ocular tubercle than in *A. dirbergi* sp. nov. However, this specimen differs slightly from the holotype of *A. krappi* by having a more acute ocular tubercle tip and more conspicuous lateral sense organs. This distinction from *A. krappi* is supported by a high molecular barcode divergence (p distance = 0.129–0.131). Several adults that could not be barcoded (listed above) present a similar shape of the ocular tubercle, and they are likely to belong to the same species as the juvenile, MNHN-IU-2016-834. Their ocular tubercle is taller, but this is coherent with the fact that the barcoded specimen

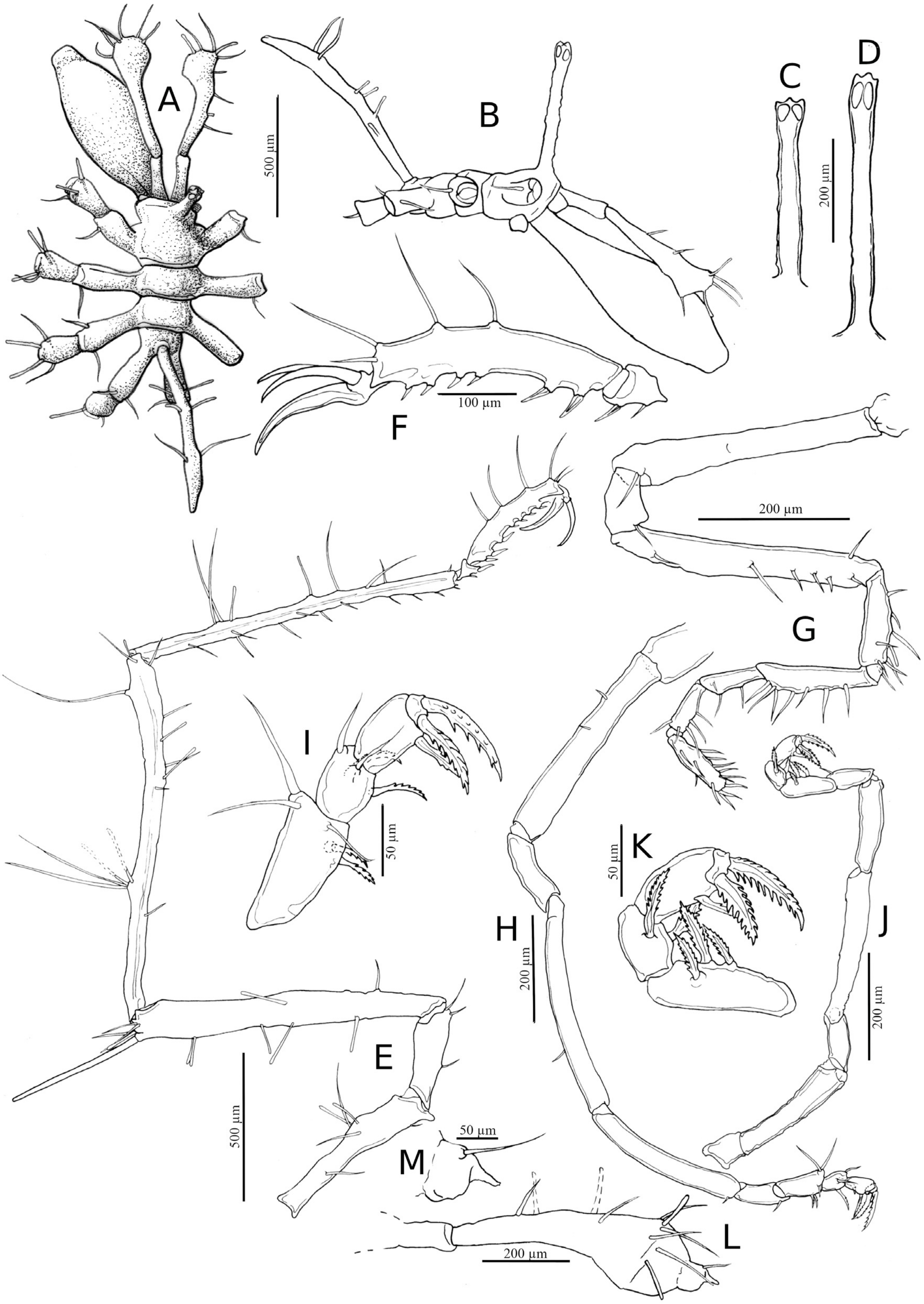

Fig. 4. *Ammothella* aff. *krappi* sp. nov. **A–B, D–I, L–M**. ♂, MNHN-IU-2019-3400. **C**. Juvenile, MNHN-IU-2016-834. **J–K**. ♀, MNHN-IU-2016-1316. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Ocular tubercle, frontal view. **D**. Ocular tubercle, frontal view. **E**. Fourth leg. **F**. Tarsus and propodus of fourth leg. **G**. Palp. **H**. Oviger. **I**. Oviger strigilis. **J**. Oviger. **K**. Oviger strigilis. **L**. Chelifore. **M**. Close-up of chela bud.

is a juvenile. However, all these specimens are extremely similar to the holotype of *A. krappi*, except regarding the shape of the distal region of the ocular tubercle. While we regard this group as likely to represent a new species, the similarities between *A. krappi* and the adults listed here as *A.* aff. *krappi* make a new species description untimely, as long as the identification of the adults as the same species as the juvenile, MNHN-IU-2016-834, is not confirmed by barcoding.

These specimens were sampled on both the Atlantic and Caribbean coasts.

Distribution

Only recorded in Martinique at the moment.

Depth range

2–72 m.

Ammothella marcusi Hedgpeth, 1948

Ammothella marcusi Hedgpeth, 1948: 247.

Ammothella marcusi – Hedgpeth 1954: 427. — Stock 1975a: 975, fig. 7a–b; 1986: tab. 1. — Child 1979: 9–11; 1982a: 358. — Müller 1990a: 278. — Müller & Krapp 2009: 11–12, 21 (key), 31–33, 137 (list), tab. 1, figs 12–13. — Sabroux *et al.* 2019b: tab. 1. — León-Espinosa *et al.* 2021: 160, tab. 1. — Ramírez-Tello *et al.* 2022: tab. 1.

Type material

Holotype: USNM 81099 (not examined). Type locality: Logger-head Key, Tortugas, southwest Florida.

Material examined

MARTINIQUE • 1 ♂; Presqu'Île de la Caravelle; 14°46.5′ N, 60°51,5'W; depth 15 m; 22 Sep. 2016; st. AB350; MNHN-IU-2016-1302.

Remarks

Only one specimen was collected, from which we did not succeed in amplifying the CO1 barcode sequence due to the poor quality of the DNA extract (probably due to the advanced state of decay of the specimen, which hardly consists of more than an empty cuticle, indicating that it was probably dead upon sampling). This species is generally rare in samplings, though Child (1979) examined a rather rich collection at the Smithsonian Tropical Reseach Institute in Panama. The species was recorded in Martinique by Müller (1990a) in Baie de Tartane, so both records of this species in Martinique are from the region of Presqu'Île de la Caravelle.

Distribution

Typically Caribbean, with one record on the Pacific shore of Mexico (Oaxaca).

Depth range

0–5 m. We extend this depth range to 15 m.

Ammothella spinifera Cole, 1904

Ammothella spinifera Cole, 1904b: 275–277, pl. 12 fig. 8, pl. 20 figs 7–9, pl. 21 figs 1–6.

Ammothella spinifera – Hedgpeth 1941: 256 (key). — Hilton 1943: 97. — Stock 1954b: 116, 119 (key); 1955: 253; 1986: tab. 1; 1992a: 116, 139. — Child 1979: 9; 1992a: 2, 9–11; 2004: 147 (key). — Müller 1990a: 278; 1992a: 43–44, figs 2–3. — Montoya Bravo *et al.* 2009: 18–21, figs 10–11. — Müller & Krapp 2009: 21 (key), 33–38, 132–133, 137 (list), tab. 1, fig. 14. — Lucena & Christoffersen 2018a: 105. — Lucena *et al.* 2019: 3 (list), 6–7, 21, fig. 2g. — Sabroux *et al.* 2019b: tab. 1, figs 3, 5. — León-Espinosa *et al.* 2021: 153, 157–160, 165, tab. 1, figs 2–3. — Ramírez-Tello *et al.* 2022: 162, tab. 1.
Ammothea spinifera – Hall 1913: 132 (key).

Type material

Holotype: USNM 231856 (not examined). Type locality: San Diego, California.

Material examined

MARTINIQUE • 1 ♂; Pointe du Diamant; 14°27.5′ N, 61°02.9′ W; depth 3 m; 15 Sep. 2016; st. AB126; MNHN-IU-2016-826/MK411145 • 1 ♀; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-827 • 2 ♂♂, 1 ♀; same collection data as for preceding; MNHN-IU-2016-1141 • 1 ♂ ov.; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-828 • 1 juv.; Pointe Michel; 14°26.4′ N, 60°49.3′ W; depth 2 m; 12 Sep. 2016; st. AB120; MNHN-IU-2016-557 • 1 ♂; Pointe Baham; 14°25′ N, 60°50.4′ W; depth 0–2 m; 17 Sep. 2016; st. AM021; MNHN-IU-2016-581 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-582 • 1 juv.; Le Prêcheur; 14°47.2′ N, 61°13.1′ W; depth 2 m; 3 Oct. 2016; st. AB382; MNHN-IU-2016-584 • 1 ♂, 2 ♂♂ ov., 1 ♀, 1 juv.; Grand'Rivière; 14°52′ N, 61°11.7′ W; depth 6 m; 3 Oct. 2016; st. AB556; MNHN-IU-2016-1070 • 1 ♂ ov., 1 ♀; Presqu'Île de la Caravelle; 14°47.5′ N, 60°57.4′ W; depth 14 m; 4 Oct. 2016; st. AB562; MNHN-IU-2016-1090 • 1 ♂, 1 ♀; Banc du Diamant; 14°26.4′ N, 61°01.7′ W; depth 18 m; 15 Sep. 2016; st. AB177; MNHN-IU-2016-1103 • 2 ♂♂, 1 ♀; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2016-1119 • 1 ♂; Baie de Fort-de-France; 14°36.1′ N, 61°04′ W; depth 0–1 m; 29 Sep. 2016; st. AM034; MNHN-IU-2016-1150 • 1 juv.; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17 m; 9 Oct. 2016; st. AB578; MNHN-IU-2016-1169 • 1 ♂ ov., 2 ♀♀; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1219 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1400 • 1 ♂; Grand'Rivière; 14°52′ N, 61°11.7′ W; depth 0–6 m; 3 Oct. 2016; st. AS557; MNHN-IU-2016-1222 • 1 juv.; Anse des Galets; 14°51.4′ N, 61°12.8′ W; depth 0–10 m; 7 Oct. 2016; st. AB567; MNHN-IU-2016-1247 • 1 ♂, 1 ♂ ov., 1 juv.; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1251 • 1 ♂; Baie de Sans-Souci; 14°34.7′ N, 60°50.7′ W; depth 0–1 m; 9 Oct. 2016; st. AM325; MNHN-IU-2016-1270 • 1 ♂; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 4–10 m; 14 Sep. 2016; st. AB123; MNHN-IU-2016-1295.

Remarks

The species is generally easily identified by the two characteristic dorsal clavate setae on the second trunk segment (Müller & Krapp 2009). It was recorded for the first time in Martinique by Müller (1990a) at Vauclin, Petite Anse Macabou and Baie de Tartane, and was abundantly collected during Madibenthos from both the Atlantic and Caribbean coasts.

Distribution

Tropical Western Atlantic (Caribbean, Brazil) and East Pacific (Ecuador, Panama, California).

Depth range

0–28 m.

Genus ***Nymphopsis*** Haswell, 1884

Type species

Nymphopsis armatus Haswell, 1884, by original designation.

Nymphopsis duodorsospinosa Hilton, 1942

Nymphopsis duodorsospinosa Hilton, 1942a: 303–305, pl. 45.

Nymphopsis duodorsospinosa – Hedgpeth 1948: 250–252, fig. 40. — Child & Hedgpeth 1971: 609 (list). — Kraeuter 1973: 496. — Stock 1975a: 978; 1986: tab. 1. — Birkeland *et al.* 1976: 134, 157. — Krapp & Kraeuter 1976: 342. — Child 1979: 1, 21; 1992b: 8 (key), 30–31, tab. 3, fig. 13; 2009: 818 (list). — Arango & Wheeler 2007: appendix 1, tab. 1, figs 1–4 (phylogeny), 5d, 8 (phylogeny). — Müller & Krapp 2009: 10, 13, 38–39, 133, 137 (list), tab. 1, figs 15–16. — Arabi *et al.* 2010: 447, tab. 2, figs 1–3 (phylogeny). — Krapp & Viquez 2011: 204–206, tab. 1. — Sabroux *et al.* 2017: 14, appendices 1–2, figs 3–5 (phylogeny); 2019b: tab. 1, fig. 3. — León-Espinosa *et al.* 2021: tab. 1.

Nymphopsis duodorsospinosum – Child 1982a: 363.

Type material

Holotype: USNM 170494 (not examined). Type locality: San Francisquito Bay, South California.

Material examined

MARTINIQUE • 1 ♂; Pointe du Diamant; 14°27.5′ N, 61°02.9′ W; depth 3 m; 15 Sep. 2016; st. AB126; MNHN-IU-2016-812/MK411134.

Remarks

This species is regularly sampled in the Tropical West Atlantic, but is never abundantly collected. This is the first record of *N. duodorsospinosa* for Martinique, on the Caribbean coast.

Distribution

East Pacific (California, Galápagos, Mexico, Panama, Costa Rica), West Atlantic (US Georgia, Caribbean Sea, Gulf of Mexico).

Depth range

0–72 m.

Genus ***Tanystylum*** Miers, 1879

Type species

Nymphon styligerum Miers, 1875, by monotypy.

Tanystylum acuminatum Stock, 1954

Tanystylum acuminatum Stock, 1954a: 125–127, fig. 29.

Tanystylum acuminatum – Stock 1979: 11; 1986: tab. 1; 1992a: 119, 139, figs 19–21. — Müller 1990a: 278. — Müller & Krapp 2009: 11, 13, 39 (key), 39–41, 128 (ecology), 130 , 132 (phenology), 137 (list), tabs 1–2, 4, fig. 17. — Lucena & Christoffersen 2018a: 106. — Lucena *et al.* 2019: 478 (list), 483–485, 487, 495–496, figs 4a–b, 6a–c. — Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: NL ZMA.PYC.P.1486 (not examined). Type locality: Gustavia, Saint Barthelemy (East Caribbean).

Material examined

MARTINIQUE • 1 ♂; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 16 m; 18 Sep. 2016; st. AB189; MNHN-IU-2016-856/MK411169.

Remarks

Lucena *et al.* (2019) described a velvety region of the femur posteriorly to the cementary tube in this species, a character also observed in the single collected specimen from Martinique. The species was identified in Martinique by Müller (1990a) in Petite Anse Macabou, and it is therefore still not known from the Caribbean coast of Martinique.

Distribution

Caribbean and Brazil.

Depth range

0–15 m. We extend this depth range to 16 m.

Tanystylum birkelandi Child, 1979

Tanystylum birkelandi Child, 1979: 23, fig. 7.

Tanystylum birkelandi – Child 1982a: 363; 2004: 150. — Stock 1986: tab. 1. — Müller 1990a: 278–279, figs 1–5. — Sabroux *et al.* 2019b: 1531, tab. 1, figs 3, 5.

Type material

Holotype: USNM 170494 (not examined). Type locality: Galeta Island reef, Caribbean Panama.

Material examined

MARTINIQUE • 1 ♂; Le Robert; 14°41.1′ N, 60°51.4′ W; depth 10 m; 19 Sep. 2016; st. AB195; MNHN-IU-2016-1407.

Remarks

This species has rarely been recorded, mostly from Panama or Belize. The species was previously recorded from West Indies from Martinique by Müller (1990a) in Petite Anse Macabou. Therefore, the few records of *Tanystylum birkelandi* are all from the Atlantic coast. This species shows characteristic setae with microstetae on coxae 1 (Child 1979).

Distribution

Caribbean (Panama, Belize, Martinique).

Depth range

0–15 m.

Tanystylum boucheti sp. nov.

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Fig. 5A–H

nec *Tanystylum hummelincki* Stock, 1954 – Sabroux *et al.* 2019b (pro parte): tab. 1, figs 3, 5.

Material examined

Holotype

MARTINIQUE • ♂ ov.; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 2 m; 24 Sep. 2016; st. AB452; MNHN-IU-2016-1074/MK411045.

Etymology

Latinized name, 2nd decl. (masc.), genitive singular. The species is named after Philippe Bouchet, head of the Madibenthos Expedition.

Description (holotype, ♂, MNHN-IU-2016-1074)

Body. Trunk completely unsegmented, discoidal; cuticle granular. No dorsomedian ornamentation. Ocular tubercle lower than abdomen, about as tall as base width, with two acute terminal tips, one large anteriorly and one smaller posteriorly, and 2 small lateral sense organs laterally, and carrying four large pigmented eyes. Cephalon with two low lateral tubercles at anterolateral margin. Low dorsal rising at base of abdomen. Lateral processes about as long as wide, jointed; 1st lateral process with one submedian tubercle, 2nd and 3rd lateral processes with two dorsolateral tubercles on distal margin, 4th lateral process with one anterior tubercle on distal margin. Lateral process tubercles carrying one short seta.

Proboscis. Conical in dorsal view, rounded proximally and conical distally in lateral view, with blunt tip, about as long as two anterior trunk segments.

Abdomen. Vertically oriented, higher than ocular tubercle, not reaching beyond lateral processes. Setae present on distal part. No basal segmentation.

Chelifore. 1-articled, composed of one elongated knob with two distal setae.

Palp. 6-articled, with setae on all articles except 1st article. 1st article shortest, wider than long. 2nd article about 2.5 times as long as wide. 3rd article shorter. 4th article longest, about 2.5 times as long as 2nd article. 5th article about as long as wide, with ventral setae. 6th article about 4 times as long as wide.

Oviger. 10-articled with scarce setae. 1st article as long as wide. 2nd article about twice as long as wide. 3rd article about 1.5 times as long as wide. 4th article about twice as long as 3rd. 5th longest, curved. 6th article ⅘ as long as wide. 7th article about as long as wide, presenting one distal low spur carrying long setae. 8th and 9th articles subequal. 10th article shortest. Strigilis spines simple on articles 7th to 9th, compound on 10th article. Strigilis formula 2:1:1:2.

Legs. Stout and nodulous, with scarce small setae. Coxa 1 shorter than wide, carrying 3 distal tubercles: anterodistal tubercle bifid, dorsomedian and distal tubercles simple, each tubercle with one short seta at tip. Coxa 2 longer than coxa 1 or 3. Coxa 3 as long as broad, with ventral setae. Femur stout, about twice as long as wide, with one elevated, dorsdistal cement gland tube. Tibia 1 and tibia 2 with large rounded tubercles and long setae on dorsal surface. Femur, tibia 1 and tibia 2 subequal. Tarsus trapezoid, short, about as long as wide, carrying one large spine and setae on ventral surface. Propodus stout and curved, with 3 large basal spines, and small spines on distal half of sole. Main claw curved, about ⅔ as long as propodus. Auxiliary claws present, about half as long as main claw.

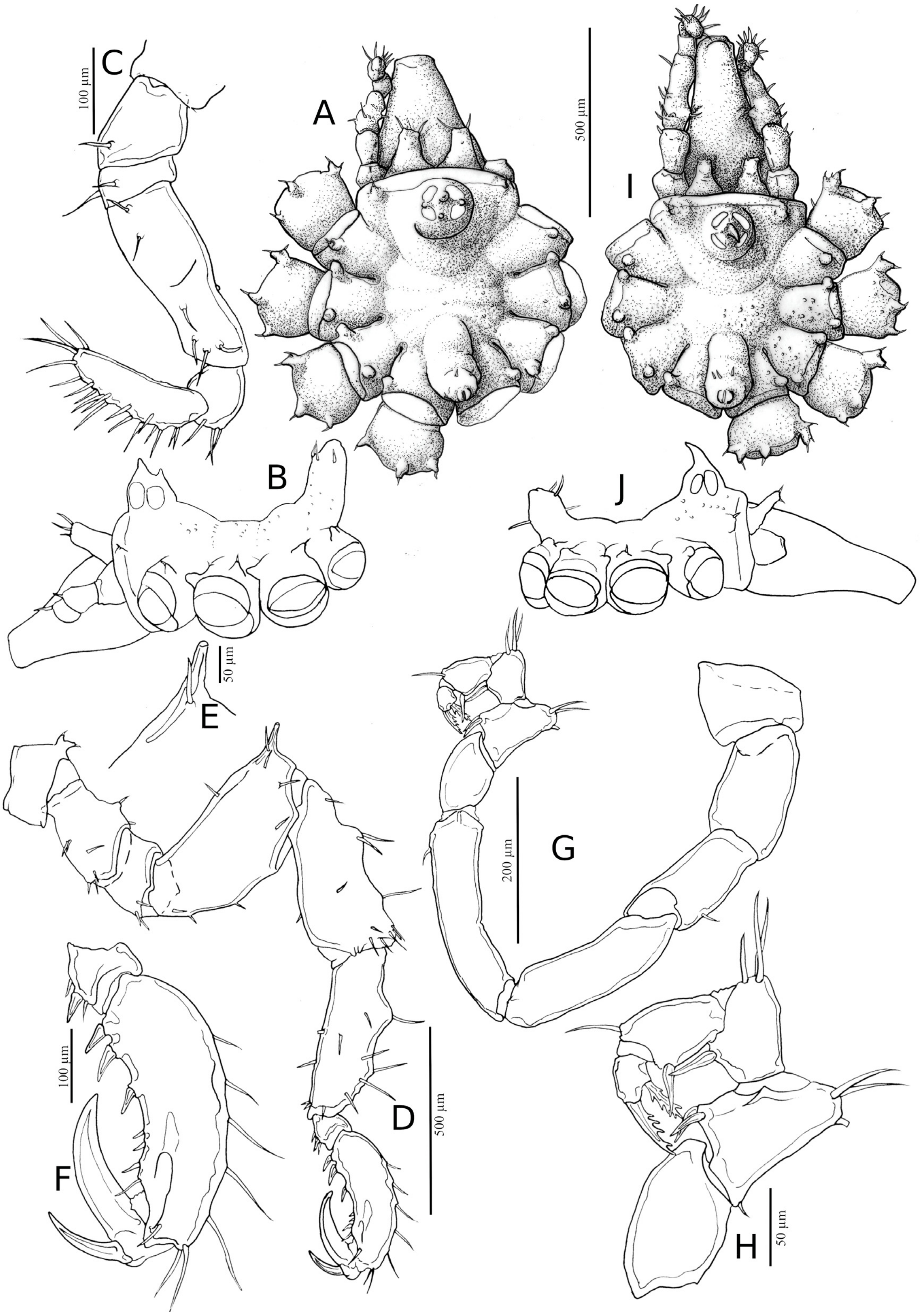

Fig. 5. Comparison between *Tanystylum boucheti* sp. nov. (A–H) and *T. hummelincki* Stock, 1954 (I–J). **A–H**. Holotype, ♂, MNHN-IU-2016-1074. **I–J**. ♂, MNHN-IU-2016-1063. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Palp. **D**. Third leg. **E**. Cement gland tube. **F**. Tarsus and propodus of third leg. **G**. Oviger. **H**. Oviger strigilis. **I**. Body, dorsal view. **J**. Body, lateral view. I and J same scale as A.

Measurements (mm). Trunk 0.61; abdomen 0.20; proboscis 0.33; chelifore 0.12; coxa 1 0.12; coxa 2 0.26; coxa 3 0.10; femur 0.42; tibia 1 0.40; tibia 2 0.45; tarsus 0.05; propodus 0.35; main claw 0.21.

Sexual dimorphism

Female unknown.

Remarks

The closest species to *Tanystylum boucheti* sp. nov. is *T. isthmiacum* Stock, 1955; we distinguish this species from the Stock's species by its vertical abdomen, the presence of bifid tubercles at the dorsal margin of coxae 1 rather than rounded, and its more pronounced dorsal tubercles on the margin of the lateral processes (Müller & Krapp 2009). It may also be worth noting that the original description of *T. isthmiacum* from Panama mentioned 5-articled palps, while many specimens (often regarded as belonging to the subspecies *T. isthmiacum difficile* Stock, 1966) are generally recorded with 6-articled palps in the Atlantic (e.g., Fage & Stock 1966; Stock 1966a, 1979; Müller & Krapp 2009). This may be a whole distinct species, morphologically closer to *T. boucheti* (although different regarding the criteria mentioned above). It is therefore possible that *T. boucheti* has been identified as *T. isthmiacum* or *T. isthmiacum difficile* in the past.

Another similar species is *Tanystylum hummelincki* Stock, 1954 (Fig. 5I–J), with which the present material was mixed in Sabroux *et al.* (2019b). Indeed, the two species show similar appendages and lateral processes, and have bifid tubercles on the dorsal distal margin of the coxae. However, *T. boucheti* sp. nov. differs from *T. hummelincki* by the length of the proboscis, the height and shape of the ocular tubercle, and by the higher abdomen, which reaches beyond the ocular tubercle. The CO1 p-distances between the *T. boucheti* specimen and the material in this study identified as *T. hummelincki* range from 0.104 to 0.106 (see Appendix).

The species also strongly resembles *Tanystylum evelinae* Marcus, 1940, described and only recorded from São Paulo State, Brazil (Marcus 1940). *Tanystylum boucheti* sp. nov. differs from *T. evelinae* by the presence of a posterior tubercle on the ocular tubercle, by the shape of the proboscis, which is conical rather than barrel-shaped, by the orientation of the abdomen, and by the size of the cement gland tube, which is longer in *T. boucheti*.

This species can be differentiated from other *Tanystylum* relatives using the following combination of characters: bifid tubercles on the anterodistal margin of coxae 1, the presence of one or two dorsal tubercles on the lateral processes, the conical shape of the proboscis, and the shape of the ocular tubercle.

A single specimen of the species was collected on the Atlantic coast of Martinique.

Distribution

Only known from the type locality.

Depth range

0–2 m.

Tanystylum duospinum Hilton, 1939

Tanystylum duospinum Hilton, 1939: 33.
Tanystylum oculospinosum Hilton, 1942b: 70.
Tanystylum tubirostre Stock, 1954a: 117–120, figs 24–25.

Tanystylum mexicanum Child, 1979: 32–34, fig. 11a–h.

Tanystylum oculospinum — Stock 1954a: 122; 1955: 248–249; 1966b: 390.
Tanystylum oculospinosum – Child & Hedgpeth 1971: 619 (list). — Child 1979: 34; 1992a: 2–3, 23–24; 1992b: 8 (keys), 35–37, tab. 3, fig. 16; 2009: 819 (list). — Stock 1994: 18, 38.
Tanystylum tubirostrum – Stock 1975a: 984.
Tanystylum tubirostrum – Stock 1986: tab. 1. — Child 1979: 34–35; 1982a: 363. — Müller 1990d: 67–68, figs 16–20.
Tanystylum duospinum – Russel & Hedgpeth 1990: 215–224, figs 1–2 (biology). — Sun 2009: 13, 22–27, 33 (key), 34, 36, 40–41, tabs 4, 8, 11, fig. 6, pic. 4. — Tirado-Sanchez 2014: 3. — Sabroux *et al.* 2019b: tab. 1, fig. 3. — Wang *et al.* 2020: tab. 1. — León-Espinosa *et al.* 2021: 168, tab. 1. — Ramírez-Tello *et al.* 2022: 154, tab. 1.

Type material

Tanystylum duospinum Hilton, 1939. Holotype: USNM 81531 (not examined). Type locality: Baja California, Pacific Mexico.

Tanystylum oculospinum Hilton, 1942. Holotype: USNM 81518 (not examined). Type locality: Todos Santos Bay, Baja California, Pacific Mexico.

Tanystylum tubirostre Stock, 1954. Holotype: NL ZMA.PYC.P.1520 (not examined). Type locality: Punt Vierkant, Bonaire.

Tanystylum mexicanum Child, 1979. USNM 170650 (not examined). Type locality: Gulf of California, Pacific Mexico.

Material examined

MARTINIQUE • 1 ♀ gr.; Le Robert; 14°41.1′ N, 60°51.4′ W; depth 10 m; 19 Sep. 2016; st. AB195; MNHN-IU-2016-578/MK411118 • 1 juv.; Le Robert; 14°43.2′ N, 60°50.6′ W; depth 23 m; 25 Sep. 2016; st. AB405; MNHN-IU-2016-1049/MK411036 • 1 ♀; E of Le Robert; 14°40.1′ N, 60°51.1′ W; depth 0–16 m; 18 Sep. 2016; st. AS255; MNHN-IU-2016-1177/MK411071.

Remarks

We follow the suggestion of Bamber *et al.* (2022) in considering *T. oculospinosum*, *T. tubirostrum* and *T. mexicanum* as junior synonyms of *T. duospinum*. This is the first record of this species in Martinique. All records in the present material are from Atlantic coast off Le Robert.

Distribution

Circumtropical, mostly recorded in America with records in the East Pacific (California, Mexico, Panama, Galápagos, Ecuador, Peru), and West Atlantic (Bermuda, Gulf of Mexico, Caribbean). Other records from Kenya, Taiwan, Indonesia and Australia (Carpentaria Gulf). It is worth noting that the distribution range nominatively for *T. duospinum* is restricted to the East Pacific American coast, and that the widest distribution for the species has been recorded under the synonym *T. oculospinosum* (American Pacific coast from Mexico to Galápagos and Peru, and Australia). *Tanystylum tubirostrum* was nominatively recorded from Atlantic and Pacific American tropical waters, while *T. mexicanum* was nominatively recorded only from the Pacific Mexico.

Depth range

Intertidal to 54 m.

Tanystylum hummelincki Stock, 1954
Fig. 5I–J

Tanystylum hummelincki Stock, 1954a: 122–125, figs 27–28.

Tanystylum hummelincki – Stock 1986: tab. 1. — Müller & Krapp 2009: 10, 39 (key), 44–46, figs 20–21, 137 (list), tab. 1. — Sabroux *et al.* 2019b (pro parte): tab. 1, figs 3, 5.

Type material

Holotype: NL ZMA.PYC.P.1485 (not examined). Type locality: La Pecha, Los Frailes Islands, Venezuela.

Material examined

MARTINIQUE • 1 ♀ gr.; Presqu’Île de la Caravelle; 14°46.5′ N, 60°51.5′ W; depth 15 m; 22 Sep. 2016; st. AB350; MNHN-IU-2016-868/MK411179 • 1 ♂; Ste-Marie; 14°46.3′ N, 60°57.5′ W; depth 20 m; 20 Sep. 2016; st. AB260; MNHN-IU-2016-1063/MK411041 • 1 ♂, 1 juv.; Presqu’Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1248 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1398/MK411111 • 1 juv.; same collection data as for preceding; MNHN-IU-2017-218 • 1 ♂; Canal de Ste Lucie; 14°23.9′ N, 60°52.6′ W; depth 0–2 m; 12 Sep. 2016; st. AM012; MNHN-IU-2016-1309.

Remarks

This is another rare species of *Tanystylum* collected for the first time in Martinique, though the most abundantly sampled here in this genus. Most specimens were collected on the Atlantic coast of Martinique, except MNHN-IU-2016-1309, which was sampled near the southern cape of the Island. This is the first record of the species out of the Caribbean Sea stricto sensu.

Distribution

Caribbean (Venezuela, Colombia, Martinique).

Depth range

0–3 m. We extend the known range to 23 m.

Tanystylum ingrallis sp. nov.
urn:lsid:zoobank.org:act:2CBAF7F7-5414-4617-80C9-809155ADA7FE
Fig. 6

Tanystylum sp. 3 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • ♂; Fond Boucher; 14°39.3′ N, 61°09.6′ W; depth 37–40 m; 1 Oct. 2016; st. AD283; MNHN-IU-2016-1055/MK411038.

Paratype

MARTINIQUE • 1 ♂; Macouba; 14°55.1′ N, 61°09′ W; depth 80 m; 24 Sep. 2016; st. AD261; MNHN-IU-2016-867/MK411178.

Etymology

Contraction of ‘*in grallis*’, *in* + plural accusative of the Latin *gralla*, *-ae* (1st decl, fem.): ‘on stilts’, referring to the long legs of this species, relatively to most instars of the genus.

Description (holotype, ♂, MNHN-IU-2016-1055)

Body. Trunk completely unsegmented, discoidal; cuticle granular. No dorsomedian ornamentation. Ocular tubercle cylindrical, higher than abdomen, about 4⁄3 as tall as wide, carrying four large pigmented eyes, one acute terminal spur anteriorly and 2 small lateral sense organs. Cephalon with 2 small lateral tubercles at anterior margin. 1st lateral processes about 4⁄3 as long as wide, other lateral processes about as long as wide; all lateral processes jointed; 1st lateral process without ornamentation, 2nd, 3rd and 4th lateral processes with one anterior tubercle on distal margin, carrying one seta.

Proboscis. Proximal half broad and rounded, distal half tubular, blunt at tip, bent ventrally, about as long as distance between cephalon distal margin and abdomen base.

Abdomen. Long, diagonally oriented, inflated distally, with light inflation at base. Anus reaching beyond first coxae of 4th legs. Abdomen carrying setae, mostly on distal inflated part. No basal segmentation. One dorsal tubercle in distal part, carrying setae.

Chelifore. 1-articled, composed of one small knob with one distal spine.

Palp. 6-articled, with setae mostly on last 2 distal articles. 1st article shortest, wider than length. 2nd article about 2.5 times as long as wide. 3rd article as long as 1st article. 4th article longest, about 1.7 times as long as 2nd article, about 3.5 times as long as wide, with cannula (gland?) on outer side. 5th article about 0.2 times as long as wide. 6th article about 3.5 times as long as wide.

Oviger. 10-articled, with scarce setae. 1st article as long as wide. 2nd article more than 1.5 times as long as wide. 3rd article about twice as long as wide. 4th and 5th articles subequal and longest, 4th about 3.5 times as long as wide, 5th about 4 times as long as wide. 6th article about twice as long as wide. 7th article about as long as wide, presenting one distal low spur carrying long setae. 8th article about as long as wide. 9th article about twice as long as wide. 10th article about 1.5 times as long as wide. Strigilis spines simple, strigilis formula 2 : 1 : 1 : 2.

Legs. Rather long for the genus, 1st leg pair longer than others. Coxa 1 shorter than wide, with 4 tubercles mounted with seta on distal margin of 1st and 2nd legs: one dorsomedian, two dorsolateral and one ventrolateral on posterior side; or with 3 tubercles on 3rd and 4th legs: one dorsomedian, one dorsolateral and one ventrolateral on posterior side. Coxa 2 longer than coxa 1 or 3, with one large distal tubercle on anterior side and 2 or 3 distal tubercles on posterior side, all mounted with one seta at tip. Coxa 3 as long as broad, with ventral setae. Femur straight, with long dorsal spur at distal margin with one lateral cement gland tube on inner side, rounded at base and tubular distally. Tibia 1 shorter than femur, with two low dorsal knobs mounted by long setae and distal dorsomedian spur. Tibia 2 longer than tibia 1 or femur, with scarce setae, and 3 low knobs on dorsal surface mounted with long setae. Tarsus trapezoid, short, about as long as wide, carrying one large spine and setae on ventral surface. Propodus gently curved, with low heel carrying 2 large heel spines, plus one smaller spine more distally. Main claw curved, about half as long as propodus. Auxiliary claws present, about 0.6 times as long as main claw.

Measurements (mm). Trunk 0.84; abdomen 0.55; proboscis 0.80; coxa 1 0.22 (1st leg), 0.24 (2nd leg); coxa 2 0.46 (1st leg), 0.36 (2nd leg); coxa 3 0.27 (1st leg), 0.28 (2nd leg); femur 1.25 (1st leg), 0.82 (2nd leg); tibia 1 1.17 (1st leg), 0.78 (2nd leg); tibia 2 1.40 (1st leg), 1.04 (2nd leg); tarsus 0.10; propodus 0.50; main claw 0.28.

Sexual dimorphism

No female currently available.

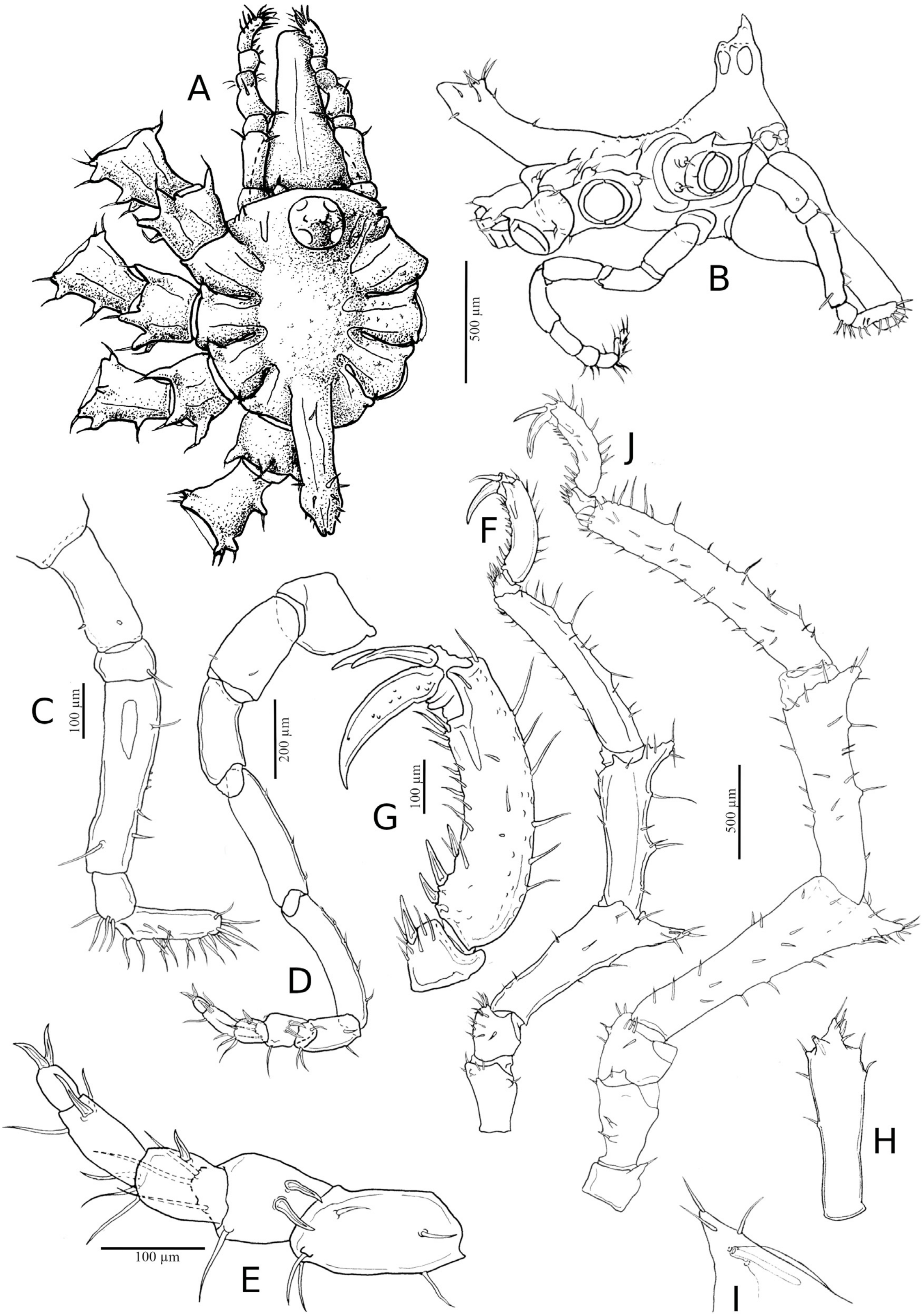

Fig. 6. *Tanystylum ingrallis* sp. nov., holotype, ♂, MNHN-IU-2016-1055. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Palp. **D**. Oviger. **E**. Oviger strigilis. **F**. Second leg. **G**. Tarsus and propodus of second leg. **H**. Femur of third leg, dorsal view (same scale as F). **I**. Close-up of distal spur on femur of second leg, and cement gland tube. **J**. First leg (same scale as F).

Individual variability

On the other available specimen, the chelifores are almost not visible in dorsal view.

Remarks

Tanystylum ingrallis sp. nov. is readily discriminated from most other described species by the peculiarly long and slender legs and the absence of nodules on legs. Most species of *Tanystylym* have their propodus conspicuously longer than half the tibia 2, while here the propodus is just half as long as tibia 2 for the second, third and fourth legs, and much smaller for first legs. Only *T. lamonti* Staples, 2019, *T. tiara* Staples, 2019, *T. zuydtorpi* Arango, 2009 and *T. paramexicanum* Müller & Krapp, 2009 have long legs as well. *Tanystylum lamonti*, *T. tiara* and *T. zuydtorpi* are much different from *T. ingrallis*, due for example to the shape of their proboscis (long and barrel shape in the two former species, pyriform in the latter), and their longer chelifores. On the other hand, *T. paramexicanum* shares some morphological characters with this new species: the shape of the proboscis, the strong spur on the anterior margin of the ocular tubercle and the presence of 3 or 4 tubercles on coxae 1. However, the two species do not only differ by the absence of tubercles on the lateral processes, the much lower tubercles on coxae 1, the shorter size of coxae 2 and the bent ocular tubercle tip in *T. paramexicanum*, but also by the longer abdomen, the presence of tubercles on coxae 2 and the presence of a high tubercle on the distal margin of tibia 1 in *T. ingrallis*. Also, there is no specific mention of a longer first pair of legs in *T. paramexicanum*. Regrettably, only females are known for *T. paramexicanum*, so it is not possible to compare the cement gland opening of the two species. Indeed, the lateral opening of the cement gland tube in *T. ingrallis* is another strong diagnostic character.

The morphologically closest species to *T. ingrallis* sp. nov. is probably *T. duospinum* Hilton, 1939, which presents a similar proboscis, and has the same palp structure. These two species are, however, differentiated by several conspicuous characters: (i) the abdomen of *T. ingrallis* extends beyond the first coxae of the fourth leg, while it does not reach the distal margin of the lateral processes in *T. duospinum*; (ii) in *T. ingrallis*, the abdomen is oriented diagonally, while it is almost vertical in *T. duospinum*; (iii) the anterior tubercle-ornamented coxa 1 is bifurcated in *T. duospinum* on the first leg (Müller & Krapp 2009), but not in *T. ingrallis*; (iv) the dorsodistal spur of the legs is longer in *T. ingrallis* compared to *T. duospinum*; (v) knobs dorsally positioned along the legs are smaller and more spaced in *T. ingrallis* compared to *T. duospinum*; (vi) tibia 2 is longer relative to tibia 1 in *T. ingrallis* compared to *T. duospinum*. Two specimens of the species were collected on the Caribbean and northern coasts of Martinique.

Distribution

Only known from Martinique.

Depth range

40–80 m.

Tanystylum orbiculare Wilson, 1878

Tanystylum orbiculare Wilson, 1878: 5–7, pl. 2 fig. 2a–2f.

Tanystylum orbiculare – Wilson 1880: 471–473, pl. 3 fig. 11. — Morgan 1891: 47–49 (embryology). — Sumner *et al.* 1913: 141–142. — Fish 1925: 161. — Marcus 1940: 105–108, pl. 15 fig. 15a–h. — Hedgpeth 1943: 54–55; 1948: 266–268, figs 8, 49a. — Fage 1949: 29–30, fig. 6; 1952: 530. — Sawaya 1950: 73. — Stock 1951: 18–20; 1954a: 117; 1958a: 138; 1958b: 4; 1962: 219; 1966a: 46; 1975a: 985; 1986: tab. 1; 1992a: 121, 139; 1994: 37. — Bourdillon 1955: 599. — Clark 1963 (?):

5, 60; 1977: 332. — Fage & Stock 1966: 319. — Kraeuter 1973: 496. — Krapp 1973: 60, 64, fig. 4; 1983: 409, 412. — Krapp-Schickel & Krapp 1975: 17, tab. 2 (ecology). — Arnaud 1976: 69; 1987: 43–44. — Krapp & Kraeuter 1976: 343 — Munilla & de Haro 1981: 191–197, tab. 1, figs 5, 11; 1984: 531, 533–535, tabs 3–4. — Bremec *et al.* 1986: 44–45, fig. 23. — Child 1992b: 8 (key), 33–35, tab. 3, fig. 15; 2009: 819 (list). — Krapp & Nieder 1993: tab. 1 (predation). — Munilla 1993: tab. 4. — Genzano 2002: 84, 86, 88, 90–91, tab. 1, figs 2–8, 11. — Bain 2003: 198, 201–205, 215, tabs 2–3, fig. 3. — Gillespie & Bain 2006: 309, 316–317, tab. 1. — Magari *et al.* 2006: tabs 1–3. — Arango & Wheeler 2007: appendix 1, tab. 3, figs 1–3, 5, 8 (phylogeny). — Fahrenbach & Arango 2007: 917, 919–920. — Krapp *et al.* 2008: 57 (list), 59, 61. — Gillett & Schaffner 2009: 83. — Bamber 2010: 15 (list), 67 (key), 104, fig. 134. — Masta *et al.* 2010 (mitogenome): 61–62, tab. 1, fig. 2. — Brenneis *et al.* 2011a: 321; 2011b: 345, 347; 2017: 7, 9, tab. 1. — Genzano *et al.* 2011: tab. 2. — Lalana & Varela 2011: 53–54, fig. 1. — Koçak & Alan 2013: 367–369, 371, figs 2–3, 5. — Brenneis & Scholtz 2014: 18. — Bakir *et al.* 2014: tab. 1. — Munilla & Soler-Membrives 2014: 124 (key), 127–129, fig. 68. — Arango & Linse 2015: tab. 1. — Koçak 2015: 191; 2019: list; 2020: 375. — Sabroux *et al.* 2017: 15, appendices 1–2, figs 3–5. — Dietz *et al.* 2018: 5 (feeding). — Lucena & Christoffersen 2018a: 106. — Lucena *et al.* 2019: 21. — Ramírez-Tello *et al.* 2022: tab. 1.

Clotenia orbiculare – Bouvier 1923a: 57. — Giltay 1929: 175.

non *Tanystylum orbiculare* – Stock 1954b: 145 (= *Tanystylum conirostre* (Dohrn, 1881))
nec *Tanystylum conirostre* (Dohrn, 1881) – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: USNM 37781 (not examined, illustrated in Child 1992b). Type locality: Long Island Sound, off Noank, Fishers Island Sound, New York, USA.

Material examined

MARTINIQUE • 1 ♂ ov.; Baie de Fort-de-France; 14°36.1′ N, 61°04′ W; depth 0–1 m; 29 Sep. 2016; st. AM034; MNHN-IU-2016-872/MK411183 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-873/MK411184 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-874/MK411185.

Remarks

This species was misidentified as *Tanystylum conirostre* in Sabroux *et al.* (2019b), as the examined specimens differed from the description of *T. orbiculare* given by Krapp (1973) by having slenderer legs and a straight abdomen. However, *T. orbiculare* can be distinguished from *T. conirostre* by the number of palp articles (5 rather than 4) and the proboscis shape, which is more barrel-shaped in *T. orbiculare.* Although this species is very common in the Atlantic, it was not yet recorded from Martinique. CO1 p-distances to previously barcoded material (Arango & Wheeler 2007; Masta *et al.* 2010; respectively GenBank accession numbers DQ390064 from Mar del Plata, Argentina, and GU370064 from Massachusetts) are high (0.172 and 0.11–0.14, respectively; see Appendix). All specimens were collected at a single station in the Baie de Fort-de-France.

It should be noted that this species is mostly amphi-Atlantic, but two records were provided from New South Wales by Stock (1954b) and Clark (1963). However, Stock regarded *T. orbiculare* as synonymous to *T. conirostre* and explicitly stated that he found the material similar to the type material of *Clotenia conirostris* (= *T. conirostre*), so this record should be regarded as *T. conirostre*. In turn, it is possible that Clark's material was also erroneously identified as *T. orbiculare* following Stock.

Distribution

Widely recorded in the Atlantic (New England, Massachusetts, Virginia, South Carolina, Georgia, Brazil, Argentina, Senegal, Congo, Angola, Cap Verde); also found in the Caribbean, Gulf of Mexico, occidental and oriental Mediterranean Sea, as well as the Bosphorus. It was also recorded in New South Wales (Clark 1963), though this record is questionable considering the otherwise amphi-Atlantic distribution of this species.

Depth range

0.5–58 m.

Tanystylum tayronae Müller & Krapp, 2009

Tanystylum tayronae Müller & Krapp, 2009: 13, 39 (key), 52–54, 137 (list), tab. 1, fig. 25.

Tanystylum tayronae – Sabroux *et al.* 2019b: tab. 1, fig. 3.
Tanystylum sp. – Müller 1990a: 280.

Type material

Holotype: SMF1111 (not examined). Type locality: Arreçifes near Punta el Diamante, Santa Marta, Colombia.

Material examined

MARTINIQUE • 1 ♂; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-858/MK411171 • 3 ♂♂; Presqu'Île de la Caravelle; 14°44.5′ N, 60°53.5′ W; depth 5–12 m; 17 Sep. 2016; st. AD241; MNHN-IU-2016-1292 • 1 ♂; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-1300/MK411097.

Remarks

This species was reported for the first time in Martinique (Petite Anse Macabou) by Müller (1990a) as *Tanystylum* sp., and was formally described later by Müller & Krapp (2009) from Colombia. The characteristic tubercle near the abdomen base is quite variable in size, but it is generally lower in the studied material compared to Müller & Krapp's drawing. This tubercle is the only conspicuous character differentiating *T. tayronae* from *T. geminum* Stock, 1954. A more diversified sampling of this species and DNA barcodes are needed to make sure the two species are not synonymous.

All specimens were collected on the Atlantic and Caribbean coasts of Martinique.

Distribution

So far only known from the Caribbean (Colombia and Martinique).

Depth range

0–2 m, extended to 15 m.

Family Pallenopsidae Fry, 1978

Genus ***Pallenopsis*** Wilson, 1881

Type species

Pallenopsis (*Pallenopsis*) *fluminensis* (Krøyer, 1844), by subsequent designation (Child 1998a).

Pallenopsis candidoi Mello-Leitão, 1949

Pallenopsis candidoi Mello-Leitão, 1949: 299–307, pls. 9–10.

Pallenopsis candidoi – Stock 1957: 105, figs 19–20; 1966b: 393. — Krapp & Kraeuter 1976: 337. — Lucena & Christoffersen 2018a: 103, 110; 2022: 308, 310, fig. 4. — Cano-Sánchez & López-González 2019: 528 (key). — Sabroux *et al.* 2019b: 1525, tab.1, fig. 3.
Pallenopsis (*Pallenopsis*) *candidoi* – Stock 1975a: 1018 (key), 1030; 1992a: 130, 139.

Type material

Holotype: MP and EMB-IOC (see Lucena & Christoffersen 2018a) (not examined). Type locality: between Ilha do Francês and Ilha da Armaçaõ, Florianópolis, Santa Catarina, Brazil.

Material examined

MARTINIQUE • 1 ♀; Le Lorrain; 14°50.7′ N, 61°03.8′ W; depth 11–14 m; 6 Oct. 2016; st. AS565; MNHN-IU-2016-814/MK411136.

Remarks

This is the first record of this species in Martinique and in the Caribbean, which fills a gap in the distribution of this species, already recorded from the northwest Atlantic, Surinam and Brazil. The specimen was collected on the Atlantic coast.

Distribution

West Atlantic (Brazil, Surinam, Caribbean and US Georgia).

Depth range

14–102 m.

Pallenopsis schmitti Hedgpeth, 1943

Pallenopsis schmitti Hedgpeth, 1943: 44.

Pallenopsis schmitti – Hedgpeth 1948: 212–214, fig. 22. — Stock 1955: 233–234, fig; 10; 1975a: 1018 (key), 1028–1030, fig. 30c–d. — Child 1979: 46. — Arango 2002: tab. 1, figs 2–4 (phylogeny); 2003a: 589, tab. 1. — Gillett & Schaffner 2009: fig. 6. — Müller & Krapp 2009: 121 (key), 122, 137, 138 (list). — Krapp & Viquez 2011: tab. 1. — Varela 2012: 4, fig. 2d. — Lucena & Christoffersen 2018: 110. — Sabroux *et al.* 2019b: tab. 1, fig. 3.
Pallenopsis (*Pallenopsis*) *schmitti* – Stock 1986: 425–427, fig. 8g–i. — Child 1992b: 65–67, tabs 12, 14, fig. 30; 2009: 819 (list). — Arango 2000: 63–65, fig. 3.

Type material

Syntypes: USNM 76517 (examined). Type locality: off West Florida and Cuba, Gulf of Mexico.

Material examined

MARTINIQUE • 1 ♂; SW of Vétiver; 14°37.5′ N, 61°08.3′ W; depth 74 m; 2 Oct. 2016; st. AD290; MNHN-IU-2016-813/MK411135.

Remarks

This is the first record of this species in Martinique. The single specimen was collected on the Caribbean coast. This species was already recorded in the Caribbean from Colombia, Cuba and Florida.

Distribution

Tropical West Atlantic (Gulf of Mexico, Caribbean, French Guiana, Brazil).

Depth range

15–600 m.

Family Ascorhynchidae Hoek, 1881

Genus ***Ascorhynchus*** Sars, 1877

Type species

Ascorhynchus abyssi Sars, 1877, by original designation.

Ascorhynchus castellioides Stock, 1957

Ascorhynchus castellioides Stock, 1957: 82–84, fig. 2.

Ascorhynchus castellioides – Bayer *et al.* 1970: A48, A117. — Stock 1975a: 968; 1986: tab. 1. — Birkeland *et al.* 1976: 133. — Child 1979: 15. — Müller 1992a: 45. — Arango & Wheeler 2007: appendix 1, tab. 3, figs 1–4 (phylogeny), fig. 8 (phylogeny). — Müller & Krapp 2009: 10, 55 (key), 57–58, 130–131, 137 (list), tabs 1, 3, fig. 28. — Arabi *et al.* 2010: tab. 2, figs 1–3 (phylogeny). — Krapp & Viquez 2011: 205, tab. 1. — Sabroux *et al.* 2017: appendices 1–2, figs 3–5 (phylogeny); 2019b: tab. 1, figs 3, 5. — Wagner *et al.* 2017: 122 (list), 123–125, 128–130, 132–133, figs 2c, 3c, 5c, 6c. — Lucena *et al.* 2019: 2, 3 (list), 12–14, 20–21, fig. 7.

Type material

Holotype: ZMH-A0000719 (not examined). Type locality: Puerto Cabello, Venezuela.

Material examined

MARTINIQUE • 1 ♂ ov.; Baie de Fort-de-France; 14°36.1′ N, 61°04′ W; depth 0–1 m; 29 Sep. 2016; st. AM034; MNHN-IU-2016-853/MK411166 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-882 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-883/MK411192 • 5 spec.; same collection data as for preceding; MNHN-IU-2016-574 • 4 ♂♂, 2 ♂♂ ov., 2 ♀♀, 1 ♀ gr., 1 juv.; same collection data as for preceding; MNHN-IU-2016-1084 • 1 juv.; Presqu’Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-573 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-576 • 1 ♂; Le Prêcheur; 14°47.2′ N, 61°13.1′ W; depth 2 m; 3 Oct. 2016; st. AB382; MNHN-IU-2016-583.

Remarks

Widely distributed in the Tropical West Atlantic, the species is here recorded for the first time in Martinique. Most of the specimens were collected at two stations, one off the Presqu’Île de la Caravalle (Atlantic coast) and the other at Baie de Fort-de-France; one record from Le Prêcheur (north Caribbean coast).

Distribution

Tropical West Atlantic: Caribbean (Venezuela, Panama, Florida, Columbia, Barbados, Martinique, Bonaire, Curaçao) and Brazil (Pernambuco and Paraíba).

Depth range

0–30 m.

Ascorhynchus horologium Child, 1992

Ascorhynchus horologium Child, 1992b: 9 (key), tabs 3, 12, 14, fig. 6.

Ascorhynchus horologium – Child 2002: 1814 (key); 2009: 818 (list). — Sabroux *et al.* 2019b: tab. 1.

Type material

Holotype: USNM 213519 (not examined). Type locality: off West Florida.

Material examined

MARTINIQUE • 1 ♀; E of Le Vauclin; 14°34.2′ N, 60°44.8′ W; depth 90 m; 14 Sep. 2016; st. AD231; MNHN-IU-2016-1199 • 1 ♀ gr.; same collection data as for preceding; MNHN-IU-2016-1322.

Remarks

This is the first record of this species since its original description from central West Florida by Child (1992b). The two specimens were sampled at the same station, off Le Vauclin (Atlantic coast). They are morphologically very similar to Child's description. Unfortunately, CO1 PCR amplifications were negative for the two DNA extracts.

Distribution

Only recorded from West Florida (Gulf of Mexico) and Martinique.

Depth range

73–90 m.

Ascorhynchus iguanarum sp. nov.

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Fig. 7

Ascorhynchus sp. 5 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • subadult; Le Robert; 14°43.2′ N, 60°50.6′ W; depth 23 m; 25 Sep. 2016; st. AB405; MNHN-IU-2016-1047/MK411035.

Paratype

MARTINIQUE • juv.; E of Le Robert; 14°40.1′ N, 60°51.1′ W; depth 14 m; 18 Sep. 2016; st. AB191; MNHN-IU-2016-1190/MK411077.

Etymology

From Latin *iguana*, *-ae*, 1st decl. (fem.), genitive plural. Named after the green iguanas of Fort Saint-Louis, the sharp teeth of which are painfully remembered by the first author, resembling the shape of the dorsomedian trunk tubercles of this new species.

Description (holotype, MNHN-IU-2016-1047)

BODY. Trunk stout, smooth, completely segmented. Trunk segments 1 to 3 bearing tall dorsomedian pointing tubercles, slightly curved anteriorly. Ocular tubercle shorter than dorsomedian tubercles, about

2.5 times as tall as wide, with acute tip, bearing four pigmented eyes distally. Lateral margin of cephalon carrying pointy tubercle near ocular tubercle. Oviger base touching first lateral processes. Lateral processes about as long as wide, 4th pair shortest, well separated by less than half their own diameter, distally bearing a dorsomedian pointing tubercle, without any seta or spine at tip.

Proboscis. Very movable, pyriform, proximal part narrow, inflated before mid-length, tapering and blunt distally. Longer than cephalon and first trunk segment together.

Abdomen. Horizontal, long, extending beyond coxa 2 of 4th leg. Distal part inflated, carrying few setae. Abdomen segmented at base.

Chelifore. 2-articled, shorter than proboscis. Scape 1-articled, carrying seta at mid-length and 3 additional setae at distal margin. Chela not functional, bearing one lateral seta. Finger oriented ventrally.

Palp. 10-articled, with setae mostly on ventral side of last 5 articles. 1st article shorter than wide, carrying dorsal pointy tubercle. 2nd article shortest, shorter than width. 3rd article subequal to 5th article and longer than other articles, with scarce spines. 4th article slightly longer than wide. 5th article with one long lateral seta on outer surface near proximal end, plus several small spines near distal end. 6th article bent, as long as wide, with setae on ventral surface. 7th and 8th articles subequal, about 1.5 times as long as wide. 9th and 10th articles subequal, about as long as wide.

Oviger. 10-articled, with scarce setae. 1st article shortest, as long as wide. 2nd article about twice as long as wide. 3rd article 1.5 times as long as wide, glabrous. 4th and 5th articles subequal in length, 5th article curved. 6th and 7th articles subequal. 6th article twice as long as wide. 7th article longest within strigilis, 8th, 9th and 10th articles subequal. Strigilis with 2 rows of compound spines. Terminal claw short, with blunt tip.

Legs. Slender with scarce setae. Coxa 1 shorter than wide, dorsodistally with 2 tubercles, each surmounted with spine. Coxa 2 slightly longer than maximal width, with ventral seta. Coxa 3 as long as wide, with ventral setae. Femur and tibia 1 subequal in length. Tibia 2 longest, about ⅕ longer than tibia 1 or femur, with many long setae on dorsal surface and shorter setae on ventral surface. Tarsus medium-sized, trapezoid. Propodus straight, about 0.6 times as long as tibia 2, sole with 8 small spines. Main claw curved, about 0.4 times as long as propodus. No auxiliary claw.

Measurements (mm). Trunk 1.13; abdomen 0.39; proboscis 0.73; chelifore 0.21; coxa 1 0.14; coxa 2 0.29; coxa 3 0.18; femur 0.57; tibia 1 0.57; tibia 2 0.71; tarsus 0.09; propodus 0.38; main claw 0.15.

Sexual dimorphism

No female currently available.

Individual variability

The paratype is a juvenile, which presents developed chelae as expected, and is overall smaller in size.

Remarks

The high, curved, conical dorsomedian tubercles of this species is a strong diagnostic character for this species. Only *Ascorhynchus athernus* Child, 1982 shows dorsomedian tubercles comparable in size and longer than the ocular tubercle, but it is otherwise very dissimilar to *A. iguanarum* sp. nov. This species is morphologically close to *A. castelli* (Dohrn, 1881), which can be found in the same region, from which it can be discriminated not only by the higher dorsomedian tubercles, but also by the larger

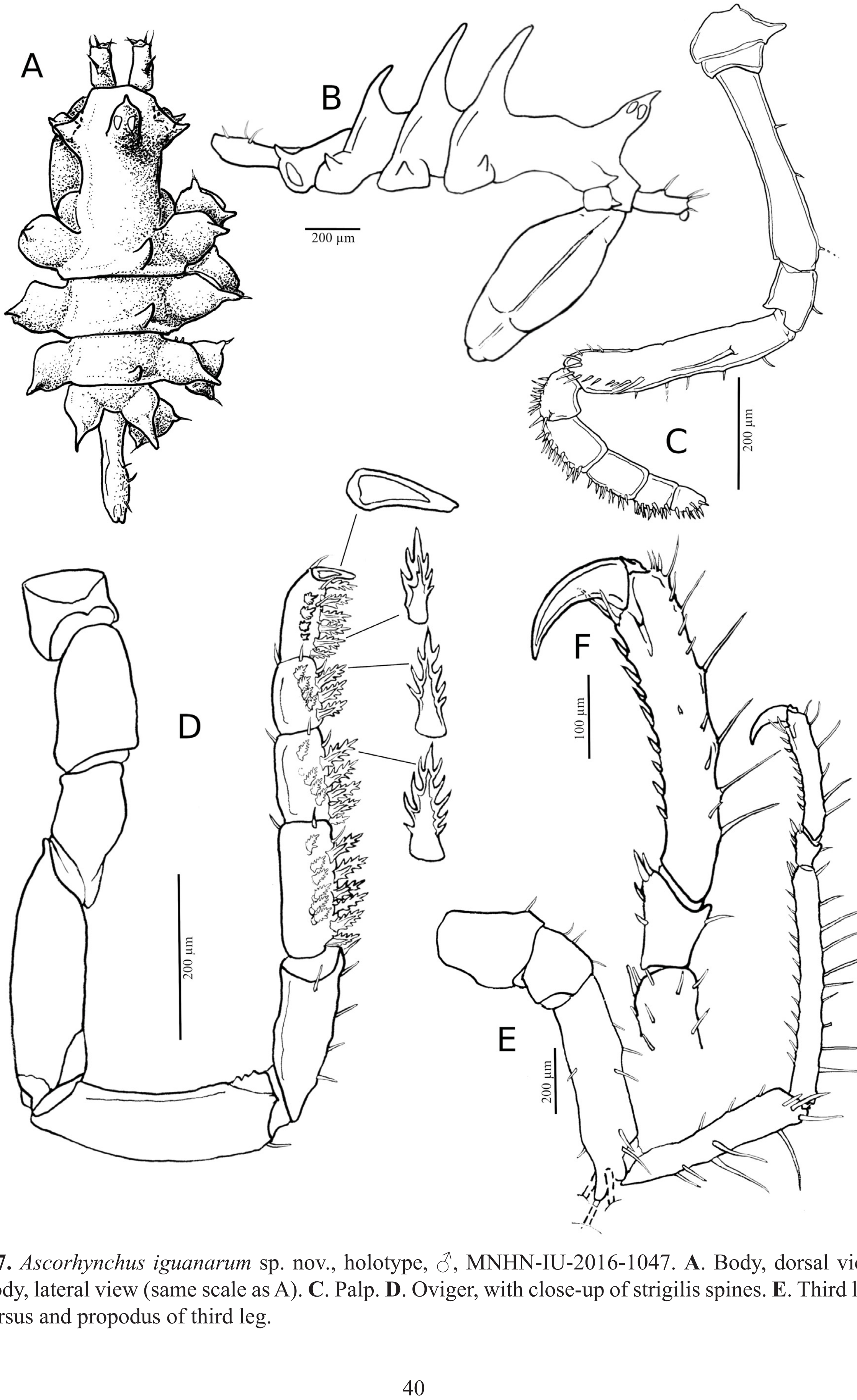

Fig. 7. *Ascorhynchus iguanarum* sp. nov., holotype, ♂, MNHN-IU-2016-1047. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Palp. **D**. Oviger, with close-up of strigilis spines. **E**. Third leg. **F**. Tarsus and propodus of third leg.

tubercles on the lateral processes, the presence of small pointy tubercles on the 1st article of the palp and at the base of palp insertion, the absence of a spur on the dorsodistal margin of tibiae 1 and the smaller distance between the lateral processes.

The two specimens were collected on the Atlantic coast of Martinique.

Distribution

Only known from Martinique.

Depth range

14–23 m.

Ascorhynchus latipes (Cole, 1906)

Barana latipes Cole, 1906: 217–222, pls 1–2.

Ascorhynchus latipes – Marcus 1940: 93. — Hedgpeth 1948: 256–257, fig. 42b; 1954: 427. — Fage 1952: 530. — Stock 1953a: 304 (key); 1954a: 116; 1975a: 969; 1979: 3; 1986: tab. 1. — Birkeland *et al.* 1976: 133. — Child 1979: 15 (key), 16; 1982a: 359; 1992b: 9 (key), 21, tab. 3, fig. 7; 2009: 818 (list). — Müller & Krapp 2009: 11–13, 55 (key), 59–61, 130, 133, 137 (list), tabs 1, 3, fig. 29. — Sabroux *et al.* 2019b: 1531, tab. 1, fig. 3. — León-Espinosa *et al.* 2021: tab. 1. — Ramírez-Tello *et al.* 2022: tab. 1.
Ascorhynchus cf. *latipes* – Krapp & Viquez 2011: 204, tab. 1.

Type material

Holotype: MCZ CRU-6947 (not examined). Type locality: Sweeting's Village, Great Abaco, Bahamas.

Material examined

MARTINIQUE • 1 ♀; Passe du Marin; 14°27′ N, 60°53.8′ W; depth 4–8 m; 9 Sep. 2016; st. AS112; MNHN-IU-2016-816/MK411137 • 1 ♂; Schœlcher; 14°37.7′ N, 61°07.2′ W; depth 4 m; 27 Sep. 2016; st. AB460; MNHN-IU-2016-861/MK411173 • 1 ♀; Pointe Baham; 14°25′ N, 60°50.4′ W; depth 0–2 m; 17 Sep. 2016; st. AM021; MNHN-IU-2016-862/MK411174 • 1 ♂ ov.; Schœlcher; 14°37.7′ N, 61°07.2′ W; depth 4–9 m; 27 Sep. 2016; st. AR461; MNHN-IU-2016-871/MK411182.

Remarks

This is the first record of this species in Martinique, where it was collected mostly on the Caribbean and southern coasts, although one specimen was found in Pointe Baham (southern Atlantic coast).

Distribution

Tropical, amphi-Atlantic (Gulf of Mexico, Caribbean, Senegal).

Depth range

0–19 m.

Ascorhynchus sp. 4

Fig. 8

Ascorhynchus sp. 4 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

MARTINIQUE • 1 juv.; Macouba; 14°55′ N, 61°08.9′ W; depth 78–80 m; 24 Sep. 2016; st. AD263; MNHN-IU-2016-1039/MK411031.

Remarks

The only available specimen is a juvenile that is rather poorly preserved. The ovigers are broken. In these circumstances, it seems unwise to name this species, although it is probably new to science.

The species differs from most other species of *Ascorhynchus* by the following character combination: ocular tubercle present, with pigmented eyes positioned below the ocular tubercle tip; slender dorsomedian tubercles on trunk segments; lateral processes less than twice as long as wide, separated by about their own diameter, carrying median tubercle; ocular tubercle near anterior cephalon boarder; chelifore scapes monosegmented. These characters are shared with *A. okai* Nakamura & Child, 1983 from Japan, *A. cactoides* Stock, 1954 from the Indo-Pacific (Stock 1991b) and *A. pudicus* Stock, 1970 from the Eastern Atlantic and Mediterranean (Munilla and Soler-Membrives 2014). *Ascorhynchus* sp. 4 differs from *A. okai* by the longer distance between the insertions of the ovigers and palps (Nakamura & Child 1983), from *A. cactoides* in having the abdomen straight and from *A. pudicus* in having no dorsomedian tubercle on the 4th trunk segment.

The specimen was collected in Northern Martinique.

Depth range

78–80 m.

Genus ***Eurycyde*** Schiødte, 1857

Type species

Zetes hispidus Krøyer, 1844 by monotypy.

Eurycyde clitellaria Stock, 1955

Eurycyde clitellaria Stock, 1955: 263–266, figs 25–26.

Eurycyde clitellaria –McCloskey 1967: 128–131, figs 18–21. — Child 1979: 16; 1988a: 8 (key); 1992b: 8 (key), 25–26, 28, tabs 3, 12, 14, fig. 10. — Stock 1986: tab. 1. — Nakamura & Chullasorn 2000: 3 (key). — Müller & Krapp 2009: 10, 61 (key), 61–63, 137 (list), tab. 1, fig. 31. — Sabroux *et al.* 2019b: 1525, 1532, tab. 1, figs 3, 5. — Ramírez-Tello *et al.* 2022: tab. 1.

Type material

Holotype: NHMD 110654 (not examined). Type locality: sound between St John and St James (Virgin Islands).

Material examined

MARTINIQUE • 1 ♂; Pointe du Diamant; 14°27′ N, 61°04.1′ W; depth 70 m; 9 Sep. 2016; st. AD214; MNHN-IU-2016-823/MK411142 • 1 ♂; Les Anses-d'Arlet; 14°29.7′ N, 61°05.4′ W; depth 19 m; 7 Sep. 2016; st. AB155; MNHN-IU-2016-824/MK411143 • 1 ♂; Canal de Ste Lucie; 14°23.1′ N, 60°50.2′ W; depth 65 m; 11 Sep. 2016; st. AD224; MNHN-IU-2016-825/MK411144 • 1 preadult ♀; same collection data as for preceding; MNHN-IU-2016-579 • 1 ♂, 1 juv.; Canal de Ste Lucie; 14°22.7′ N, 60°51.3′ W; depth 65 m; 11 Sep. 2016; st. AD223; MNHN-IU-2016-545 • 7 ♂♂, 4 ♀♀, 1 ♀ gr., 2 juvs; Canal de Ste Lucie; 14°22.7′ N, 60°51.6′ W; depth 65 m; 11 Sep. 2016; st. AD222; MNHN-IU-2016-547 • 1 ♀; Grande Anse d'Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-549 • 1 ♀; Vétiver; 14°37.8′ N, 61°07.7′ W; depth 25 m; 8 Sep. 2016; st. AB161; MNHN-

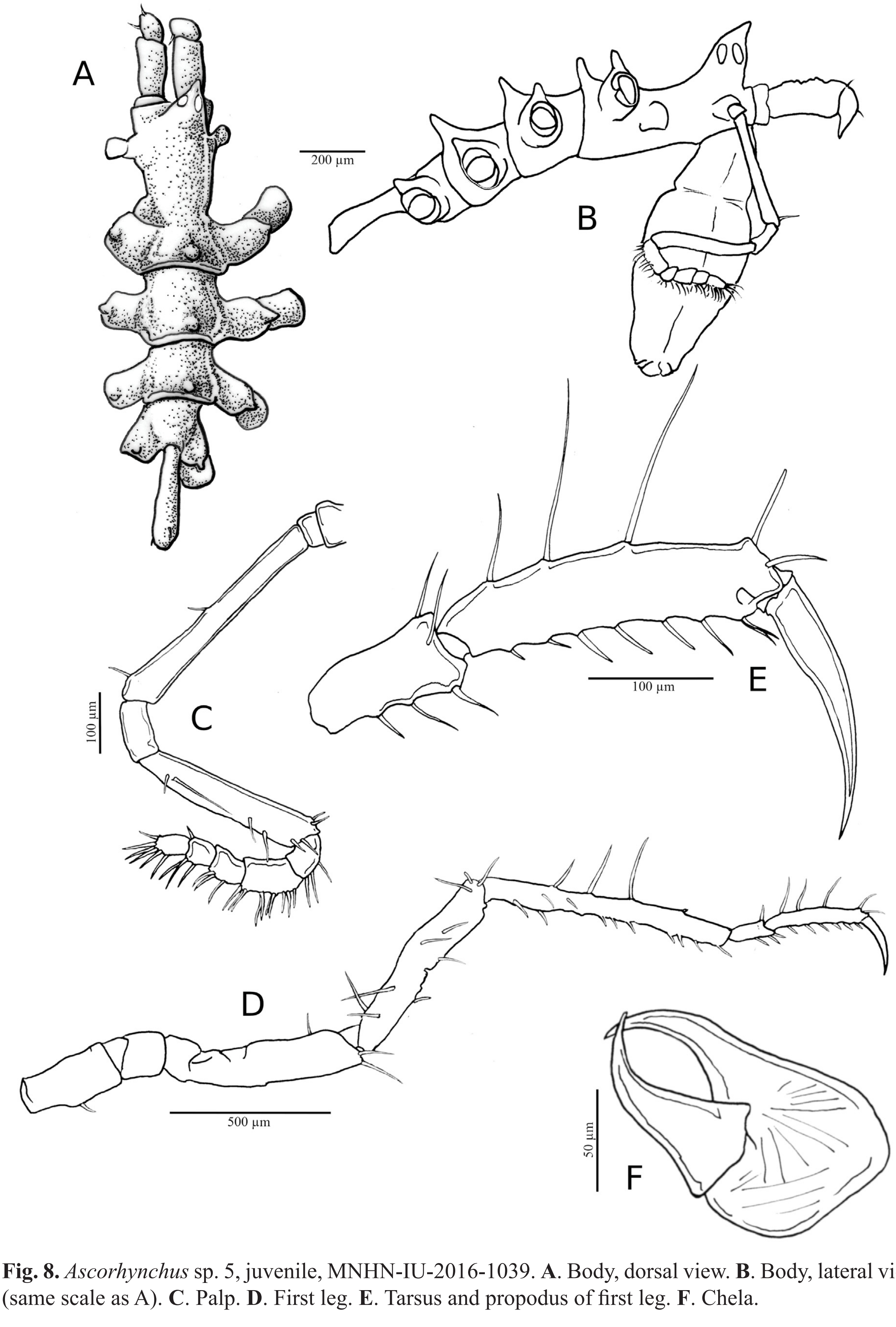

Fig. 8. *Ascorhynchus* sp. 5, juvenile, MNHN-IU-2016-1039. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Palp. **D**. First leg. **E**. Tarsus and propodus of first leg. **F**. Chela.

IU-2016-550 • 6 ♂♂, 3 ♀♀; Les Anses-d'Arlet; 14°28.1′ N, 61°05.3′ W; depth 72 m; 8 Oct. 2016; st. AD616; MNHN-IU-2016-1041 • 6 ♂♂, 3 ♀♀, 4 juvs; Fond Boucher; 14°39.3′ N, 61°09.6′ W; depth 37–40 m; 1 Oct. 2016; st. AD283; MNHN-IU-2016-1053 • 5 juvs; same collection data as for preceding; MNHN-IU-2016-1223 • 1 ♂, 1 ♀, 1 juv.; Baie de St-Pierre; 14°45.1′ N, 61°11′ W; depth 17 m; 4 Oct. 2016; st. AB388; MNHN-IU-2016-1057 • 2 ♀♀; Bellefontaine; 14°40.2′ N, 61°10.5′ W; depth 70 m; 2 Oct. 2016; st. AD289; MNHN-IU-2016-1112 • 1 ♂; SW Vétiver; 14°37.6′ N, 61°08.3′ W; depth 60 m; 30 Sep. 2016; st. AD280; MNHN-IU-2016-1134 • 1 ♂; Les Anses-d'Arlet; 14°28.5′ N, 61°05.1′ W; depth 29 m; 26 Sep. 2016; st. AD271; MNHN-IU-2016-1135 • 1 ♀ gr?; Le Carbet; 14°42.3′ N, 61°11.7′ W; depth 90 m; 3 Oct. 2016; st. AD293; MNHN-IU-2016-1146 • 1 juv.; Bellefontaine; 14°40.2′ N, 61°10′ W; depth 40 m; 2 Oct. 2016; st. AD286; MNHN-IU-2016-1192 • 1 ♀; Grande Anse d'Arlets; 14°30.1′ N, 61°06.3′ W; depth 71 m; 8 Oct. 2016; st. AD617; MNHN-IU-2016-1194 • 1 ♀; Le Prêcheur; 14°49.1′ N, 61°13.8′ W; depth 20–25 m; 8 Oct. 2016; st. AS576; MNHN-IU-2016-1198 • 1 ♀; Pointe du Diamant; 14°26.9′ N, 61°04′ W; depth 84 m; 8 Oct. 2016; st. AD614; MNHN-IU-2016-1212 • 1 juv.; Baie de Fort-de-France; 14°35.4′ N, 61°01.5′ W; depth 8 m; 6 Oct. 2016; st. AD602; MNHN-IU-2016-1214 • 1 ♂, 3 ♀♀; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 17–19 m; 30 Sep. 2016; st. AB369; MNHN-IU-2016-1255 • 1 ♂; SW of Vétiver; 14°37.6′ N, 61°08.6′ W; depth 66 m; 7 Oct. 2016; st. AD612; MNHN-IU-2016-1289.

Remarks

A noticeable feature of this species compared to other representatives of *Eurycyde* is the strong bending of the abdomen about mid-length in a right angle. This feature is illustrated by Müller & Krapp (2009) and Stock (1955), although the bending seems to be only very slight in Child (1992b).

This is the first record of this species in Martinique. The species was abundantly sampled but only on the Caribbean coast. Records of *E. clitellaria* outside the Caribbean Sea are actually rare, with only one record of four specimens in Jalisco, Pacific Mexico (Child 1979) and one record of one specimen from North Carolina (McCloskey 1967).

Distribution

Caribbean, North Carolina, Pacific Mexico (Jalisco).

Depth range

Intertidal to 100 m.

Eurycyde kaiouti sp. nov.

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Fig. 9A–J

nec *Eurycyde raphiaster* Loman, 1912 – Sabroux *et al.* 2019a: fig. 2d–f; 2019b (pro parte): 1525, 1531, tab. 1, figs 3, 5.

Material examined

Holotype

MARTINIQUE • ♂; Rocher du Diamant; 14°26.7′ N, 61°02.4′ W; depth 14 m; 14 Sep. 2016; st. AB175; MNHN-IU-2016-1129/MK411058.

Paratypes

MARTINIQUE • 1 ♀; E of Le Vauclin; 14°34.2′ N, 60°44.8′ W; depth 90 m; 14 Sep. 2016; st. AD231; MNHN-IU-2016-821 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-1200 • 1 ♂; Case-

Pilote; 14°38.3′ N, 61°08.4′ W; depth 12 m; 8 Sep. 2016; st. AB159; MNHN-IU-2016-820 • 2 ♂♂, 1 ♂ ov.; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 19–21 m; 9 Sep. 2016; st. AS057; MNHN-IU-2016-540 • 1 ♂, 1 ♂ ov.; Pointe du Diamant; 14°27.5′ N, 61°02.9′ W; depth 3 m; 15 Sep. 2016; st. AB126; MNHN-IU-2016-542 • 1 ♂ ov., 1 ♀; Bellefontaine; 14°39.7′ N, 61°09.6′ W; depth 12 m; 30 Sep. 2016; st. AB372; MNHN-IU-2016-1032 • 1 ♂; Baie de Fort-de-France; 14°34.3′ N, 61°02.7′ W; depth 7 m; 7 Oct. 2016; st. AB394; MNHN-IU-2016-1045/MK411033 • 1 ♂; Fond Boucher; 14°39.3′ N, 61°09.6′ W; depth 37–40 m; 1 Oct. 2016; st. AD283; MNHN-IU-2016-1052 • 1 ♂, 2 ♀♀; 2 juvs; Baie de St-Pierre; 14°45.1′ N, 61°11′ W; depth 17 m; 4 Oct. 2016; st. AB388; MNHN-IU-2016-1056 • 2 ♂♂, 2 ♀♀; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 4–10 m; 14 Sep. 2016; st. AB123; MNHN-IU-2016-1067 • 1 juv.; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2016-1077 • 8 ♂♂, 3 ♀♀, 2 juvs; same collection data as for preceding; MNHN-IU-2016-1121 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1145/MK411064 • 2 ♀♀; N of Presqu'Île de la Caravelle; 14°52.9′ N, 60°50.6′ W; depth 61 m; 19 Sep. 2016; st. AD249; MNHN-IU-2016-1082 • 1 ♂; Presqu'Île de la Caravelle; 14°47.5′ N, 60°57.4′ W; depth 14 m; 4 Oct. 2016; st. AB562; MNHN-IU-2016-1089/MK411046 • 4 ♂♂, 2 ♀♀; Le Lorrain; 14°50.7′ N, 61°03.8′ W; depth 11–14 m; 6 Oct. 2016; st. AS565; MNHN-IU-2016-1115 • 1 ♀; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1137/MK411061 • 1 ♂; Fond Boucher; 14°39.3′ N, 61°09.4′ W; depth 0–14 m; 27 Sep. 2016; st. AS363; MNHN-IU-2016-1162 • 1 ♂, 1 ♂ ov.; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17 m; 9 Oct. 2016; st. AB578; MNHN-IU-2016-1166 • 2 ♂♂; Trois Rivières; 14°27.7′ N, 60°57.8′ W; depth 4–5 m; 25 Sep. 2016; st. AB354; MNHN-IU-2016-1170 • 1 ♂; Baie de Fort-de-France; 14°33.2′ N, 61°01.6′ W; depth 6 m; 6 Oct. 2016; st. AB390; MNHN-IU-2016-1178/MK411072 • 1 juv.; Le Robert; 14°41.1′ N, 60°51.4′ W; depth 10 m; 19 Sep. 2016; st. AB195; MNHN-IU-2016-1181 • 1 ♂; Le Vauclin; 14°32′ N, 60°49′ W; depth 1 m; 16 Sep. 2016; st. AB130; MNHN-IU-2016-1187/MK411075 • 2 ♀♀; Grande Anse du Diamant; 14°27.9′ N, 61°01.4′ W; depth 17 m; 26 Sep. 2016; st. AB358; MNHN-IU-2016-1209 • 1 ♀; Presqu'Île de la Caravelle; 14°47.3′ N, 60°57.4′ W; depth 19 m; 21 Sep. 2016; st. AB301; MNHN-IU-2016-1229 • 1 ♂, 1 juv.; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1237 • 2 ♀♀; Grande Anse du Diamant; 14°27.9′ N, 61°01.2′ W; depth 15 m; 15 Sep. 2016; st. AB179; MNHN-IU-2016-1241 • 1 ♀; Anse des Galets; 14°51.4′ N, 61°12.8′ W; depth 0–10 m; 7 Oct. 2016; st. AB567; MNHN-IU-2016-1244/MK411085 • 1 ♀; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1261/MK411089 • 2 ♂♂, 3 ♀♀; N of Presqu'Île de la Caravelle; 14°52.5′ N, 60°51.1′ W; depth 58 m; 19 Sep. 2016; st. AD248; MNHN-IU-2016-1296 • 1 ♀; Rocher du Diamant; 14°26.6′ N, 61°02.4′ W; depth 22 m; 9 Sep. 2016; st. AB163; MNHN-IU-2019-3391 • 2 ♂♂; Rocher du Diamant; 14°26.5′ N, 61°02.4′ W; depth 24 m; 14 Sep. 2016; st. AB173; MNHN-IU-2019-3392.

Etymology

Apposition of the Kalinago (Caribbean) word '*kaiouti*', 'which has spines', in reference to the long tubercles of coxae 1.

Description (holotype, ♂, MNHN-IU-2016-1129)

Body. Trunk granulous, completely segmented with posterior margin flaring. No dorsomedian ornamentation. Ocular tubercle tall, carrying four pigmented eyes and seven thick setae around ocular tubercle tip. Oviger base almost touching lateral processes. Lateral processes about 1.5 times as long as wide, 4th pair shortest, well separated by less than half their own diameter, distally bearing a dorsomedially pointing tubercle, without seta or spine at tip.

Proboscis. Bipartite, anterior part as petiole, posterior part pyriform, about as long as body, anterior and posterior parts articulated together.

Abdomen. Long, extending beyond coxa 1 of 4th leg. Distal part inflated, carrying long thick setae. Base articled with trunk, movable, tip conical.

Chelifore. 3-articled, reaching beyond proximal petiole of proboscis. Scape 2-articled, 1st article longest, with distal dorsomedian thick seta. 2nd article carrying many thick setae dorsally. Chela residual, with non-functional finger.

Palp. 10-articled, with setae mostly on ventral side of last five articles. 1st article about as long as wide, carrying one dorsal pointy tubercle. 2nd article shortest, shorter than wide. 3rd article longest, with distal thick setae. 4th article slightly longer than wide. 5th article 0.7 times as long as 3nd, carrying several thick setae. 6th article about twice as long as wide, 6th and 10th articles subequal in length, shorter than 7th. 7th, 8th and 9tharticles subequal in length.

Oviger. 10-articled, with scarce setae. 1st article shortest, as short as wide. 2nd and 3rd articles subequal. 4th and 5th articles subequal in length, 5th article curved. 6th articles 3 times as long as broad, longer than 7th article. 7th article longest within strigilis. 8th, 9th and 10th articles subequal. Compound spines of strigilis in 2 rows. Terminal claw shorter than 10th article.

Legs. Slender with many thick setae. Coxa 1 shortest, about as long as wide, with 2 long dorsolateral pointy tubercles on distal margin, anterior one about as long as 1st coxa, posterior one at least twice as long as anterior one and carrying long thick seta at base for 1st to 3rd legs. Coxa 2 slightly longer than broad. Coxa 3 as long as wide. Femur with cement gland tube at about mid-length on anterior side and many thick setae distally. Tibia 1 13 times as long as wide, about 1.3 times as long as femur, thinner, with many dorsal thick setae at about mid-length. Tibia 2 subequal to tibia 1. Tarsus medium-sized, trapezoid. Propodus gently curved, about half as long as tibia 2; sole carrying many small spines. Main claw curved, about ⅓ as long as propodus. No auxiliary claw.

Measurements (mm). Trunk 1.05; abdomen 0.55; proboscis 1.42; chelifore 1.05; coxa 1 0.23; coxa 2 0.27; coxa 3 0.16; femur 0.72; tibia 1 0.92; tibia 2 0.90; tarsus 0.10; propodus 0.48; main claw 0.16.

Sexual dimorphism

Females with shorter oviger articles; anterior dorsolateral pointy tubercle of coxa 1 often shorter than in males.

Individual variability

Size of pointy dorsolateral tubercles of coxa 1 variable among specimens, posterior one always longer (or rarely as long) than length of coxa 1, anterior one always shorter, posterior tubercle always conspicuously longer than anterior tubercle. In holotype specimen, posterior dorsolateral pointy tubercle of coxa 1 curved anteriorly, but may curve posteriorly in other specimens.

Remarks

Eurycyde kaiouti sp. nov. can be discriminated from most other species of *Eurycyde* by the following combination of characters: (i) the ocular tubercle presents long thick setae (the number of these setae may vary with loss and we do not recommend using it as a criterion); (ii) the coxa 1 carries dorsaly a long thick seta on the first, second and third legs, as well as two laterodistal tubercles on all four legs; (iii) lateral processes bear one pointy tubercle dorsally. These characters are only shared with *E. raphiaster* Loman, 1912, to which it is very close morphologically. Comparing with the illustration in Bouvier (1917) of the type material, the two tubercles of coxae 1 in *E. raphiaster* are subequal in length and less long than coxa 1 (shorter in females). Instead, *E. kaiouti* presents a posterior coxa 1 tubercle that is much longer than the anterior one: the anterior tubercle is shorter than coxa 1, the

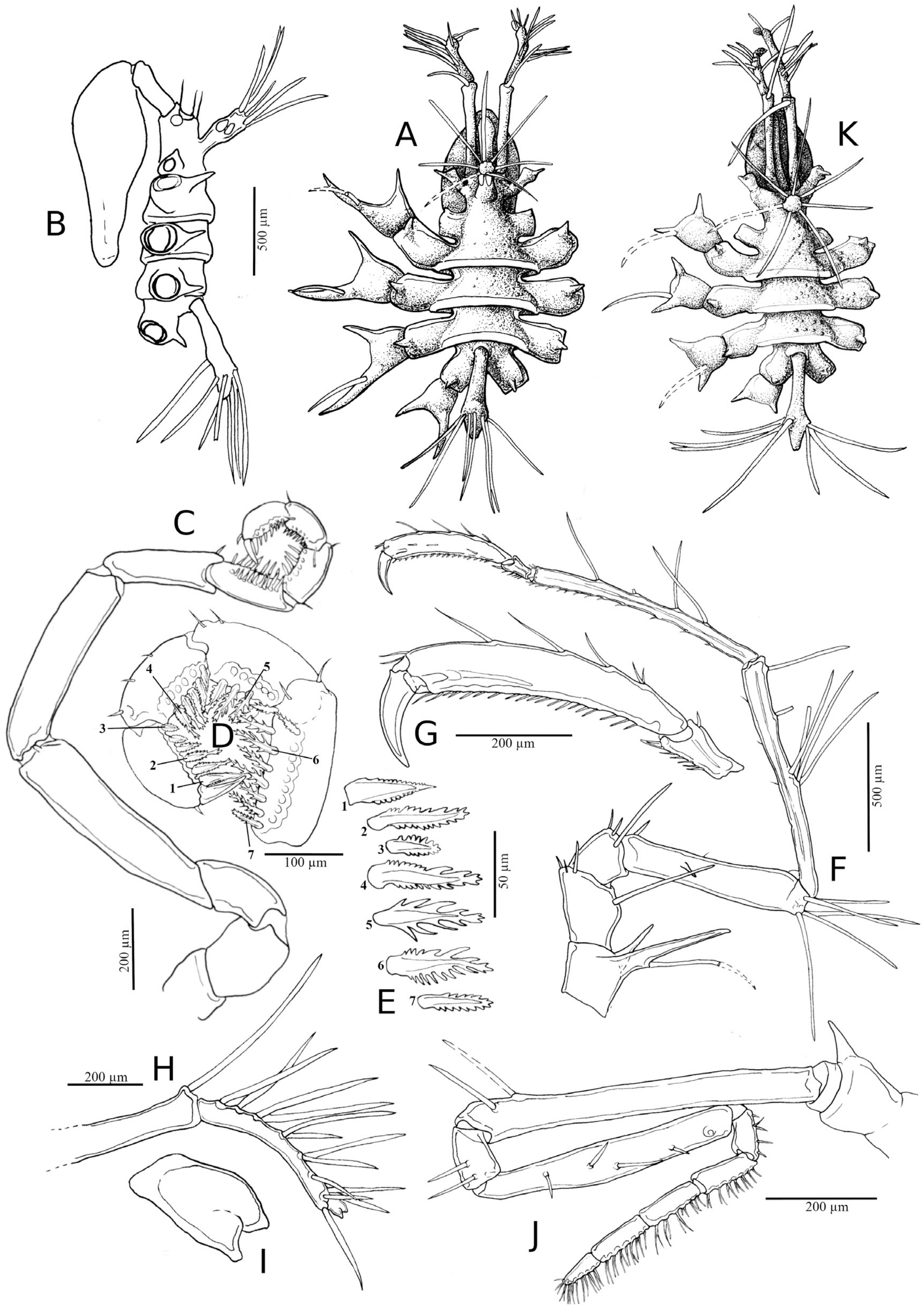

Fig. 9. Comparison between *Eurycyde kaiouti* sp. nov. (A–J) and *E. raphiaster* Loman, 1912 (K). **A–J**. Holotype, ♂, MNHN-IU-2016-1129. **K**. ♂, MNHN-IU-2016-818. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Oviger. **D**. Oviger strigilis. **E**. Pointed teeth of oviger strigilis. **F**. Third leg. **G**. Tarsus and propodus of third leg. **H**. Chelifore. **I**. Chela bud. **J**. Palp. **K**. Body, dorsal view (same scale as A).

posterior one longer, or rarely as long. This difference between *E. raphiaster* and *E. kaiouti* is recovered also in juveniles. Furthermore, we observe that, in Martinique material, the tibia 1 in *E. kaiouti* is shorter than in *E. raphiaster*, e.g., 13 times as long as wide for the *E. kaiouti* holotype against 15 times for *E. raphiaster* specimen MNHN-IU-2016-818. The two species can be distinguished based on CO1 barcodes (*E. kaiouti* intraspecific p-distance = 0–0.013; interspecific p-distance with *E. raphiaster* = 0.173–0.187; see Appendix).

One specimen recorded in Sabroux *et al.* (2019b), MNHN-IU-2016-819, is morphologically very similar to the holotype of *Eurycyde kaiouti* sp. nov., but falls in a barcode cluster on its own that is very divergent from the *E. kaiouti* cluster (p-distance = 0.182–0.188, see Appendix). Because it is the only specimen showing such genetic divergence, and since morphological differences are small, we cannot discriminate it as another species relying on morphological characters. For this reason, we choose to keep this specimen as *Eurycyde* sp. Further material from NWTA *Eurycyde* should be barcoded and studied to resolve the status of this specimen.

Eurycyde kaiouti was widely collected on both Atlantic and Caribbean coasts.

Distribution

Only known from Martinique.

Depth range

1–90 m.

Eurycyde raphiaster Loman, 1912

Fig. 9K

Eurycyde raphiaster Loman, 1912: 13.

Eurycyde raphiaster – Bouvier 1917: 33–35, pl. 4 figs 2–7. — Hedgpeth 1948 (?): 260–261, fig. 45; 1954: 427. — Fage 1952: 530. — Stock 1954a: 116; 1975a: 979; 1979: 3; 1990: 209. — Fage & Stock 1966: 316. — Birkeland *et al.* 1976: 133. — Child 1979: 21; 1982a: 360; 1988a: 8 (key); 1992b: 8 (key), 27–28, tab. 3, fig. 11; 2009: 818 (list). — Müller 1992a: 45. — Lalana & Ortiz 1994: tab. 1. — Nakamura & Chullasorn 2000: 2 (key). — Arango 2002: tab. 1, figs 2–4 (phylogeny). — Arango & Wheeler 2007: 261, appendix 1, figs 1–4 (phylogeny), 6d, 7a, 8 (phylogeny). — Nakamura *et al.* 2007: tab. 1, fig. 1 (phylogeny). — Müller & Krapp 2009: 10–13, 61 (key), 64–67, 137 (list), figs 32–33. — Arabi *et al.* 2010: tab. 2, figs 1–3 (phylogeny). — Sabroux *et al.* 2017 : appendices 1–2, figs 3–5 (phylogeny); 2019 (pro parte): 1525, 1531, tab. 1, figs 3, 5.

Type material

Holotype: MOM INV-0001360 (not examined). Type locality: 4 miles southwest of Boa Vista, Cap Verde.

Material examined

MARTINIQUE • 1 ♂; Passe du Marin; 14°26.8′ N, 60°54.3′ W; depth 15 m; 9 Sep. 2016; st. AB165; MNHN-IU-2016-818/MK411139 • 1 juv.; Grande Anse d'Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-822/MK411141 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-541/MK411114 • 6 ♂♂; same collection data as for preceding; MNHN-IU-2016-544 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-548 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1282 • 1 ♂; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-543 • 1 ♂ ov., 1 ♀; Rocher du Diamant; 14°26.6′ N, 61°02.4′ W; depth

22 m; 9 Sep. 2016; st. AB163; MNHN-IU-2016-546 • 2 juvs; N Le Lorrain; 14°55.1′ N, 61°02.4′ W; depth 63 m; 21 Sep. 2016; st. AD257; MNHN-IU-2016-1133 • 2 ♀♀; Rocher du Diamant; 14°26.5′ N, 61°02.4′ W; depth 24 m; 14 Sep. 2016; st. AB173; MNHN-IU-2016-1156 • 1 juv.; Vétiver; 14°37.8′ N, 61°07.7′ W; depth 25 m; 8 Sep. 2016; st. AB161; MNHN-IU-2016-1189/MK411076 • 2 ♂♂, 1 juv.; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 17–19 m; 30 Sep. 2016; st. AB369; MNHN-IU-2016-1256 • 2 ♀♀; Le Prêcheur; 14°47.2′ N, 61°13.1′ W; depth 10–17 m; 3 Oct. 2016; st. AR383; MNHN-IU-2016-1305.

Remarks

Unlike Müller & Krapp (2009), we have never observed an absence of the lateral process tubercle in females.

Eurycyde raphiaster and *E. kaiouti* sp. nov. are very similar species that may have been mistaken in the past. After revising literature illustrations, we agree with the determinations of Müller & Krapp (2009) (at least the illustrated male), while Hedgpeth (1948) and Child (1992b) may have illustrated *E. kaiouti* rather than *E. raphiaster*.

Although the species is abundant in the Caribbean, this is its first record in Martinique. Our data suggest that it is less common in Martinique than *E. clitellaria* or *E. kaiouti*. The species was most often collected on the Caribbean coast, though a few specimens were sampled off Le Lorain and Presqu'Île de la Caravelle on the Atlantic coast.

Distribution

Bahamas, Gulf of Mexico, Caribbean, Cap Verde, Guyana and Senegal.

Depth range

0–91 m.

Family Callipallenidae Hilton, 1942

Genus ***Callipallene*** Flynn, 1929

Type species

Pallene brevirostris Johnston, 1837, by original designation.

Callipallene brevirostris (Johnston, 1837)

Pallene brevirostris Johnston, 1837: 380, pl. 12 figs 7–8.
Pallene empusa Wilson, 1878: 9, pl. 3 fig. 2a–g.

Pallene brevirostris – Milne Edwards 1840: 534–535. — Gosse 1855: 120, fig. 192. — Grube 1869: 118–119, 125, pl. 1 fig. 5a–c. — Hoek 1877: 237–240, pl. 15 figs 4–7, pl. 16 figs 14, 21–22; 1881a: 511–512, pl. 26 fig. 17, pl. 29 fig. 36. — Hansen 1884a: 649; 1884b: pl. 7 fig. 20. — Halhed 1886: 230. — Sars 1888: 340; 1891: 32. — Topsent 1889: 62. — Morgan 1891: 8–22. — Möbius 1893: 86; 1901: 50. — Cole 1901: 195–207. — D'Arcy Thompson 1901: 54; 1909: 541–542, figs 275a, 285 (pro parte). — Hallez 1905: 50. — Norman 1908: 204–205 (pro parte). — Schimkewitsch 1909: 430; 1930: 245–253, figs 58–59 (pro parte). — Tesch 1910: 51, 55. — Loman 1912: 8 (pro parte); 1928: 79–80, fig. 7. — Sumner *et al.* 1913: 677. — Wirén 1918: 42. — Bouvier 1923a: 34–36, fig. 28; 1923b: 119 (pro parte). — Fish 1925: 161. — Meisenheimer 1925: 2, 5; 1927: 14. — Giltay 1928: 211–213, fig. 8. — Schlottke 1932: 1–10. — Stephensen 1933: 33–35, fig. 10; 1936a: 24;

1936b: 34–36, fig. 7. — Helfer 1936: 2 (map). — Faraggiana 1940: 2–4 (pro parte). — Lebour 1945: 144.

Pallene sp. – Verrill 1873: 415.

Pallene empusa – Wilson 1880: 476–477, pl. 2 fig. 5–7. — Rathbun 1881: 118.

Callipallene brevirostris – Corrêa 1948: 6. — Hedgpeth 1948: 202–203, fig. 4. — Stock 1949: 3, fig. 4; 1954a: 115; 1954b: 43–44, fig. 18; 1979: 14; 1986: 403, 424, tab. 1; 1987: 512–513. — Bourdillon 1955: 589. — Băcescu 1959: 127. — King 1972: 621–622; 1974: 59 (key), 60–61, fig. 27. — Arnaud 1976: 70. — Wolff 1976: 476–477, fig. 4b (distribution). — Chimenz Gusso *et al.* 1978: 94–95, fig. 2. — Child 1982b: 26; 1992b: 59 (key), 60–61, fig. 27; 1996a: 529; 2009: 819 (list). — Munilla 1993: tab. 4. — Piscitelli & Barone 2000: tab. 1. — Arango 2002: 120, tab. 1, figs 2–4 (phylogeny). — Chimenz Gusso & Lattanzi 2003: 257, tab. 1. — Arango & Wheeler 2007: appendix 1, tab. 3, figs 1–4 (phylogeny), 8 (phylogeny). — Cano-Sánchez & López-González 2007: tabs 1–2. — Dunlop *et al.* 2007: 70. — Nakamura *et al.* 2007: tab. 1, fig. 1 (phylogeny). — Montoya Bravo *et al.* 2009: 32, fig. 18. — Müller & Krapp 2009: 11, 67 (key), 67–69, 72, 137 (list), tabs 1–2, 4, figs 34–35. — Bamber 2010: 16 (list), 149 (key), 154, fig. 193. — Bartolino & Chimenz 2010: 396 (list). — Brenneis *et al.* 2011a: 321; 2017: 16, tab. 1. — Gul & Ghani 2012: 203, 206, fig. 5. — Esquete *et al.* 2013: 30, tab. 1. — Bakir *et al.* 2014: tab. 1. — Brenneis & Scholtz 2014: 13, 18. — Munilla & Soler-Membrives 2014: 159 (key), 160–162, figs 85–86. — Koçak 2015: 194, tab. 1; 2019: 49 (list). — Soler-Membrives & Munilla 2015: tab. 2. — Sabroux *et al.* 2017: appendices 1–2, figs 3–5 (phylogeny); 2019b: 1531, tab. 1, fig. 3. — Lehmann *et al.* 2021: 36, fig. 1. — León-Espinosa *et al.* 2021: tab. 1. — Ramírez-Tello *et al.* 2022: tab. 1.

Callipallene brevirostris brevirostris – Stock 1970a: 9.

Callipallene brevirostrum – Stock 1975a: 1010.

Callipallene brevirostris ? – Child 2004: 151.

nec ?*Phoxichilus spinosus* Montagu, 1808 – Quatrefages 1845: 41, pl. 1 fig. 2a, pl. 2 fig. 1.

Type material

Pallene brevirostris Johnston, 1837. Type(s): unknown. Type locality: Berwickshire, southeast Scotland.

Pallene empusa Wilson, 1878. Syntypes: USNM 37777 (not examined). Type locality: Vineyard Sound or Long Island Sound, or Noank (Connecticut, USA).

Material examined

MARTINIQUE • 1 ♂; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-842/MK411156 • 1 ♀; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-843/MK411157 • 1 ♂ ov.; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 2 m; 24 Sep. 2016; st. AB452; MNHN-IU-2016-869/MK411180 • 1 ♂ carrying larvae; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 4–10 m; 14 Sep. 2016; st. AB123; MNHN-IU-2016-1294 • 1 ind. (sex indet.); Pointe du Diamant; 14°27.5′ N, 61°02.9′ W; depth 3 m; 15 Sep. 2016; st. AB126; MNHN-IU-2016-1312.

Remarks

This very common species is recorded for the first time in Martinique, though in low numbers (five specimens). The species was found on both the Atlantic and Caribbean coasts.

Distribution

Widespread in both sides of the Atlantic: North Sea (Norway, Denmark, Scotland, England and the Netherlands), West Scotland, Irish Sea, West Ireland, Scilly Islands, English Channel, Gulf of Biscay, Portugal, Mediterranean, Black Sea, Bay of Fundy, Massachusetts, Virginia, West Florida, Caribbean, French Guiana). Also recorded from Pakistan, Thailand and Indonesia.

Depth range

0–316 m.

Callipallene cinto Müller & Krapp, 2009

Callipallene cinto Müller & Krapp, 2009: 12, 67 (key), 69–72, 137 (list), tab. 1, figs 36–37.

Callipallene cinto – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: SMF1497 (not examined). Type locality: Bahía Cinto in Tayrona National Park, Colombia.

Material examined

MARTINIQUE • 1 ♀ gr.; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 16 m; 18 Sep. 2016; st. AB189; MNHN-IU-2016-880/MK411190.

Remarks

This is the first record of this species since its original description from Caribbean Colombia by Müller & Krapp (2009). A single specimen was collected off the Presqu'Île de la Caravelle, on the Atlantic coast.

Distribution

Caribbean Colombia and Martinique.

Depth range

1–3.5 m, extended to 16 m.

Callipallene longicoxa Stock, 1955

Callipallene brevirostris longicoxa Stock, 1955: 223–226, figs 4–5.
Callipallene belizae Child, 1982a: 363–365, fig. 164.

Callipallene longicoxa – Stock 1986: 424, tab. 1. — Müller & Krapp 2009: 10–11, 13, 67 (key), 69, 72–74, 137 (list), tab. 1, fig. 38. — Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Callipallene brevirostris longicoxa Stock, 1955. Holotype: NHMD 110621 (not examined). Type locality: off Calf and Cow, St James Bay, St Thomas (Virgin Islands).

Callipallene belizae Child, 1982. Holotype: USNM 171035 (not examined). Type locality: Carrie Bow Cay, Belize.

Material examined

MARTINIQUE • 1 ♂ carrying larvae; Grande Anse d'Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-841/MK411155 • 1 ♂, 1 ♂ ov., 2 ♀♀, 2 juvs; same collection data as for preceding; MNHN-IU-2016-1277.

Remarks

This is the first record of this species in Martinique. All specimens were found at the same station near Grande Anse d'Arlets. Comparatively to other specimens, collected between 10 and 30 meters, the single specimen collected by Stock (1986) was found strikingly deep into the Strait of Florida (512–549 m).

Distribution

Caribbean and Strait of Florida.

Depth range

10–512 m.

Genus ***Pallenoides*** Stock, 1951

Type species

Pallenoides magnicollis Stock, 1951, by original designation.

It is worth noting for this genus that specific epithets should be accorded to masculine, following the ICZN code recommandations for genera ending in -*oides*.

Pallenoides cf. ***amazonicus*** Stock, 1975

Fig. 10

Pallenoides amazonica Stock, 1975a: 1012–1015, figs 23–24.

Pallenoides sp. nr *amazonica* – Arnaud & Child 1988: 142–143.
Pallenoides amazonica – Stock 1992a: 129, 139 (list). — Lucena & Christoffersen 2018a: 103, 108. — Müller & Krapp 2009: 77.
Pallenoides sp. 1 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Pallenoides amazonicus Stock, 1975. Holotype: NL ZMA.PYC.P.1356 (not examined). Type locality: off Pará State, Brazil.

Material examined

MARTINIQUE • 1 ♀; SW of Vétiver; 14°37.6′ N, 61°08.6′ W; depth 66 m; 7 Oct. 2016; st. AD612; MNHN-IU-2016-866/MK411177.

Remarks

This unique specimen is very close to Stock (1975a)'s original description; however, we note a few discripencies that make this identification unsure, i.e., the shorter auxillary claws of the Martinique specimen (about half as long as in the holotype) and its conspicuous pointy tubercle on the dorsal surface of the chelifores. In the absence of a CO1 barcode sequence for *P. amazonicus*, we refrain from describing this species as new.

A single specimen was collected on the Caribbean coast, off Vévier.

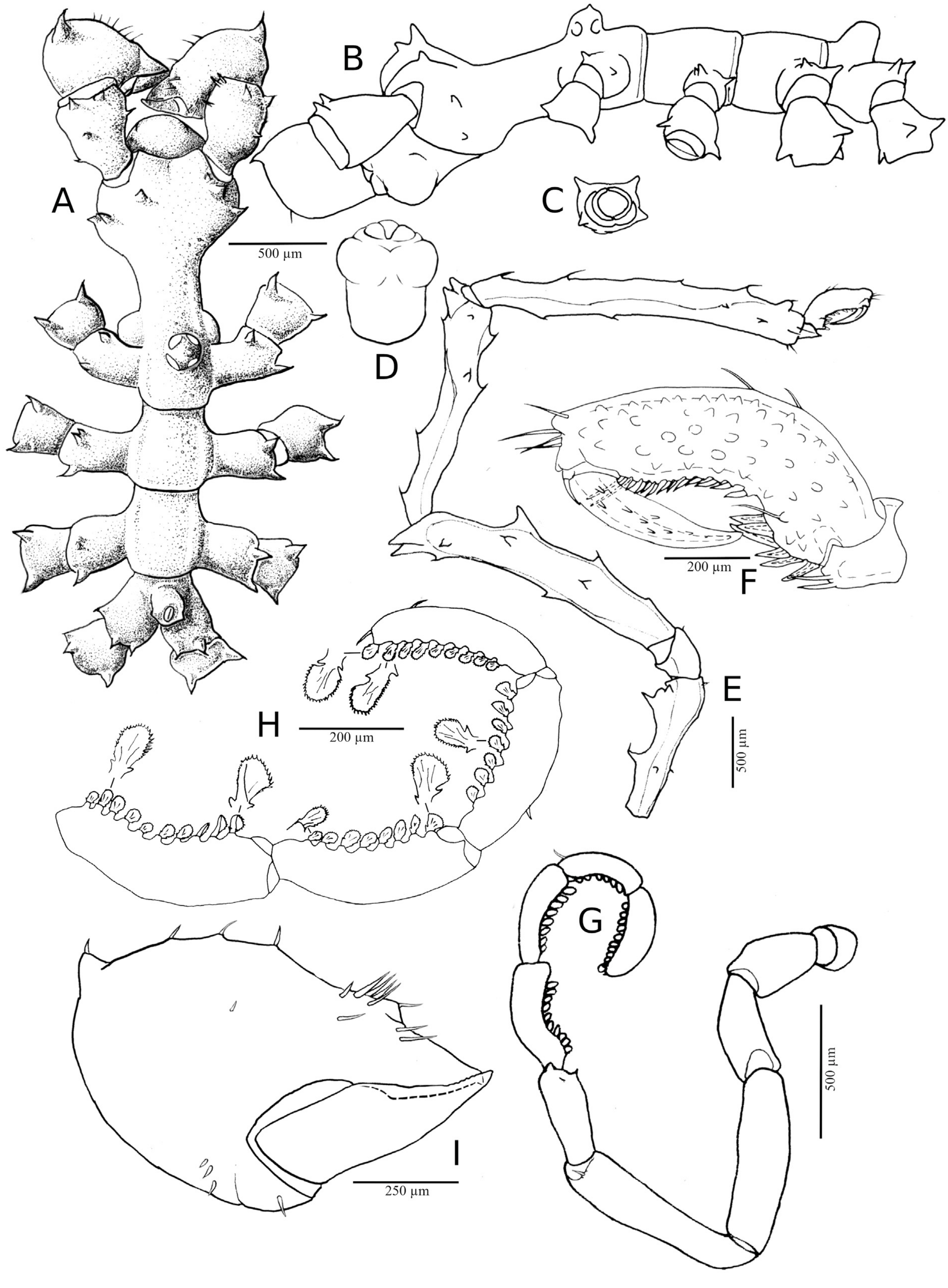

Fig. 10. *Pallenoides* cf. *amazonicus* Stock, 1974, ♀, MNHN-IU-2016-866. **A**. Body, dorsal view. **B**. Oviger. **C**. First coxa of third leg, frontal view. **D**. Proboscis, ventral view. **E**. Second leg. **F**. Tarsus and propodus of second leg. **G**. Oviger. **H**. Oviger strigilis, with close-up of some compound teeth. **I**. Chela.

Distribution

Pallenoides amazonicus is known from Brazil, with one juvenile that has been considered as a possible *P. amazonicus* collected in South Africa (Arnaud & Child 1988), though this record seems very doubtful. If confirmed, the present record would be the first one for the Caribbean.

Depth range

Pallenoides amazonicus is known to dwell between 17 and 136 m. The present specimen was sampled at 66 m.

Pallenoides spinulosus Stock, 1955

Pallenoides (?) *spinulosa* Stock, 1955: 227–230, figs 6–7.

Pallenoides (?) *spinulosa* – Capriles 1970: 105.
Pallenoides spinulosa – Stock 1975a: 1012; 1986: tab. 1. — Müller & Krapp 2009: 13, 67 (key), 77, 129, 137 (list), tab. 1, fig. 40.
Pallenoides spinulosum – Sabroux *et al.* 2019b (pro parte): tab. 1, fig. 3. — León-Espinosa *et al.* 2021: tab. 1. — Ramírez-Tello *et al.* 2022: tab. 1.

Type material

Holotype: NHMD 110703 (not examined). Type locality: between St Jan and St Thomas, Virgin Islands.

Material examined

MARTINIQUE • 1 juv.; Canal de Ste Lucie; 14°22.6′ N, 60°52.7′ W; depth 21–30 m; 11 Sep. 2016; st. AR064; MNHN-IU-2016-846/MK411159 • 1 juv.; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 19–21 m; 9 Sep. 2016; st. AS057; MNHN-IU-2016-847/MK411160 • 1 ♂ carrying larvae; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 4–10 m; 14 Sep. 2016; st. AB123; MNHN-IU-2016-848/MK411161 • 1 ♀ gr.; Pointe du Diamant; 14°27.5′ N, 61°02.9′ W; depth 3 m; 15 Sep. 2016; st. AB126; MNHN-IU-2016-551 • 2 ♂♂, 1 ♂ carrying larvae; Rocher du Diamant; 14°26.7′ N, 61°02.2′ W; depth 22 m; 22 Sep. 2016; st. AS096; MNHN-IU-2016-1044 • 1 preadult ♀; Baie de St-Pierre; 14°45.1′ N, 61°11′ W; depth 17 m; 4 Oct. 2016; st. AB388; MNHN-IU-2016-1061 • 2 juvs; Le Robert; 14°41.1′ N, 60°51.4′ W; depth 10 m; 19 Sep. 2016; st. AB195; MNHN-IU-2016-1405.

Remarks

This is the first record of this species in Martinique. Specimens were mostly collected on the Caribbean coast, except for two specimens found off Le Robert (Atlantic Coast).

Distribution

Caribbean, Yucatán Channel.

Depth range

1.5–37 m.

Genus ***Parapallene*** Carpenter, 1892

Type species

Pallene australiensis Hoek, 1881, by original designation

Parapallene bermudensis Lebour, 1949

Parapallene bermudensis Lebour, 1949: 930–932, figs 2–3.

Parapallene bermudensis – Child 1982a: 366–367, fig. 165; 1996a: 529–530, fig. 1g–h. — Stock 1991a: 193 (key). — Sabroux *et al.* 2019b: tab. 1, fig. 3.
Parapallene bermudensis? – Child 1992b: 59 (key), 61–62, fig. 28.

Type material

Holotype: NHMUK ZOO-1957.11.6.2 (not examined). Type locality: off Castle Roads, Bermuda.

Material examined

MARTINIQUE • 1 juv.; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 24 m; 30 Sep. 2016; st. AR413; MNHN-IU-2016-1221/MK411083.

Remarks

Despite the specimen being a juvenile, it can easily be identified as *Parapallene bermudensis* thanks to the characteristic pectinated spines on tibia 2 and the ventrodistal extremity of the tarsus, and on the propodal sole (Child 1982a). This is the first record of this species in Martinique, at Pointe Baleine (Caribbean coast).

Distribution

Caribbean (Belize, Martinique), Bermuda, Gulf of Mexico (off West Florida).

Depth range

16.8–54 m.

Family Nymphonidae Wilson, 1878

Genus ***Nymphon*** Fabricius, 1794

Type species

Nymphon grossipes O. Frabricius, 1780, by subsequent designation (Child 1998a).

Nymphon aemulum Stock, 1975

Nymphon aemulum Stock, 1975a: 998–1001, figs 16–17.

Nymphon aemulum – Stock 1986: tab. 1. — Child 1988b: 68; 1992b: 70, fig. 32; 2009: 819. — Müller & Krapp 2009: 12–13, 80 (key), 80–83, 137 (list), tab. 1, figs 42–43. — Takahashi *et al.* 2012: 1356 (key). — Sabroux *et al.* 2019b: 1532, tab. 1, figs 3, 5.
Nymphon aemulon – Varela 2012: 3–4, fig. 2b.

nec *Nymphon floridanum* – Hedgpeth 1948: 196 (pro parte). — Stock 1955: 215 (pro parte).

Type material

Holotype: NL ZMA.PYC.P.1267 (not examined). Type locality: Dickinson Bay, Antigua.

Material examined

MARTINIQUE • 2 ♀♀; Le François; 14°37′ N, 60°49.5′ W; depth 1 m; 17 Sep. 2016; st. AB134; MNHN-IU-2016-1234 • 1 ♀ gr., 1 ind. (sex indet.); same collection data as for preceding; MNHN-IU-2016-1234 • 1 ♀ gr.; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-845 • 1 ♀; Îlet Chevalier; 14°25.9′ N, 60°49.5′ W; depth 0–2 m; 19 Sep. 2016; st. AM023; MNHN-IU-2016-1034 • 1 ♀; Pointe Michel; 14°26.4′ N, 60°49.3′ W; depth 2 m; 12 Sep. 2016; st. AB120; MNHN-IU-2016-1038 • 1 ♂; E of Le Vauclin; 14°34.7′ N, 60°45.9′ W; depth 20 m; 16 Sep. 2016; st. AS078; MNHN-IU-2016-1186/MK411074 • 1 ♀; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 1–3 m; 24 Sep. 2016; st. AR453; MNHN-IU-2016-1213/MK411082 • 1 ♀; Le Robert; 14°41.1′ N, 60°51.4′ W; depth 10 m; 19 Sep. 2016; st. AB195; MNHN-IU-2016-1318 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1320 • 1 juv.; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 24 m; 30 Sep. 2016; st. AR413; MNHN-IU-2016-1221.

Remarks

Like all *Nymphon* but one found in Madibenthos material (i.e., *Nymphon timons* sp. nov.), this species is part of the *aequidigitatum* group as defined by Child (1988b) and for which Takahashi *et al.* (2012) provided a complete identification key. Species of this group share the following five characters: (i) a long fifth palp article relative to the other four; (ii) an oviger claw without denticulation, and most often (iii) bifurcate chela teeth, (iv) propodus main claw as long as or shorter than auxiliaries, and (v) one or all propodal claws bearing endal rugosities or setules.

This is the first record of this species for Martinique. It was only collected on the Atlantic coast, where it was found to be rather common.

Distribution

Tropical West Atlantic (Gulf of Mexico, Caribbean, Surinam).

Depth range

0.5–37 m.

Nymphon dorlis sp. nov.

urn:lsid:zoobank.org:act:8B1908A6-04E4-4B2E-B142-8E6E9F0990AD

Fig. 11

Nymphon sp. 1 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • ♂; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 16 m; 18 Sep. 2016; st. AB189; MNHN-IU-2016-879/MK411189.

Paratypes

MARTINIQUE • 1 ♂; same collection data as for holotype; MNHN-IU-2016-870/MK411181 • 1 ♂; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1298 • 1 ♂; Le François; 14°38.5′ N, 60°46.3′ W; depth 63 m; 15 Sep. 2016; st. AD234; MNHN-IU-2016-1313 • 1 juv.; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 24 m; 30 Sep. 2016; st. AR413; MNHN-IU-2016-1221.

Etymology

Noun in apposition. Named after the *Dorlis*, also called 'night husband', a malevolent, invisible character of Martinique folklore. It fits somehow with the aspect of this species, with horn-like lateral sense organs on the ocular tubercle and large setose chelae; and only males were found.

Description (holotype, ♂, MNHN-IU-2016-879)

Body. Species rather small and stout, trunk completely segmented, cuticle smooth. No dorsomedian tubercle. Ocular tubercle rounded, as tall as wide, positioned anteriorly to 1st lateral processes, with 2 conspicuous pointy lateral sense organs beside tip and four pigmented eyes. Preocular neck short, shorter than wide. Oviger base jointing 1st lateral process. Lateral processes without ornamentation, well separated by less than their own diameter.

Proboscis. Rounded and large, reaching distal margin of chelifore scape in lateral view.

Abdomen. Medium-sized, not reaching beyond lateral processes, carrying several setae at about mid-length, directed diagonaly. No basal segmentation.

Chelifore. 2-articled, reaching far beyond proboscis. Scape 1-articled, 4.5 times as long as wide, carrying setae. Chela very large, palm longer than fingers ornamented with setae. Fingers sub-equal in length, bearing simple and bifurcated teeth, 10 bifurcated and 3 simple teeth on both fingers.

Palp. 5-articled. 1st article shortest, shorter than wide. 2nd article longest, about 7 times as long as wide, with distal setae. 3rd article about 0.8 times as long as 2nd, carrying ventrodistal setae. 4th article about 0.6 times as long as 5th, about 3 times as long as wide, with many long ventral setae along its length. 5th article 0.8 times as long as 3rd, carrying many ventral setae.

Oviger. 10-articled. 1st article shorter than wide. 2nd article about 1.5 times as long as wide. 3rd article about twice as long as wide. 4th article about 4 times as long as wide, with a few distal setae. 5th article longest, about twice as long as 4th, straight, strongly swollen distally, with light constriction at base. 6th article about ⅔ as long as 4th, with many setae along its length. 7th and 10th articles subequal, about ¾ of 6th article length. Strigilis formula 12:10:9:10. Strigilis spines compound, carrying many lateral teeth, proximalmost shortest and spatulated to oblong, median spines lancelolate, distalmost spines spatulated to oblong, longer than proximalmost. Intermediary position spines roughly intermediary in shape. Distalmost spines of 9th and 10th articles longest among strigilis articles. Terminal claw about ⅔ length of 10th article.

Legs. Slender, setose. Coxa 1 no longer than broad. Coxa 2 about 3 times as long as maximal width, longer than coxae 1 and 3 together. Coxa 3 about as long as wide. Femur about 8 times as long as wide and more than twice as long as coxa 2, ventrally carrying one row of hardly conspicuous cement glands and cement gland pores, 44 glands counted on 3rd leg. No cement gland tube. Tibia 1 gently curved, slender, about as long as femur. Tibia 2 even slenderer, longest, about 1.5 times length of femur or tibia 1, with many tall setae along and two ventral spines on distal margin. Tarsus medium-sized, trapezoid, one spine distally on ventral surface. Propodus straight, slender, about 3 times as long as tarsus, and ¼ of tibia 2 length. Main claw short, about ¼ of propodal length, well curved. Auxiliary claws present, well curved, as long as main claw. Both main claw and auxiliary claws with small teeth on inner surface.

Measurements (mm). Trunk 1.13; abdomen 0.22; proboscis 0.61; chelifore scape 0.61; chela palm 0.56; chela fingers 0.29; coxa 1 0.16; coxa 2 0.54; coxa 3 0.20; femur 1.24; tibia 1 1.34; tibia 2 1.82; tarsus 0.15; propodus 0.36; main claw 0.12; auxillary claw 0.12.

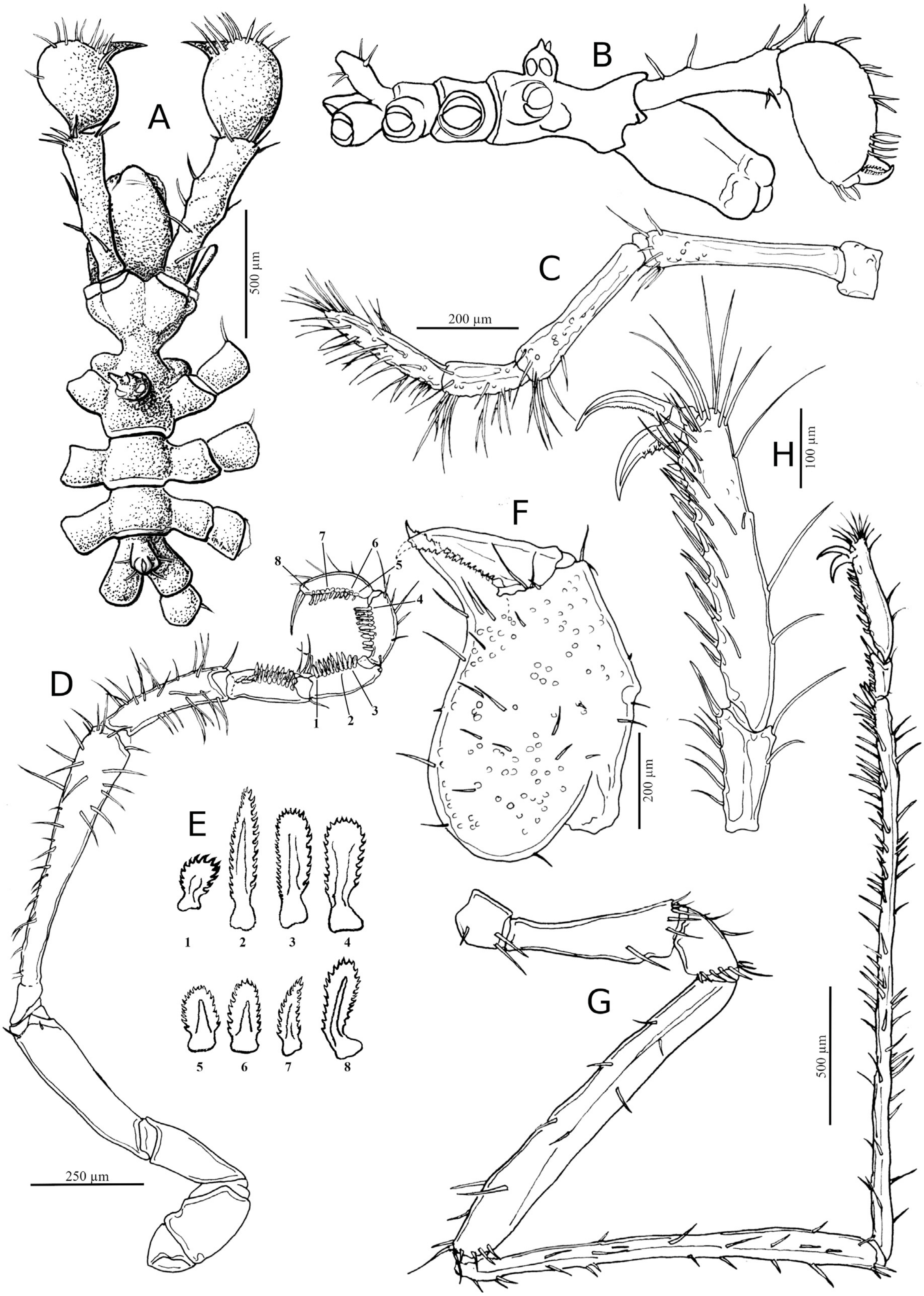

Fig. 11. *Nymphon dorlis* sp. nov., holotype, ♂, MNHN-IU-2016-879. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Palp. **D**. Oviger. **E**. Pointed teeth of oviger. **F**. Chela. **G**. Third leg. **H**. Tarsus and propodus of third leg.

Sexual dimorphism

No female available.

Individual variability

Strigilis formula more or less with one compound spine per article in investigated specimens, the highest number of compound spines always on the first strigilis article. Chela teeth number variable, 13–16 on movable finger and 13–20 on immovable finger in investigated specimens.

Remarks

Nymphon dorlis sp. nov. is a new species in the *aequidigitatum*-group (Child 1988b). It can be discriminated from most of its relatives by the following three criteria: (i) preocular neck short, (ii) tarsus about ⅓ as long as propodus; (iii) tibiae 2 about 1.5 times as long as femorae or tibiae 1. Additionally, this species can be distinguished from *N. biformidens* Stock, 1974 from Madagascar by the larger chelifore palms and shorter fingers of *N. dorlis*, as well as its conspicuous horn-like lateral sense organs (Stock 1974). It can be distinguished from *N. aequidigitatum* Flynn, 1919 from Australia by the shorter tarsi (⅓ of propodus length in *N. dorlis* against ½ in *N. aequidigitatum*) and the prominent lateral organs of *N. dorlis* (see Stock 1973). It differs from *N. draconis* Child, 1990 from the Indo-Pacific by having no conspicuous range of cement gland tubes on the ventral side of the femorae, a longer main claw relatively to the auxiliary claws, and the tarsus only about ⅓ of propodus length (against about ½ for *N. draconis*; Child 1990). Finally, it differs from *N. megacheles* Child, 1988 by the larger space between the lateral processes, the longer 5th palp segment, the shorter main claw relatively to the propodus and the slenderer leg articles (Child 1988a).

Among Martinique species, *Nymphon dorlis* sp. nov. could be mistaken for *N. macabou* Müller, 1990. The two species differ by the propodus, which is straight in *N. dorlis* and curved in *N. macabou*; and the tibiae 2, which are slender and 1.5 times as long as the femorae, while in *N. macabou* tibiae 2 are only slightly longer than the femorae (Müller 1990a).

The species was only collected on the Atlantic coast.

Depth range

Only known from type locality. 16–63 m.

Nymphon ludovici sp. nov.

urn:lsid:zoobank.org:act:53F8FAE5-3380-479C-A5AE-8C6B30CAC9A5

Figs 12–13

Nymphon sp. 3 – Sabroux *et al.* 2019b: 1525, 1531, tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • ♂ ov. carrying larvae; Les Anses-d'Arlet; 14°29.6′ N, 61°05.5′ W; depth 10–26 m; 7 Sep. 2016; st. AR050; MNHN-IU-2016-835/MK411150.

Paratypes

MARTINIQUE • 1 ♀; Canal de Ste Lucie; 14°22.7′ N, 60°51.6′ W; depth 65 m; 11 Sep. 2016; st. AD222; MNHN-IU-2016-836/MK411151 • 1 ♂; Passe du Marin; 14°26.6′ N, 60°54.3′ W; depth 15 m; 9 Sep. 2016; st. AB058; MNHN-IU-2016-837/MK411152 • 1 ind. (sex indet.); Passe du Marin; 14°26.7′ N, 60°54′ W; depth 19–15 m; 10 Sep. 2016; st. AB060; MNHN-IU-2016-558 • 1 ♂; Grande

Anse d’Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-561 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-562 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1274/MK411094 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1323/MK411099 • 1 ♂ ov. carrying larvae; Presqu’Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1107 • 1 ♀; same collection data as for preceding; MNHN-IU-2017-219 • 1 juv.; Vétiver; 14°37,8’N-61°07,7’W; depth 25 m; 8 Sep. 2016; st. AB161; MNHN-IU-2016-1118/MK411054 • 1 ♂ ov.; Presqu’Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1317 • 1 ♂; N Presqu’Île de la Caravelle; 14°51.9′ N, 60°50.7′ W; depth 57 m; 19 Sep. 2016; st. AD247; MNHN-IU-2017-3500.

Etymology

From the Latin first name *Ludovicus*, *-i*, (masc., 2nd decl.), from which the French name Louis originates. The species is named after the Fort Saint-Louis naval base in Fort-de-France, Martinique, where the Madibenthos crew was warmly welcome and hosted for the whole expedition.

Description (holotype, ♂, MNHN-IU-2016-835)

Body. Medium size, slender species. Trunk completely segmented, cuticle smooth. No dorsomedian ornamentation. Ocular tubercle positioned anteriorly to 1st lateral processes; about as tall as its diameter, rounded, slightly bent backward, with wide, slightly bifid rounded tip carrying lateral sense organs distally; four pigmented eyes. Preocular neck long, about 3 times as long as wide, markedly segmented at base. Oviger base well separated from 1st lateral processes. Lateral processes well separated by about twice their diameter between 1st and 2nd, about 1.5 times between 2nd and 3rd, and about their diameter between 3rd and 4th; lateral processes without ornamentation.

Proboscis. Robust, with distal swelling on 3 antimers, bearing a few setae around mouth. Proboscis reaching about distal part of chelifore scape in lateral view.

Abdomen. Small, rounded with pointed anus, directed diagonally. No basal articulation.

Chelifore. 2-articled, long, reaching beyond proboscis. Scape 1-articled, about 5 times as long as wide, with dorsal setae on distal part, peculiarly on distal margin. Chela large, palm ornamented with a few setae, longer than fingers. Fingers crossing at tip, carrying bifid teeth plus simple teeth at base. 16 bifurcate teeth plus 3 simple teeth on imovable finger, 14 bifurcate teeth plus 2 normal teeth on movable finger.

Palp. 5-articled. 1st article shortest, shorter than wide, glabrous. 2nd article longest, about ⁴⁄₃ length of 3rd or 5th, more than 10 times as long as wide. 3rd article about 7 times as long as wide, with several setae on ventrodistal margin. 4th article about 1.5 times as long as wide, covered with ventral setae. 5th article of about same size as 3rd, about 6 times as long as wide, covered ventrally with setae.

Oviger. 10-articled, slender, 1st and 2nd articles as long as wide, with scarce setae mostly on last 5 articles, 3rd article less than 5 times as long as wide. 4th article about twice as long as 3rd. 5th article longest, more than 1.5 times as long as 4th, slightly curved, inflated distally. 6th article about half as long as 4th. 7th article about 0.6 times as long as 6th. 8th, 9th and 10th articles shorter than 7th, subequal. Strigilis formula 15:12:13:13. Strigilis spines compound, carrying many lateral teeth. On 7th to 9th articles proximalmost compound spine shortest and oblong, median spines lanceolate and longer than proximal ones, distalmost ones spatulated, with most basal teeth of compound spines conspicuously broader than distal teeth. Intermediate position spines roughly intermediary in shape. On 10th article, all spines but two distal ones round to oblong and short, two distal spines spatulated with basal teeth of spines conspicuously broader than distal teeth, distalmost spine longest. Terminal claw about ⅔ of 4th strigilis article length.

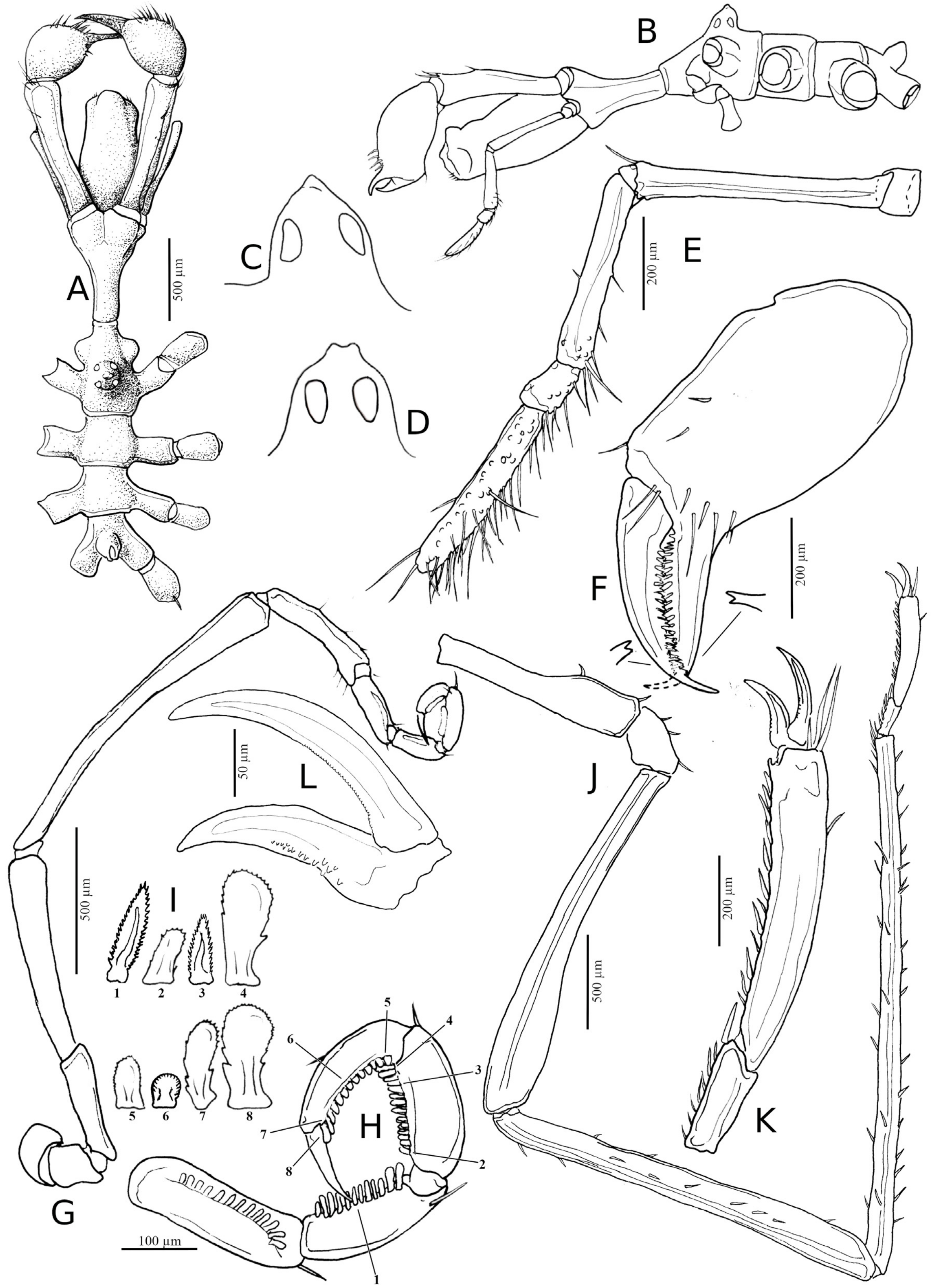

Fig. 12. *Nymphon ludovici* sp. nov., holotype, ♂, MNHN-IU-2016-835. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Ocular tubercle, lateral view. **D**. Ocular tubercle, frontal view. **E**. Palp. **F**. Chelifore, with close-up of two bifid teeth. **G**. Oviger. **H**. Strigilis. **I**. Pointed teeth of strigilis. **J**. Fourth leg. **K**. Tarsus and propodus of fourth leg. **L**. Propodal claws.

Legs. Long and slender, with scarce setae. Coxae 1 and 3 subequal, about 1.5 times as long as wide. Coxa 2 more than twice as long as coxae 1 and 3 together. Femur about 12 times as long as median width, with one row of cement glands and cement gland pores on ventral surface, 46 counted on 4th leg. No cement gland tube. Tibia slightly longer than femur, about 12 times as long as median width. Tibia 2 longest, about 1.5 times as long as femur and 22 times as long as median width. Tarsus medium-sized, about 3 times as long as wide, trapezoid, with one ventrodistal spine. Propodus straight, about 0.2 times as long as tibia 2 and 6 times as long as broad, no basal spine; sole with 8 spines and setae. Main claw curved, short, less than ¼ of propodal length. Auxiliary claws curved, slightly longer than main claw. Both auxiliary claws and main claw with denticles on inner surface.

Measurements (mm). Trunk 2.08; abdomen 0.16; proboscis 0.87; chelifore scape 0.98; chela palm 0.62; chela fingers 0.36; coxa 1 0.26; coxa 2 1.1; coxa 3 0.31; femur 1.97; tibia 1 2.15; tibia 2 2.83; tarsus 0.23; propodus 0.71; main claw 0.18; auxiliary claw 0.22.

Sexual dimorphism

Available female poorly preserved. Oviger articles shorter than in males, no distal inflation of 5th article. Females chela palm not as wide as in males (Fig. 13).

Individual variability

Number of teeth on chela fingers variable, up to 18 teeth on movable finger and 16–19 on imovable finger in investigated specimens. Strigilis formula variable, 11–18 per strigilis article, with generally more spines on 7th oviger article. Teeth of 10th oviger article either spatulated (e.g., MNHN-IU-2016-835) or lanceolate (e.g., MNHN-IU-2016-837), sometimes within same barcode cluster.

Remarks

Nymphon ludovici sp. nov. can be discriminated from other *aequidigitatum*-group species with the combination of the four following characters: (i) the preocular neck is long, (ii) the tarsus is short, (iii) the lateral sense organs on the ocular tubercle tip are low and the ocular tubercle tip is not bifurcate; and (iv) the main and auxiliary claws are subequal in length. The closest species are the Japanese *N. plectrum* Takahashi *et al.*, 2012, which presents much more setose legs, longer leg setae and lateral sense organs well separated on the ocular tubercle, and *N. floridanum* Hedgpeth, 1948 from the Caribbean, which has no segmentation at the base of the preocular neck.

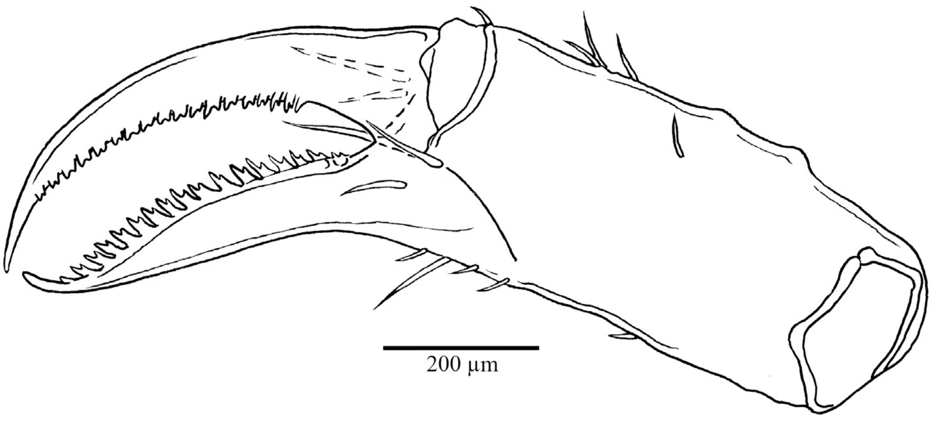

Fig. 13. *Nymphon ludovici* sp. nov., paratype, ♀, MNHN-IU-2017-219. Chelifore.

We were not able to infer whether the segmentation at the preocular neck base corresponds to a mobile articulation. This feature is shared with a number of species from the *aequidigitatum* complex (Child 1988b; Takahashi *et al.* 2012): *N. adense* Müller, 1989, *N. aldabrense* Child, 1988, *N. giraffa* Loman, 1908, *N. micronesicum* Child, 1982 and *N. plectrum* Takahashi *et al.*, 2012. Some other species of the *aequidigitatum*-complex show a constriction at the same location of the ocular neck that does not seem to be a segmentation, e.g., *N. natalense* Flynn, 1928 (see Flynn 1928). This species is divided into two clusters based on DNA barcoding data (intracluster p-distance = 0–0.026, intercluster p-distance = 0.104–0.111) (Sabroux *et al.* 2019b). Since no morphological character was found to support their separation, the two clusters corresponding to group 1 (holotype MNHN-IU-2016-835 and paratype MNHN-IU-2016-837) and group 2 (paratypes MNHN-IU-2016-562, -836, -1118, -1274 and -1323) (Appendix), were described as the same species.

The species was collected on both the Atlantic and Caribbean coasts.

Distribution

Only known from type locality.

Depth range

15–57 m.

Nymphon martinicum sp. nov.

urn:lsid:zoobank.org:act:2B7EA480-66C1-4449-BC75-DB7D3459CBF7
Fig. 14

Nymphon sp. 4 – Sabroux *et al.* 2019b: 1531, tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • ♂; Les Anses-d'Arlet; 14°29.7′ N, 61°05.4′ W; depth 19 m; 7 Sep. 2016; st. AB155; MNHN-IU-2016-889/MK411198.

Paratypes

MARTINIQUE • 2 ♀♀, 1 juv.; same collection data as for holotype; MNHN-IU-2016-1280 • 1 ♀; Bellefontaine; 14°39.7′ N, 61°09.6′ W; depth 12 m; 30 Sep. 2016; st. AB372; MNHN-IU-2016-1033 • 1 ♂; Rocher du Diamant; 14°26.5′ N, 61°02.4′ W; depth 24 m; 14 Sep. 2016; st. AB173; MNHN-IU-2016-1159 • 1 ♂ carrying larvae; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 17–19 m; 30 Sep. 2016; st. AB369; MNHN-IU-2016-1257 • 3 ♀♀ gr.; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1299 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1319 • 1 ♀ preadult?; Presqu'Île de la Caravelle; 14°46.5′ N, 60°51.5′ W; depth 15 m; 22 Sep. 2016; st. AB350; MNHN-IU-2016-1304 • 1 juv.; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 24 m; 30 Sep. 2016; st. AR413; MNHN-IU-2016-1221.

Etymology

From the Latin neologism *Martinicus*, *-a*, *-um* (adj.): Martiniquese.

Description (holotype, ♂, MNHN-IU-2016-889)

BODY. Trunk completely segmented, cuticle smooth. No dorsomedian tubercle. Ocular tubercle near oviger base and positioned anterior to 1st lateral processes, rounded, as wide at base as high, with 2 large horn-like lateral sense organs on its tip; 4 pigmented eyes. Preocular neck long, as high as base width.

Oviger base touching 1st lateral processes. Lateral processes without ornamentation, well separated by more than once and up to twice their own diameters between 1st, 2nd and 3rd lateral processes and by slightly less than their own diameter between 3rd and 4th lateral processes.

Proboscis. Rounded and large, reaching distal margin of chelifore scape in lateral view, about as long as cephalon and 1st trunk segment.

Abdomen. Medium-sized, not reaching beyond lateral processes, directed diagonally. No basal segmentation.

Chelifore. 2-articled, reaching far beyond proboscis, carrying scarce setae. Scape 1-articled, 5.5 times as long as wide. Chela large, palm longer than fingers. Fingers sub-equal in length, bearing simple and bifurcated teeth, 17 on inmovable finger and 15 on movable finger.

Palp. 5-articled. 1st shortest, as long as wide. 2nd article longest, about 11 times as long as wide, with a few distal setae. 3rd article about 0.8 times as long as 2nd, carrying setae on distal half. 4th article about half as long as 5th, carrying setae mostly on ventral side. 5th article 0.9 times as long as 3rd, carrying many ventral setae.

Oviger. 10-articled. 1st article shorter than wide. 2nd article about ⅓ as long as wide. 3rd article about 3 times as long as maximal width. 4th article more than twice as long as 3rd. 5th article longest, about 1.6 times as long as 4th, setose, widening near distal part. 6th article about 0.7 times as long as 4th, setose. 7th article longest within strigilis, 8th, 9th and 10th articles subequal. Strigilis formula 13 : 10 : 9 : 11. Strigilis spines compound, carrying many lateral teeth, proximalmost shortest and spatulated, median spines longest, oblong to lanceolate), distalmost spatulated, longer than proximalmost. Intermediary position spines roughly intermediary in shape. Terminal claw about as long as 10th article.

Legs. Slender, setose. Coxa 1 about 1.5 times as long as wide. Coxa 2 about 2.5 times as long as coxae 1 and 3 together. Coxa 3 about 1.5 times as long as wide. Femur about 16 times as long as wide and about twice as long as coxa 2, ventrally carrying one row of hardly conspicuous cement glands and cement gland pores, 45 glands counted. No cement gland tube. Tibia 1 less than 0.1 times as long as femur. Tibia 2 longest, even slenderer, about ¼ as long as tibia 1, setose. Tarsus medium-sized, trapezoid, one spine distally on inner surface. Propodus straight, slender, about 2.5 times as long as tarsus, and 0.15 times as long as tibia 2. Main claw short, about ¼ of propodal length, curved. Auxiliary claws present, curved, slightly longer than main claw. Both main claw and auxiliary claws with small denticles on inner surface.

Measurements (mm). Trunk 1.59; abdomen 0.20; proboscis 0.75; chelifore scape 0.55; chela palm 0.41; chela fingers 0.31; coxa 1 0.16; coxa 2 0.97; coxa 3 0.21; femur 1.88; tibia 1 2.04; tibia 2 3.00; tarsus 0.19; propodus 0.45; main claw 0.11; auxillary claw 0.15.

Sexual dimorphism

5th ovigeral article distally inflated only in males. Female chela palm not as wide as in males.

Individual variability

Chela teeth number variable, 12 to 19 on immovable finger, and 14 to 17 on movable finger. Strigilis formula variable, from 9 to 13 spines on each strigilis article, with generally more spines on 1st strigilis article. In one specimen (MNHN-IU-2016-1304), strigilis formula drops to 8:7:7:7, which may be linked to preadult stage.

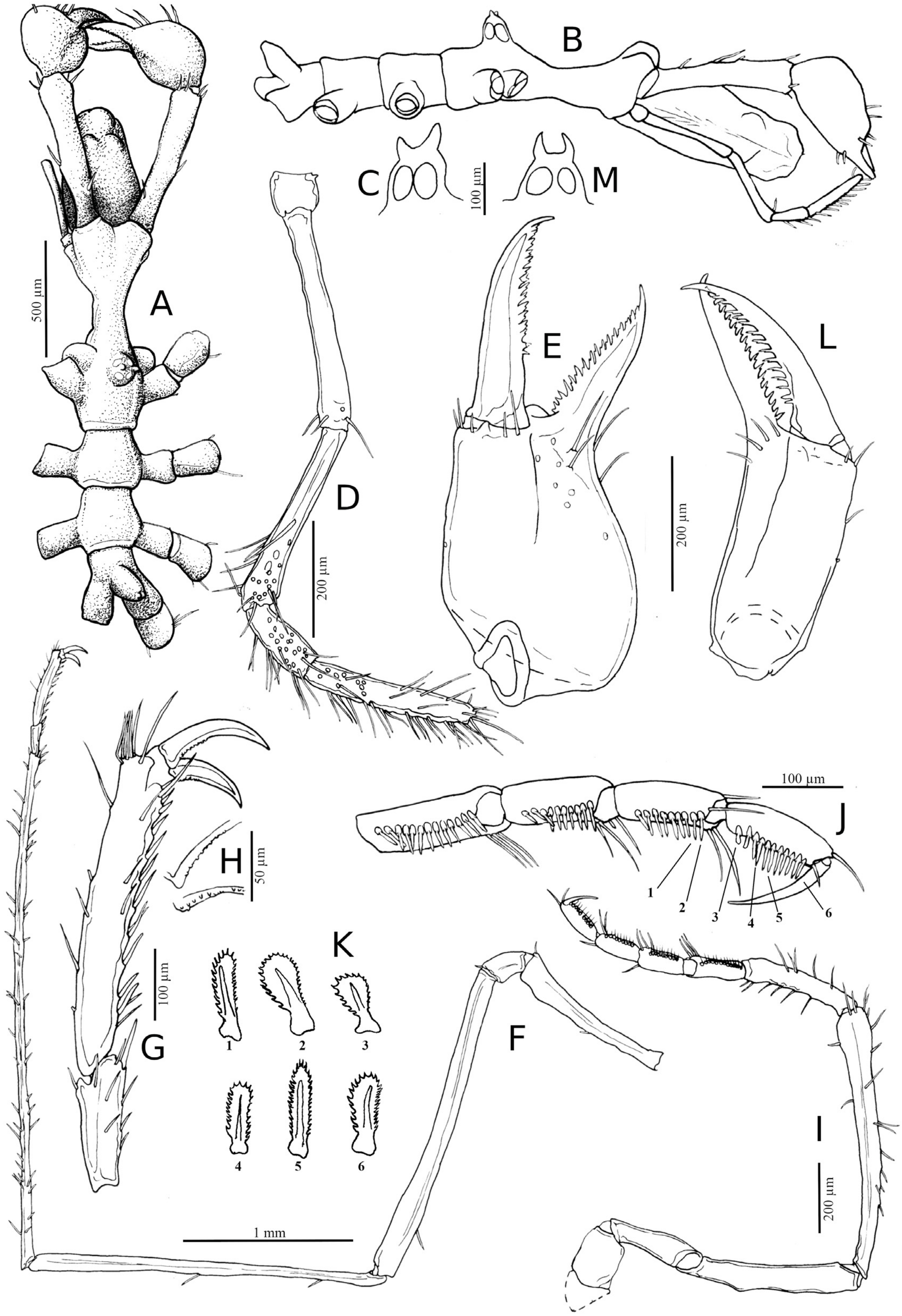

Fig. 14. *Nymphon martinicum* sp. nov. **A**–**K**. Holotype, ♂, MNHN-IU-2016-889. **L**–**M**. Paratype, ♀, MNHN-IU-2016-1033. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Ocular tubercle, frontal view. **D**. Palp. **E**. Chelifore. **F**. Leg. **G**. Tarsus and propodus. **H**. Close-up of ventral surface of propodal claws. **I**. Oviger. **J**. Oviger strigilis. **K**. Pointed teeth of oviger strigilis. **L**. Chela (same scale as E). **M**. Ocular tubercle, frontal view (same scale as C).

Remarks

Nymphon martinicum sp. nov. belongs to the *aequidigitatum* group. It greatly resembles *N. floridanum* Hedgpeth, 1948, and differs from this species by the ocular tubercle, which is simple and conical in *N. floridanum*, while it is rounded in Martinique specimens with two conspicuous, horn-like lateral sense organs (Hedgpeth 1948; Child 1992a; Müller & Krapp 2009). We describe this species as new to science based on those morphological differences, with strong support from CO1 data: the p-distance between the sequenced specimen and *N. floridanum* GenBank sequence DQ390073 (Arango & Wheeler 2007) is equal to 0.147 (see Appendix).

This species was collected on both the Atlantic and Caribbean coasts.

Depth range

12–25 m.

Nymphon timons sp. nov.

urn:lsid:zoobank.org:act:86C9C63A-9B7A-4D45-ABAD-39D6DBA6CFD9
Figs 15–16

Nymphon sp. 2 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • ♀; Pointe du Diamant; 14°27′ N, 61°04.1′ W; depth 70 m; 9 Sep. 2016; st. AD214; MNHN-IU-2016-844/MK411158.

Paratypes

MARTINIQUE • 1 ♀; Pointe du Diamant; same collection data as for holotype; MNHN-IU-2016-887/MK411196 • 1 ♂, 1 ♀; same collection data as for holotype; MNHN-IU-2016-569 • 1 ♂; E of Le Vauclin; 14°34.2′ N, 60°44.8′ W; depth 90 m; 14 Sep. 2016; st. AD231; MNHN-IU-2016-1201 • 1 ♂; same collection data as for preceding; MNHN-IU-2021-6623.

Etymology

Noun in apposition. Named after the *Ti Mons* (from Martinique Creole: ‘little monster’), a malevolent creature of Martinique folklore which is given birth by placing an egg under his master’s armpit during Lent.

Description (holotype, ♀, MNHN-IU-2016-844)

Body. Small species. Trunk completely segmented; cuticle smooth. No dorsomedian ornamentation. Ocular tubercle rounded, about as tall as wide, with 2 small lateral sense organs; four pigmented eyes. Preocular neck broad, medium-sized, about as long as wide. Chelifore insertions well separated. Oviger base touching 1st lateral processes. Lateral processes well separated by slightly less than their own diameter; 1st, 2nd and 3rd lateral processes about 1.5 times as long as wide, 4th about as long as wide; unornamented.

Proboscis. Large, cylindrical, rounded at tip.

Abdomen. Long, reaching beyond 1st coxa, oriented diagonally. No basal articulation.

Chelifore. 2-articled, slender, reaching beyond proboscis. Scape 1-articled, with scarce setae, less than 3 times as long as wide. Chela carrying setae; palm slender, about as long as fingers. Fingers slender,

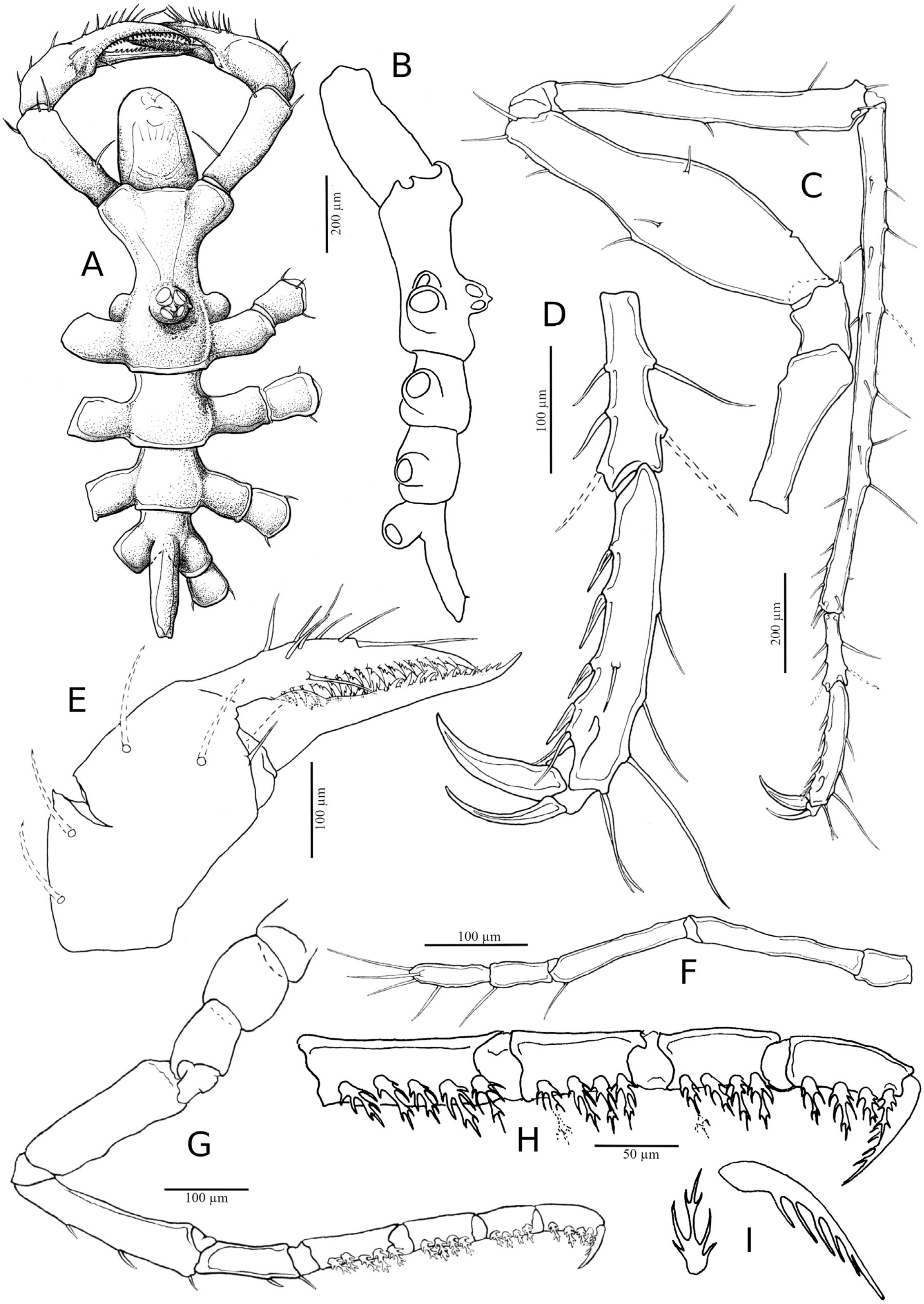

Fig. 15. *Nymphon timons* sp. nov., holotype, ♀, MNHN-IU-2016-844. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Fourth leg. **D**. Tarsus and propodus of fourth leg. **E**. Chela. **F**. Palp. **G**. Oviger. **H**. Oviger strigilis. **I**. Compound denticle and terminal claw of strigilis.

subequal in length, with 17 denticled teeth on immovable finger and 15 on movable finger. Some teeth of movable finger curved.

PALP. 5-articled. 1st article shortest, less than twice as long as wide. 2nd article longest, 7.5 times as long as wide. 3rd article 0.8 times as long as 2nd, with one ventral seta near distal margin. 4th article 0.4 times as long as 3rd, with one ventral seta near distal margin. 5th article about ¼ longer than 4th, with distal setae. 4th and 5th palp articles together about as long as 3rd.

OVIGER. 10-articled, with scarce setae. 1st article shortest, shorter than wide. 2nd and 3rd articles subequal in length. 4th article 3 times as long as 2nd. 5th article slightly longer than 4th. 6th article half as long as 5th. 7th article longer than 8th, 9th or 10th, less than 3 times as long as wide. 8th, 9th and 10th articles subequal, about twice as long as wide. Strigilis spines compound, with 2 pairs of long basal teeth, then 3 long teeth at end of long elongation; strigilis formula 5:4:4:4. Terminal claw as long as 10th article, pectinated with 5 long lateral teeth.

LEGS. Slender, with scarce setae. Coxa 1 about 1.5 times as long as wide, carrying setae on distal margin. Coxa 2 longer than coxae 1 and 3 together, widening distally. Coxa 3 about as long as wide, with ventral setae carried distally. Femur about 6.5 times as long as distal width, inflated by ovaries in holotype specimen. Tibia 1 subequal to femur in length, about 12.5 times as long as wide, with one long spine about half its size. Tibia 2 longest, about 1.5 times as long as femur or tibia 1, carrying rows of setae on ventral, dorsal and lateral sides, and 2 ventral spines on distal margin. Tarsus rather long. Propodus less than twice as long as tarsus and ¼ times as long as tibia 2, slightly curved, carrying setae; heel spines absent, 4 sole spines. Main claw less than half as long as propodus, curved. Auxiliary claws curved, about 0.8 times as long as main claw.

MEASUREMENTS (mm). Trunk 0.94; abdomen 0.27; proboscis 0.30; chelifore scape 0.31; chela palm 0.31; chela finger 0.29; coxa 1 0.13; coxa 2 0.35; coxa 3 0.13; femur 0.68; tibia 1 0.63; tibia 2 1.01; tarsus 0.15; propodus 0.26; main claw 0.12; auxillary claw 0.09.

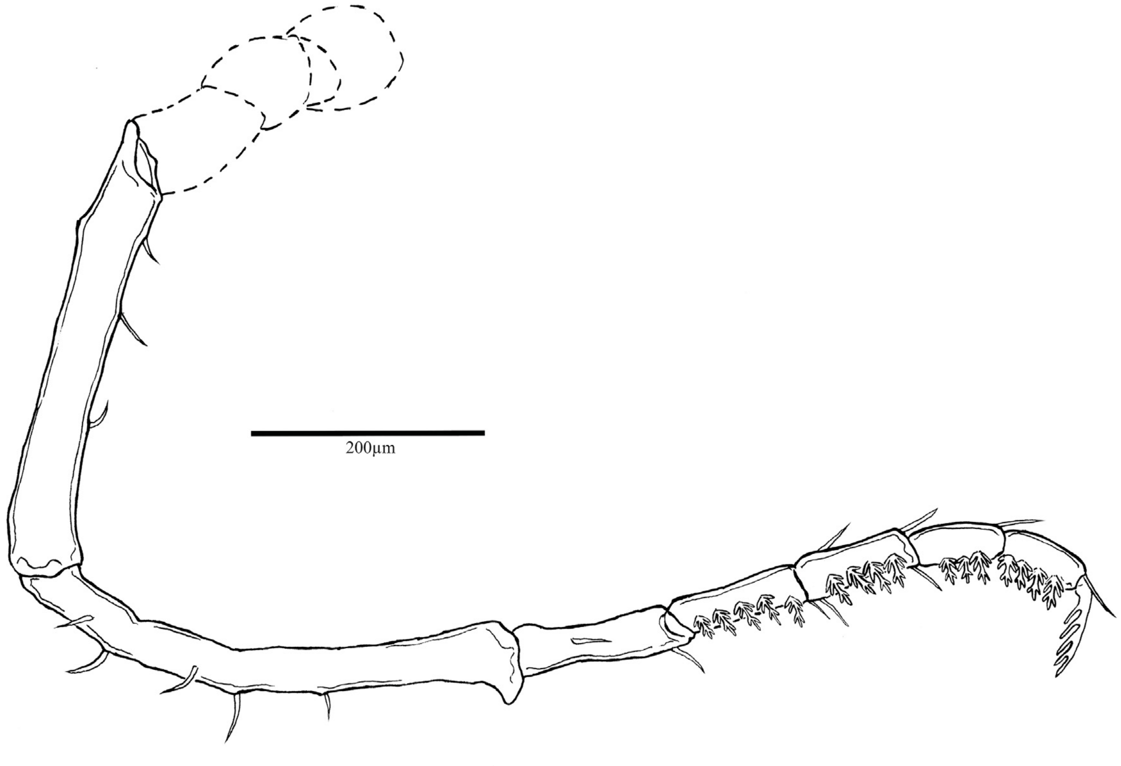

Fig. 16. *Nymphon timons* sp. nov., paratype, ♂, MNHN-IU-2021-6623. Oviger.

Sexual dimorphism

Male femur narrower, not swollen. Cement glands and cement gland pores inconspicuous, no cement gland tube. Oviger articles longer: in specimen MNHN-IU-2021-6623, 3rd article longer than wide, 4th article about 4 times as long as 2nd article, 5th article about 1.1 times as long as 4th. 5th oviger article curved, with distal apophysis.

Individual variability

Number of teeth on chelifore fingers 13 to 17 in investigated specimens. Strigilis formula slightly variable although always low, 2 to 5 spines per strigilis article, highest number on 1st strigilis article. Number of teeth of oviger terminal claw variable, 4 to 5 in investigated specimens.

Remarks

Nymphon timons sp. nov. is the only species of *Nymphon* in the Madibenthos material that does not belong to the *aequidigitatum* group. It is a small species for the genus, and is differentiated from other species of *Nymphon* by the combination of the following characters: tarsus about half as long as propodus; auxiliary claws about 0.8 times as long as main claw; preocular neck medium, about as long as wide; lateral processes separated by slightly less than their own diameter; tibia 2 about 1.5 times as long as tibia 1 or femur; chela teeth denticled; oviger terminal claw pectinated; oviger base touching first lateral processes; fourth and fifth palp articles together about as long as third palp article.

To some extent, *Nymphon timons* sp. nov. shares similarities with *N. boogoora* Bamber, 2008 from Eastern Australia: both species share the pectinated oviger terminal claw, the long tibiae 2, and the same palp structure (Bamber 2008). However, *N. boogoora* does not have the chela teeth denticled, and its abdomen does not extand beyond the 4th lateral processes. *Nymphon timons* was only collected at two locations: one on the Atlantic coast and the other on the Caribbean coast.

Distribution

Only known from Martinique.

Depth range

70–90 m.

Family Endeidae Norman, 1908

Genus **Endeis** Philippi, 1843

Type species

Endeis spinosa (Montagu, 1808), by subsequent designation (Child 1998a).

Endeis flaccida Calman, 1923

Endeis flaccidus Calman, 1923: 295–297, fig. 17.

Endeis flaccida – Stock 1953a: 300; 1968a: 56, 59 (key); 1970b: 3–4; 1975a: 1085, fig. 58a–b; 1986: 440. — Child 1979: 66; 2009: 819 (list). — Arango 2003b: 2759–2761, tab. 2, fig. 14. — Bamber 2008: 134. — Veena *et al.* 2008: tab. 1. — Sabroux *et al.* 2019b: 1530, tab. 1, fig. 3. — Wang *et al.* 2020: tab. 1; 2021: 6.

Type material

Syntypes: NHMUK ZOO-1923.10.6.18-23 (not examined). Type locality: Madras, India.

Material examined

MARTINIQUE • 1 ♂; Grande Anse du Diamant; 14°28.6′ N, 60°59.4′ W; depth 1–2 m; 9 Sep. 2016; st. AD215; MNHN-IU-2016-840/MK411154 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-559.

FRENCH GUIANA • 1 ♂; Île Royale/Île du Diable; Passe des Grenadines; 5°17′27.5388″ N, 52°35′15.54″ W; depth 6–9 m; st. SC01; MNHN-IU-2013-18550/KX535406.

Remarks

This is the first record of this species in Martinique. The material only includes one juvenile and one poorly preserved male with no femur left, which strongly impedes identification. However, DNA barcoding data indicated that they belong to the same species as a specimen from French Guiana, MNHN-IU-2013-18550, GenBank reference KX535406 (Sabroux *et al.* 2017) with p-distance = 0. This specimen was successfully identified as *Endeis flaccida*. The species is recognizable by the intestinal tracts having many branched and unbranched diverticula, and the cement gland pores dispatched in an irregular band along the femur (Child 1979). Furthermore, in contrast to the otherwise very similar species *E. nodosa* Hilton, 1942 (known from Pacific islands and Barbados), *E. flaccida* does not have a femoral ventral projection (Müller 1992a).

The two specimens were collected at one station on the southern Caribbean coast of Martinique.

Distribution

Widely distributed and probably pantropical, recorded from Pacific Panama, West Atlantic (Florida, Martinique, Panama, French Guiana), the Indian Ocean (Philippines, Indonesia, India), Taiwan and East Queensland.

Depth range

0–69 m.

Endeis aff. ***meridionalis*** (Böhm, 1879)

Fig. 17

Phoxichilus meridionalis Böhm, 1879: 189–191, pl. 2 fig. 4.

Phoxichilus meridionalis – Schimkewitsch 1890: 20; 1891: 509–510; 1929: 186–188. — Dunlop *et al.* 2007: 57, fig. 40.

Endeis meridionalis – Calman 1923: 291–293, fig. 15. — Stock 1965: 30–31; 1968a: 59 (key); 1979: 27–28; 1982: 189; 1990: 231. — Fry & Hedgpeth 1969: 64, 66 (key). — Utinomi 1971: 327–328. — Arnaud 1973a: 959. — Clark 1973: 33, fig. 3a–d. — Daniel & Sen 1980: 165. — Müller 1989: 127; 1990e: 109; 1990c: 101. — Bamber 1992: 199; 2004: tab. 2. — Veena *et al.* 2008: tab. 1. — Sabroux *et al.* 2019b: 530–531, tab. 1, figs 3, 5.— Wang *et al.* 2021: 6.

non *Phoxichilus meridionalis* – Loman 1908: 78.

Type material

Endeis meridionalis (Böhm, 1879). Syntypes: ZMB_Pyc_6 and ZMB_Pyc_7 (not examined). Type localities: Red Sea?, west coast of Sinai Peninsula, Egypt and Singapore (see Dunlop *et al.* 2007).

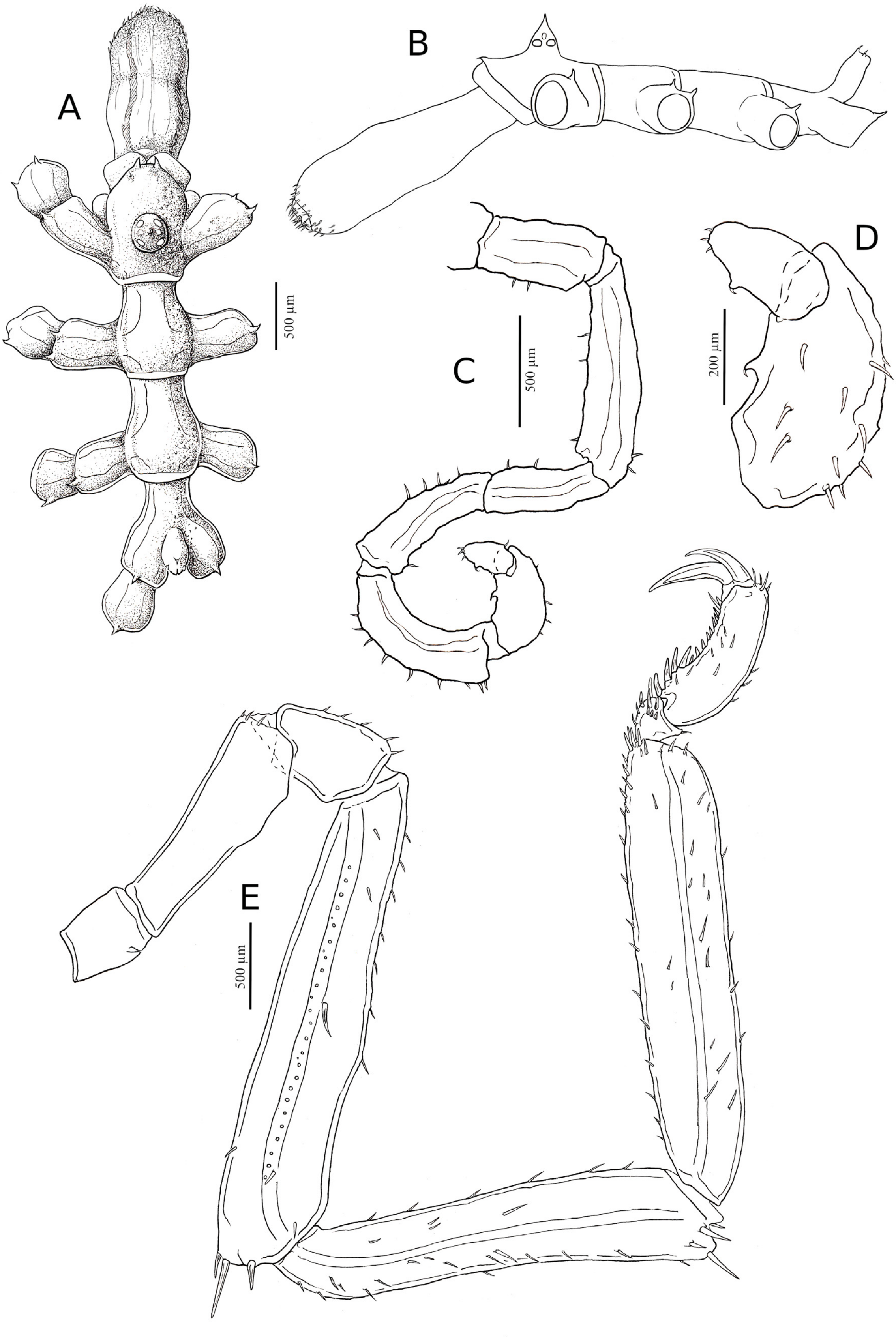

Fig. 17. *Endeis* aff. *meridionalis* (Böhm, 1879), ♂, MNHN-IU-2016-1043. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Oviger. **D**. Last two oviger articles. **E**. Third leg.

Material examined

MARTINIQUE • 1 ♂; E of Pointe Ferré; 14°27.8′ N, 60°47.8′ W; depth 35 m; 12 Sep. 2016; st. AD227; MNHN-IU-2016-839 • 1 ♂ ov., 1 ♀ gr., 2 juvs; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-560 • 1 ♂; Rocher du Diamant; 14°26.7′ N, 61°02.2′ W; depth 22 m; 22 Sep. 2016; st. AS096; MNHN-IU-2016-1043/MK411032 • 2 ♂♂; same collection data as for preceding; MNHN-IU-2016-1423 • 1 ♂; Passe du Brigot; 14°33.8′ N, 60°47.6′ W; depth 30 m; 17 Sep. 2016; st. AR082; MNHN-IU-2016-1125 • 1 ♂ ov.; Le François; 14°37′ N, 60°49.5′ W; depth 1 m; 17 Sep. 2016; st. AB134; MNHN-IU-2016-1142/MK411062 • 1 juv.; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1265/MK411091.

Remarks

This species was regarded as *Endeis meridionalis* in Sabroux *et al.* (2019b) despite the shorter distance between the lateral processes, and the absence of kinked femorae in the Martinique material. The specimens also resemble *E. spinosa* as drawn by Marcus (1940), but this species was represented in quite different fashions, with a variable shape of the proboscis, distance between the lateral processes, etc. (Hedgpeth 1948; Child 1992b; Munilla & Soler-Membrives 2014). Since the original description provides little information, and because of the inherent difficulties in identifying species of *Endeis*, the status of this morphospecies remains doubtful; therefore, we refrain from describing it as new species. Most of the specimens were found on the Atlantic coast, although three were collected at Pointe Diamant on the Carribean coast.

Distribution

Mostly recorded from the Indian Ocean (Somalia, Réunion, Mauritius (?), Madagascar, India, Malaysia, India, Western Australia) and the Red Sea; also reported in the Pacific (Japan, Moorea, Fiji islands), in the Eastern Atlantic (Cape Verde) and in the Caribbean (Curaçao).

Depth range

0–90 m.

Endeis aff. ***mollis*** (Carpenter, 1904)

Fig. 18

Phoxichilus mole Carpenter, 1904: 182–183, figs 1–7.

Phoxichilus mollis – Carpenter 1907: 98. — Loman 1908: 77–78.

Endeis mollis – Calman 1923: 293–294, fig. 16; 1927: 408; 1938: 160. — Stock 1951: 17–18, figs 23–24; 1957: 85–86; 1965: 31; 1966a: 54; 1975a: 1083–1085; 1975b: 76; 1986: 440; 1994: 19 (list), 68; 1997: 407. — Barnard 1954: 130–132, fig. 21. — Bourdillon 1954a: 4–8, figs 1–3. — Child 1977a: 441; 1979: 66; 1988a: 20–21; 1991: 144–145. — Nakamura & Child 1983: 41; 1988a: 664. — Arnaud 1987: 52. — Munilla 1994: 110. — Arango 2001: 656; 2002: 115, 120, tab. 1, figs 2–4 (phylogeny); 2003b: 2761, 2765, tab. 2, fig. 15. — Chimenz Gusso & Lattanzi 2003: tab. 1. — Paulay *et al.* 2003: appendix (list). — Bamber 2004: tab. 2; 2007: 256 (list). — Veena *et al.* 2008: 17–19, tab. 1, figs 3–5. — Müller & Krapp 2009: 115 (key), 117–119, 133, 137 (list), tab. 1, fig. 62. — Krapp & Viquez 2011: 204, tab. 1. — Gul & Ghani 2012: 206. — Sabroux *et al.* 2017: appendices 1–2, figs 3–5 (phylogeny); 2019b: fig. 3. — Dietz *et al.* 2018: 9. — Lucena & Christoffersen 2018a: 108. — Lucena *et al.* 2019: tab. 1. — Wang *et al.* 2021: 6.

Endeis cf. *mollis* – Sabroux *et al.* 2019b: 1530, tab. 1, fig. 3.

Type material

Endeis mollis (Carpenter, 1904). Type(s): unknown. Type locality: Cheval Paar, Sri Lanka.

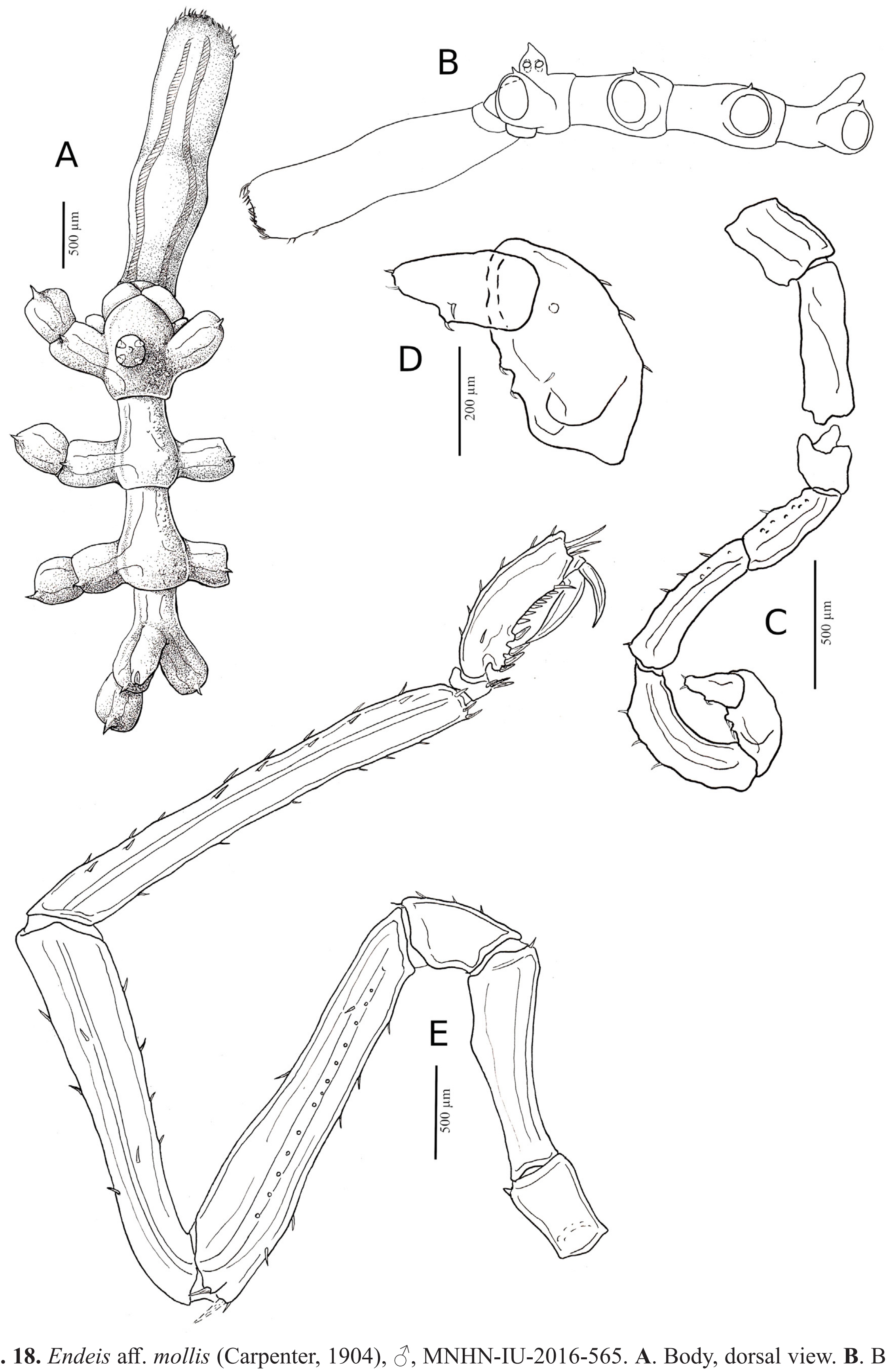

Fig. 18. *Endeis* aff. *mollis* (Carpenter, 1904), ♂, MNHN-IU-2016-565. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Oviger. **D**. Last two oviger articles. **E**. Third leg.

Material examined

MARTINIQUE • 1 ♀; Baie de Fort-de-France; 14°32.6′ N, 61°04.7′ W; depth 0–1 m; 6 Sep. 2016; st. AM002; MNHN-IU-2016-838/MK411153 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2016-565/MK411116 • 2 ♀♀; same collection data as for preceding; MNHN-IU-2017-216 • 1 ♀; same collection data as for preceding; MNHN-IU-2017-217/MK411200.

Remarks

The general morphology of Martinique specimens corresponds well to the description in Carpenter (1904), as well as that in Müller & Krapp (2009), including the distal spiny tubercle on the lateral processes. However, these specimens are much smaller than other records (the trunk is about half as long as indicated in Müller & Krapp 2009), the ocular tubercle and lateral processes are smaller, and the number of observed cement gland pores is 13 rather than 19 as mentioned by Müller & Krapp (2019). The CO1 barcoding tree of Sabroux *et al.* (2019b) showed a sister-group relationship with a specimen of *Endeis mollis* from Caribbean Colombia identified by Arango & Wheeler (2007), although the genetic distance is very high (p-distance = 0.157; see Appendix). It is therefore probably another species than *E. mollis*, but due to the complexity of taxonomy within *Endeis*, we refrain from describing it as a new species as long as a review for the genus is not available. All specimens were found at the same station, at the entrance of Baie de Fort-de-France.

Distribution

Endeis mollis is a commonly found pantropical species recorded from the Tropical West Atlantic (Caribbean, Surinam, Brazil), West Africa (Occidental Sahara, off Guinea, Nigeria), Indian Ocean (South Africa, Madagascar, Somalia, Red Sea, Suez, Oman, Pakistan, India, Sri Lanka, Maldives, Christmas Islands, Philippines) and the West Pacific (Australia, Japan mainland, Ryukyu Islands, New Caledonia, Guam, Marianas Islands, Polynesia). There is only one record from the Western Mediterranean, north of Tunis.

Depth range

0–105 m.

Endeis sp. 3

Fig. 19

Endeis sp. 3 – Sabroux *et al.* 2019b : 1522, tab. 1, fig. 3.

Material examined

MARTINIQUE • 1 ♀ gr.; Macouba; 14°55.1′ N, 61°09′ W; depth 80 m; 24 Sep. 2016; st. AD261; MNHN-IU-2016-863/MK411175 • 1 leg (♂); Macouba; 14°55′ N, 61°08.9′ W; depth 78–80 m; 24 Sep. 2016; st. AD263; MNHN-IU-2016-1203/MK411080.

Remarks

These specimens resemble *E. mollis*, but they do not show the spiny tubercle on the lateral processes as represented by Carpenter (1904) and Müller & Krapp (2009). The male femur presents at least 25 pores. Only two specimens were collected: one female and a male leg. The analysis of CO1 sequences confirmed that the male leg belongs to the same species as the female specimen, making available characters of the cement gland pores. However, in the absence of ovigers, a species description would be incomplete. Therefore we prefer to keep this species as unnamed until new material becomes available.

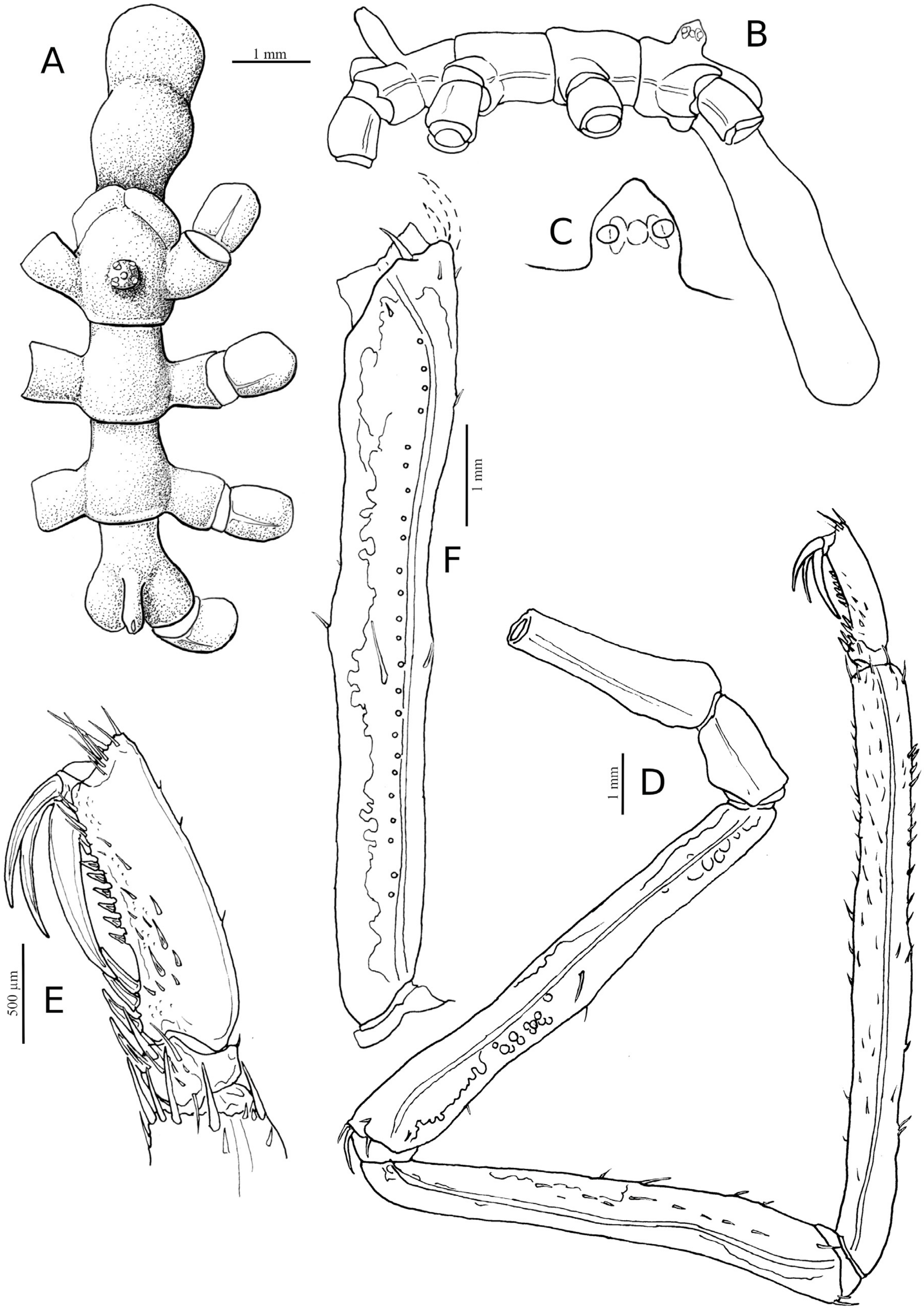

Fig. 19. *Endeis* sp. 3. **A**–**E**. ♀, MNHN-IU-2016-863. **F**. ♂, MNHN-IU-2016-1203. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Ocular tubercle, lateral view. **D**. Leg. **E**. Tarsus and propodus. **F**. Femur.

The two specimens were collected at the same location, north of Martinique.

Depth range

78–80 m.

Family Phoxichilidiidae Sars, 1891

Genus ***Anoplodactylus*** Wilson, 1878

Type species

Anoplodactylus lentus Wilson, 1878, by subsequent designation (Child 1998a).

Anoplodactylus cf. ***arcuatus*** Child, 1977

Anoplodactylus arcuatus Child, 1977b: 584–587, fig. 1.

Anoplodactylus sp. A. – Hedgpeth 1948: 236, fig. 35.
Anoplodactylus arcuatus – Child 1992b: 39 (key), 41, tab. 5, fig. 17; 2004: 154; 2009: 819 (list). — Müller 1992a: 45–47, figs 4–14.
Anoplodactylus cf. *arcuatus* – Sabroux *et al.* 2019b: tab. 1, figs 3, 5.

Type material

Anoplodactylus arcuatus. Holotype: USNM 154801 (not examined). Type locality: Piscadera Bay, Curaçao.

Material examined

MARTINIQUE • 1 juv.; Vétiver; 14°37.8′ N, 61°07.7′ W; depth 25 m; 8 Sep. 2016; st. AB161; MNHN-IU-2016-1036/MK411030 • 1 ♂, 1 ♂ ov., 1 ♀, 2 ♀♀ gr., 1 juv.; Vétiver; 14°37.9′ N, 61°07.7′ W; depth 10 m; 8 Sep. 2016; st. AS054; MNHN-IU-2016-1204 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1326 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1327/MK411102 • 1 ♀; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 17–19 m; 30 Sep. 2016; st. AB369; MNHN-IU-2016-1259/MK411087 • 1 ♀; Le Prêcheur; 14°48.5′ N, 61°13.8′ W; depth 56 m; 8 Oct. 2016; st. AS574; MNHN-IU-2016-1288.

Remarks

Martinique specimens are very similar to those described by Child (1977b), though the cement gland tubes are situated more proximally on the femorae (at about mid-length). The tubes are not arcuated in the present material; however, this character is known to be strongly variable (Müller & Krapp 2009). All specimens were collected on the Caribbean coast.

Distribution

Anoplodactylus arcuatus is known from the Caribbean (Curaçao, Barbados) and the Gulf of Mexico (Loggerhead Keys, Florida).

Depth range

Anoplodactylus arcuatus is known to dwell between 2.5 and 18 m. The present material was sampled between 10 and 56 m.

Anoplodactylus bahamensis Child, 1977
Fig. 20

Anoplodactylus bahamensis Child, 1977b: 587–589, fig. 2.

Anoplodactylus bahamensis – Child 1982a: 368; 2004: 154. — Stock 1986: 403. — Müller & Krapp 2009: 11–13, 85 (key), 86–88, 132, 137 (list), tab. 1, fig. 46.

nec *Anoplodactylus micros* Bourdillon, 1955 – Sabroux *et al.* 2019b (pro parte): tab. 1, figs 3, 5.

Type material

Holotype: USNM 154804 (not examined). Type locality: Tongue of the Ocean, off Andros Island, Bahamas.

Material examined

MARTINIQUE • 3 ♂♂, 1 ♀, 2 juvs; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2016-1123 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1390 • 1 ♀; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1264/MK411090 • 1 ♂ ov.; Anse Dufour; 14°31.6′ N, 61°05.4′ W; depth 10–20 m; 7 Sep. 2016; st. AD206; MNHN-IU-2016-1271 • 1 ♂; Baie de Fort-de-France; 14°34.5′ N, 61°05′ W; depth 11–15 m; 6 Oct. 2016; st. AR468; MNHN-IU-2016-1324 • 1 ♂ ov.; Le Prêcheur; 14°49.1′ N, 61°13.8′ W; depth 20–25 m; 8 Oct. 2016; st. AS576; MNHN-IU-2016-1389 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1463.

Remarks

Anoplodactylus bahamensis is discriminated from *Anoplodactylus micros* by the conspicuously larger size of the specimens and the wider opening of the cement gland pores. We observed setae on the ventral side of the proboscis in both species (but not in all specimens), unlike observations in Müller & Krapp (2009). Only one specimen was barcoded, a female. While it is not possible to confirm its identification using the cement glands, the specimen is similar to the male specimens regarding all available characters, including the propodal sole lamina and the dorsomedian tubercles on the lateral processes.

This is the first record of this species in Martinique. The species was sampled at five different stations, four of them on the Caribbean coast, one (the barcoded female, MNHN-IU-2016-1264) on the Caribbean coast. Müller & Krapp (2009) mentioned that the species prefers sublittoral areas, where it is peculiarly abundant in sea-grass meadows.

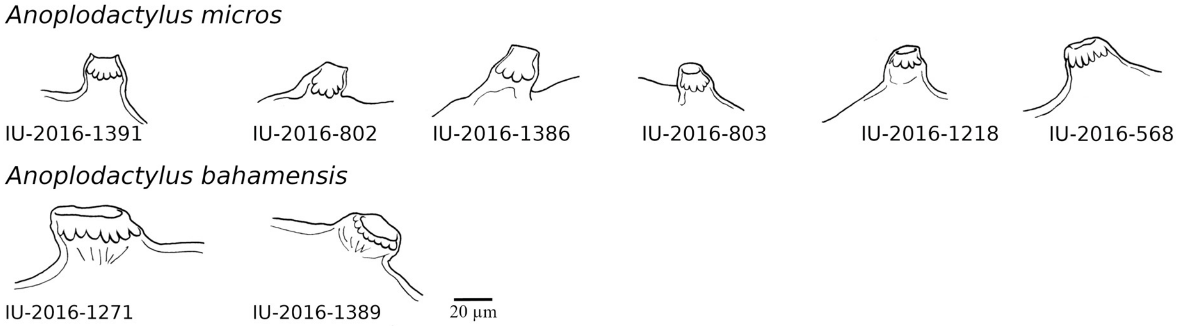

Fig. 20. Cement gland pores of *Anoplodactylus micros* Bourdillon, 1955 and *A. bahamensis* Child, 1997.

Distribution

Caribbean (Belize, Nicaragua, Colombia) and Bahamas.

Depth range

0.5–12 m, extended to 20 m.

Anoplodactylus batangensis (Helfer, 1938)

Pycnosoma batangense Helfer, 1938: 174–176, fig. 6a–c.
Anoplodactylus intermedius Hilton, 1942c: 44–45, fig. 2.
Anoplodactylus stylirostris Hedgpeth, 1948: 232–234, fig. 33.
Anoplodactylus tenuirostris Lebour, 1949: 929–930, fig. 1.

Pycnosoma batangense – Marcus 1940: 47–48.
Anoplodactylus batangense – Stock 1953b: 39–41, fig. 4a–e; 1954a: 127–128. — Bourdillon 1955: 595–598, pl. 2 figs 4–8. — Birkeland *et al.* 1976: 133. — Dunlop *et al.* 2007: 49, fig. 7.
Anoplodactylus batangensis — Stock 1968a: 54; 1974: 17; 1975a: 1082–1083, fig. 43c–d; 1976: 133; 1979: 27; 1989: 95; 1994: 19 (list), 54. — Arnaud 1973a: 957, figs 3–4. — Child 1975: 191; 1977a: 444; 1979: 50; 1982a: 368; 1988a: 14; 1990: 311–335; 1992b: 39 (key), 41–42, tab. 5, fig. 18; 1998b: 293; 2004: 155; 2009: 819 (list). — Müller 1990a: 283–284; 1992a: 47. — Bamber 2000: 613; 2004: 16, 23, tab. 2; 2007: 257 (list). — Arango 2002: 115, tab. 1, figs 2–4 (phylogeny). — Arango 2003b: 2746 (key), 2747–2748, 2765, tab. 2. — Arango & Wheeler 2007: appendix 1, tab. 3, figs 1–4 (phylogeny), fig. 8 (phylogeny). — Müller & Krapp 2009: 10–13, 85 (key), 88–90, fig. 47, 129–131, 137 (list), tabs 1–3. — Arabi *et al.* 2010: tab. 2, figs 1–3 (phylogeny). — Krapp & Viquez 2011: tab. 1. — Lucena *et al.* 2015: 430–432, figs 1–5; 2019: tab. 1. — Lucena & Christoffersen 2016: 2, 6; 2018a: 103, 111; 2018b: 374 (key), 375–376. — Sabroux *et al.* 2017: 6, appendices 1–2, figs 3–5 (phylogeny); 2019b: 1525, 1531, tab. 1, figs 3, 5. — León-Espinosa *et al.* 2021: 153, tab. 1. — Ramírez-Tello *et al.* 2022: 152, 161, tab. 1.
Anoplodactylus stylirostris – Lalana & Ortiz 1994: 208, tab. 1. — Child 2009: 820 (list).

Type material

Pycnosoma batangense Helfer, 1938. Holotype: ZMB_Pyc_285 (not examined). Type locality: Grand Batanga, Cameroun, Gulf of Guinea.

Anoplodactylus intermedius Hilton, 1942. Type(s): unknown. Type locality: Hawaiian Islands.

Anoplodactylus stylirostris Hedgpeth, 1948. Holotype: USNM 81094 (not examined). Type locality: off southeast Loggerhead Key, Tortugas, Florida.

Anoplodactylus tenuirostris Lebour, 1949. Type(s): unknown. Type locality: Bermuda, the Reach.

Material examined

MARTINIQUE • 1 ♂; Le Vauclin; 14°32.7′ N, 60°49.8′ W; depth 2 m; 12 Sep. 2016; st. AD229; MNHN-IU-2016-799/MK411122 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2016-896 • 1 ♂; E of Le Robert; 14°40.1′ N, 60°51.1′ W; depth 14 m; 18 Sep. 2016; st. AB191; MNHN-IU-2016-800/MK411123 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1144 • 1 ♀; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-801/MK411124 •

1 ♂; same collection data as for preceding; MNHN-IU-2016-566 • 1 ♀ gr.; Pointe Michel; 14°26.4′ N, 60°49.3′ W; depth 2 m; 12 Sep. 2016; st. AB120; MNHN-IU-2016-892 • 1 ♀ gr.; Baie de Fort-de-France; 14°32.6′ N, 61°04.7′ W; depth 0–1 m; 6 Sep. 2016; st. AM002; MNHN-IU-2016-893 • 3 ♀♀; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-894 • 1 ♀; Anse d'Arlet; 14°29.4′ N, 61°05′ W; depth 12 m; 6 Sep. 2016; st. AD203; MNHN-IU-2016-895 • 1 ♂ ov.; Pointe Baham; 14°24.7′ N, 60°50.1′ W; depth 2 m; 11 Sep. 2016; st. AB117; MNHN-IU-2016-572 • 1 ♂ ov.; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 4–10 m; 14 Sep. 2016; st. AB123; MNHN-IU-2016-1068 • 1 juv.; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1081 • 3 ♂♂, 1 ♂ ov., 2 ♀♀, 1 juv.; same collection data as for preceding; MNHN-IU-2016-1215 • 3 ♂♂, 2 ♀♀, 1 juv.; same collection data as for preceding; MNHN-IU-2016-1236 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-1403 • 1 ♂ ov.; Presqu'Île de la Caravelle; 14°47.5′ N, 60°57.4′ W; depth 14 m; 4 Oct. 2016; st. AB562; MNHN-IU-2016-1088 • 1 preadult ♀; Presqu'Île de la Caravelle; 14°45.4′ N, 60°58′ W; depth 0–2 m; 22 Sep. 2016; st. AM027; MNHN-IU-2016-1097 • 1 ♀ gr.; Baie de Sans-Souci; 14°34.7′ N, 60°50.7′ W; depth 0–1 m; 9 Oct. 2016; st. AM325; MNHN-IU-2016-1099 • 1 ♂; NE Pointe Jacob; 14°36.1′ N, 60°49′ W; depth 23 m; 17 Sep. 2016; st. AB185; MNHN-IU-2016-1101 • 1 ♀; Grande Anse du Diamant; 14°28′ N, 61°02.8′ W; depth 0–1 m; 27 Sep. 2016; st. AM033; MNHN-IU-2016-1110 • 3 ♂♂, 1 ♀; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2016-1122 • 1 ♂; Trois Rivières; 14°27.8′ N, 60°57.9′ W; depth 3–4 m; 25 Sep. 2016; st. AB356; MNHN-IU-2016-1164 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-1269 • 2 ♂♂, 2 ♀♀; Trois Rivières; 14°27.7′ N, 60°57.8′ W; depth 4–5 m; 25 Sep. 2016; st. AB354; MNHN-IU-2016-1171 • 1 ♀ gr.; Le Vauclin; 14°32′ N, 60°49′ W; depth 1 m; 16 Sep. 2016; st. AB130; MNHN-IU-2016-1188 • 1 ♀ gr.; Îlet La Perle; 14°50.5′ N, 61°13.7′ W; depth 23 m; 1 Oct. 2016; st. AS375; MNHN-IU-2016-1206 • 1 ♀; Presqu'Île de la Caravelle; 14°47.3′ N, 60°57.4′ W; depth 19 m; 21 Sep. 2016; st. AB301; MNHN-IU-2016-1228 • 4 ♂♂, 4 ♂♂ ov., 3 ♀♀; Le François; 14°37′ N, 60°49.5′ W; depth 1 m; 17 Sep. 2016; st. AB134; MNHN-IU-2016-1232 • 1 ♀ gr.; Anse Céron; 14°50.1′ N, 61°13.4′ W; depth 0–2 m; 3 Oct. 2016; st. AM039; MNHN-IU-2016-1240 • 1 ♀; Anse des Galets; 14°51.4′ N, 61°12.8′ W; depth 10 m; 7 Oct. 2016; st. AB567; MNHN-IU-2016-1245 • 1 ♂ ov., 1 ♀ gr.; Baie du Robert; 14°40.2′ N, 60°52.5′ W; depth 11 m; 24 Sep. 2016; st. AS403; MNHN-IU-2016-1267 • 1 ♂, 1 ♀ gr.; Presqu'Île de la Caravelle; 14°44.5′ N, 60°53.5′ W; depth 5–12 m; 17 Sep. 2016; st. AD241; MNHN-IU-2016-1291 • 1 ♂; same collection data as for preceding; MNHN-IU-2017-3915 • 1 ♀ gr.; Presqu'Île de la Caravelle; 14°45.5′ N, 60°52.8′ W; depth 2 m; 22 Sep. 2016; st. AB149; MNHN-IU-2017-2558.

Remarks

This species, characterized by its slender, tapering proboscis, is widely distributed, particularly common in the Western Atlantic and one of the most abundant of the present study. Already reported from Martinique, from Petite Anse du Diamant (Bourdillon 1955) and Ilet Cabrits, Cap Chevalier, Petite Anse Macabou and Baie de Tartane (Müller 1990a), this species was collected on both the Atlantic and Caribbean coasts, although none were found along the coast between Saint-Pierre and Fort-de-France where the slope is the steepest.

Distribution

Circumtropical species: Tropical West Atlantic (South Florida, Gulf of Mexico, Caribbean, Brazil), Gulf of Guinea, Indo-Pacific (Indonesia, Papua-New Guinea, Philippines, Eastern Australia, New Caledonia, Tonga, Hawaii), East Pacific (Costa Rica and Panama).

Depth range

0–40 m.

***Anoplodactylus* cf. *californicus* Hall, 1912**
Fig. 21

Anoplodactylus californicus Hall, 1912: 91–93, fig. 49.
Anoplodactylus portus Calman, 1927: 405–408, fig. 103.
Anoplodactylus carvalhoi Marcus, 1940: 40 (key), 50–54, fig. 3.
Anoplodactylus projectus Hilton, 1942c: 45–47, fig. 3a–b.

Anoplodactylus californicus – Hall 1913: 129–130. — Hilton 1915a: 69; 1915b: 201, 205; 1920: 93; 1939: 29; 1942a: 288–291, pl. 39; 1942d: 72. — Marcus 1940: 40 (key). — Child 1987: 554–555; 1992a: 37; 1992b: 39 (key), 43, tab. 5, fig. 19; 1995: 113 (summary), 122 (key), 123–124; 2004: 155; 2009: 819 (list). — Müller 1990a: 284. — Bain 1991: 63–64. — Çinar *et al.* 2005: 120, tab. 1; 2011: tab. 1. — Arango & Maxmen 2006: 52–53, 60–61, 62 (key), fig. 1 (distribution), fig. 3. — Magari *et al.* 2006: tabs 1–3. — Melzer *et al.* 2006: 238–241, fig. 2b, f–g. — Arango & Wheeler 2007: appendices 1–2, tab. 3, figs 1–4 (phylogeny), 6–7, 8 (phylogeny). — Galil 2007: 303 (annex). — Krapp *et al.* 2008: 57 (list). — Müller & Krapp 2009: 10–11 (list), 85 (key), 90–93, fig. 48. — Munilla & Soler Membrives 2009: tab. 1. — Krapp & Viquez 2011: 205. — Weis & Melzer 2012 : 188 (list), 200–201, figs 2b, 10g, 11. — Bakir *et al.* 2014: tab. 1. — Vassallo *et al.* 2014: 351, tab. 2. — Koçak 2015: 192; 2019: 49 (list). — Lucena *et al.* 2015: 429, 441; 2019: 3 (list), 16–17, 19, tab. 1. — Sabroux *et al.* 2017: appendices 1–2, figs 3–5. — Wagner *et al.* 2017: 122–125, 128–130, 132–133, tab. 1, figs 2–6. — Dietz *et al.* 2018: 9–10 (feeding). — Lucena & Christoffersen 2018a: 111; 2018b: 374, 375 (key), 376, 381, 383, 385. — León-Espinosa *et al.* 2021: 183–184, 190–191, tab. 1, figs 16–18. — Colasanto & Galli 2021: 623, 628–629, tab. 1, fig. 3. — Ramírez-Tello *et al.* 2022: 152, 154, tab. 1.
Anoplodactylus californiensis – Hedgpeth 1941: 257 (key), pl. 11. — Child 1996b: tab. 1.
Anoplodactylus carvalhoi – Hedgpeth 1943: 46; 1948: 230–232, fig. 30e–g. — Bourdillon 1955: 592.
Anoplodactylus portus – Sawaya 1950: 70 (key). — Stock 1954a: 128; 1955: 238–239; 1958a: 140–141, fig. 2; 1958b: 4; 1962: 218; 1975a: 1052–1053; 1979: 15. — Lipkin & Safriel 1971: tab. 1. — Child 1975: 201; 1978: 133, 144, figs 1–4; 1979: 58; 1982a: 373. — Birkeland *et al.* 1976: 158. — Arnaud 1987: 46.
Anoplodactylus sp. 2 – Sabroux *et al.* 2019b: 1530–1531, tab. 1, fig. 3.

nec *Anoplodactylus robustus* (Dohrn, 1881) – Hilton 1939: 28–29.

Type material

Anoplodactylus californicus Hall, 1912. Topotypes (see Child 1987): USNM 231867 (not examined). Type locality: Laguna Beach, California.

Anoplodactylus portus Calman, 1927. Syntypes: NHMUK ZOO-1926.19.9–13 (not examined). Type locality: Port Said, Suez Canal.

Anoplodactylus carvalhoi Marcus, 1940. Type(s): unknown. Type locality: Bahia de Santos, Brazil.

Anoplodactylus projectus Hilton, 1942. Type(s): unknown. Type locality: Pearl Harbour, Oahu, Hawaiian Islands.

Material examined

MARTINIQUE • 1 ♀; Pointe Michel; 14°26.4′ N, 60°49.3′ W; depth 2 m; 12 Sep. 2016; st. AB120; MNHN-IU-2016-810/MK411132 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1231 • 1

♀; Pointe Michel; 14°26.4′ N, 60°49.3′ W; depth 0–2 m; 12 Sep. 2016; st. AR121; MNHN-IU-2016-811/MK411133 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-891/MK411199 • 1 ♂; Pointe Baham; 14°24.7′ N, 60°50.1′ W; depth 2 m; 11 Sep. 2016; st. AB117; MNHN-IU-2016-855/MK411168 • 1 juv.; same collection data as for preceding; MNHN-IU-2016-571 • 1 juv; Grande Anse du Diamant; 14°28′ N, 61°02.8′ W; depth 0–1 m; 27 Sep. 2016; st. AM033; MNHN-IU-2016-864/MK411176.

Remarks

The Madibenthos material matches with the descriptions in Child (1992b) and Müller & Krapp (2009) of *Anoplodactylus californicus* for most characters. Instead of lateral processes with rounded tubercles, as represented in Child's and Müller & Krapp's specimens, Madibenthos specimens show distal angular thickening. *Anoplodactylus califorinicus* was already recorded in Martinique (as *A. carvalhoi*) by Bourdillon (1955) and Müller (1990a), but Bourdillon's illustrations show differences from the Madibenthos material. For example, the ocular tubercle is somehow lanceolate (narrower at the base, broader at mid-length, with tapering tip) in the Madibenthos material, while it is represented as conical by Bourdillon. We note that the ocular tubercle shape is highly variable in the illustrations of different authors, more or less tapering, conical or rounded (e.g., Hall 1912; Child 1992b; Müller & Krapp 2009; Weis & Melzer 2012). Regarding molecular data, p-distances from some previously sequenced material from the Colombian Caribbean identified as *A. californicus* (GenBank reference DQ390068; Arango & Wheeler 2007) are relatively low (0.047). Therefore, a revision of this widespread and multi-synonymised species is needed. Until then, we only allegedly link Madibenthos material to this species as *Anoplodactylus* cf. *californicus*.

Distribution

Recorded in the Eastern Pacific (California, Ecuador, Mexico, Chile, Costa Rica, Nicaragua, Panama) and in Hawaii and the Panama Canal. It is also often recorded in the Caribbean Sea (Belize, Caribbean Panama, Bahamas, Martinique, Colombia, Costa Rica, Curaçao, Bonaire, Saint Kitts and Nevis, Virgin Islands, Porto Rico), the Gulf of Mexico and the Western Atlantic in Brazil and Argentina southward to the Magellan Strait. It is also recorded from the Mediterranean, in the Thyrrenean and Levantine Seas, as well as in the Suez Canal.

Depth range

Intertidal–100 m.

Anoplodactylus digitatus (Böhm, 1879)

Phoxichilidium (*Anoplodactylus*) *digitatum* Böhm, 1879: 184–185, pl. 2 fig. 2a–b.
Anoplodactylus saxatilis Calman, 1923: 287–288, fig. 13.
Anoplodactylus investigatoris Calman, 1923: 288–289, fig. 14.

Anoplodactylus digitatus – Loman 1908: 74–76, pl. 2 figs 25–28. — Stock 1965: 28–29; 1968a: 49; 1992a: 94; 1994: 19 (list), 57. — Lipkin & Safriel 1971: tab. 1. — Arnaud 1987: 45. — Müller 1992b: 164–166, figs 18–26. — Child 1996c: 551–552. — Arango 2003b: 2747 (key), 2750, 2757, tab. 2, fig. 10. — Chimenz Gusso & Lattanzi 2003: 257–258, tab. 1. — Arango & Maxmen 2006: 52, 54, 58, 60, 63 (key), figs 1 (distribution), 2d. — Bakir *et al.* 2014: tab. 1. — Koçak 2014: 378–380, figs 2–4; 2015: 192, tab. 1; 2019: 49 (list). — Lucena *et al.* 2018: tab. — Sabroux *et al.* 2019b: tab. 1, fig. 3.
Anoplodactylus saxatilis – Calman 1927: 405. — Stock 1958a: 139–140, fig.1a–c.

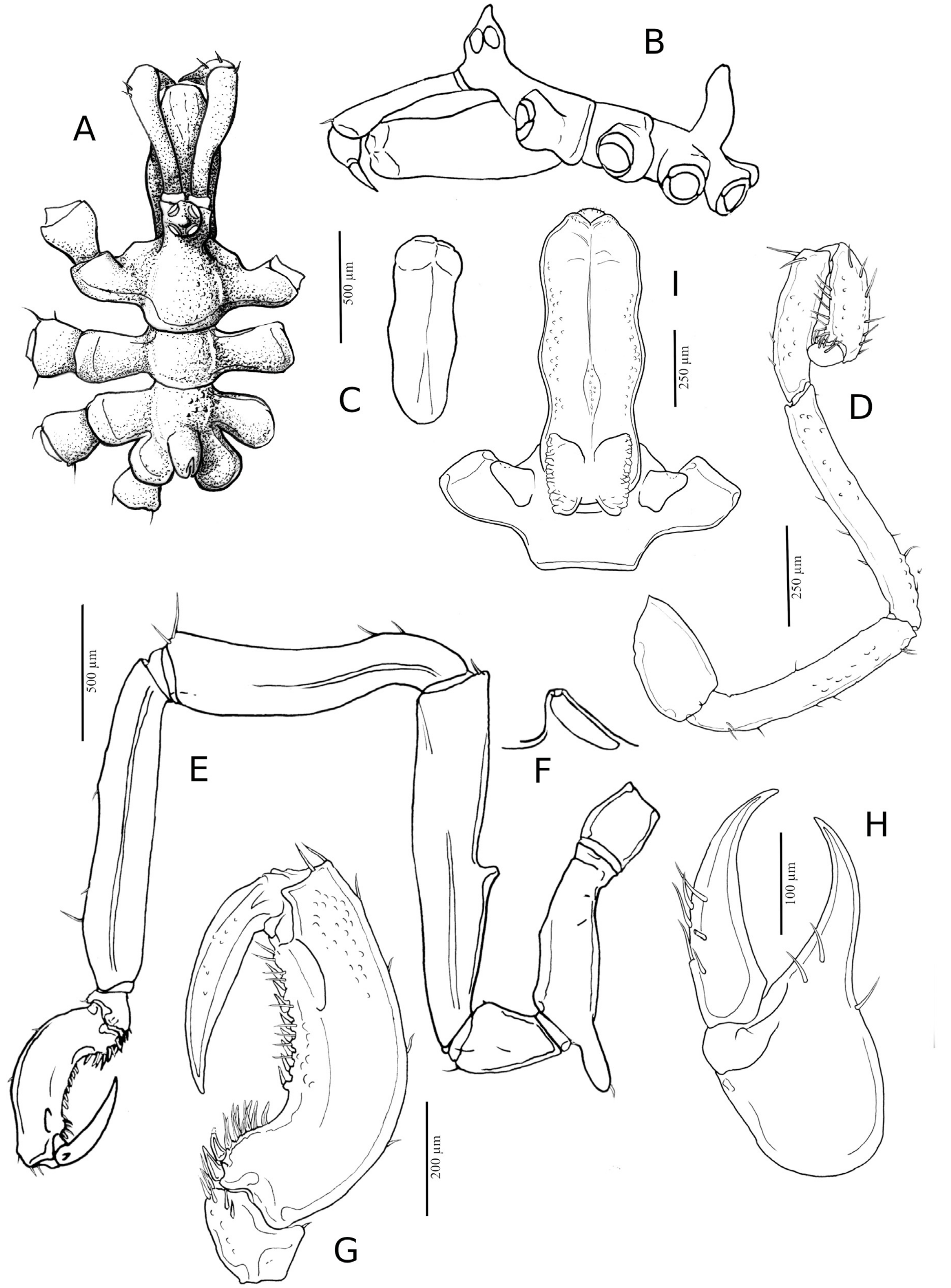

Fig. 21. *Anoplodactylus* cf. *californicus* Hall, 1912. **A–H**. ♂, MNHN-IU-2016-855. **I**. ♀, MNHN-IU-2016-810. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Proboscis, ventral view (same scale as A). **D**. Oviger. **E**. Third leg. **F**. Cement gland tube. **G**. Propodus of third leg. **H**. Chela. **I**. Cephalon and proboscis, ventral view.

Anoplodactylus investigatoris – Stock 1954b: 85–86, figs 37a–b, 38b; 1958b: 4. — Bourdillon 1955: 593–594, pl. 2 figs 1–3. — Veena *et al.* 2008: 17, tab. 1.
Anoplodactylus cf. *digitatus* – Arnaud 1974: 174.
Phoxichilidium (*Anoplodactylus*) *digitatum* – Dunlop *et al.* 2007: 53, fig. 20.

Type material

Phoxichilidium (*Anoplodactylus*) *digitatum* Böhm, 1879. Holotype: ZMB_Pyc_12 (not examined). Type locality: Singapore.

Anoplodactylus saxatilis Calman, 1923. Type(s): unknown. Type locality: Marble Rocks, Mergui Archipelago, Myanmar.

Anoplodactylus investigatoris Calman, 1923. Type(s): unknown. Type locality: Madras, outside harbour, India.

Material examined

MARTINIQUE • 1 ♂; Baie de Fort-de-France; 14°36.1′ N, 61°04′ W; depth 0–1 m; 29 Sep. 2016; st. AM034; MNHN-IU-2016-875 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-876/MK411186 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2016-1152/MK411065 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1328.

Remarks

This species is widely distributed through the Indian Ocean, with some records in the eastern Mediterranean (Arango & Maxmen 2006). On the other hand, records of this species in Atlantic are rare. It may have been found near the Azores, though the record is unusually deep for the species, and Arnaud (1974) mentioned that the sampled female was "close to *A. digitatus*, without being identifical" without further explanation. The species was already known from Martinique, only recorded from the port of Fort-de-France (Bourdillon 1955; confirmed by the present study).

Distribution

Tropical Indo-Pacific (Indonesia, Madagascar, India, Myanmar, Malaysia, Oman, Singapore, Great Barrier Reef), Eastern Mediterranean and Marmara Sea. Some records from Martinique and Azores (?).

Depth range

Intertidal to 75 m (most records between 0 and 5 m); one record of *Anoplodactylus* cf. *digitatus* in Arnaud (1974) at 600 m.

Anoplodactylus evelinae Marcus, 1940

Anoplodactylus evelinae Marcus, 1940: 55–58, fig. 4.

Anoplodactylus evelinae – Hedgpeth 1948: 232, fig. 31. — Sawaya 1950: 72. — Child 1979: 53; 1982a: 368; 2004: 157–158. — Stock 1979: 27; 1986: 404; 1992a: 130, 139. — Varoli 1996: 42, tabs 1–2. — Müller & Krapp 2009: 10–13, 85 (key), 93–95, 133, 137 (list), tabs 1–4, fig. 49. — Lucena & Christoffersen 2016: 2, 4, 6; 2018a: 102, 112; 2018b: 374 (key), 377. — Lucena *et al.* 2019: 3 (list), 18, 20–21, tab. 1. — Sabroux *et al.* 2019b: tab. 1, fig. 3. — Ramírez-Tello *et al.* 2022: tab. 1.
Anoplodactylus (*Labidodactylus*) *evelinae* – Stock 1954a: 128; 1975a: 1083.
Anoplodactylus evelynae – Varela 2012: 2, fig. 1c.

Type material

Type(s): not designated ? (see Lucena & Christoffersen 2018a). Type locality: Ilha das Palmas, São Paulo, Brazil.

Material examined

MARTINIQUE • 1 ♂ ov.; Le Lorrain; 14°50.7′ N, 61°03.8′ W; depth 11–14 m; 6 Oct. 2016; st. AS565; MNHN-IU-2016-1116 • 1 ♂; Le François; 14°37′ N, 60°49.5′ W; depth 1 m; 17 Sep. 2016; st. AB134; MNHN-IU-2016-1233/MK411084.

Remarks

First record from Martinique. The two specimens were sampled on the Atlantic coast.

Distribution

Tropical West Atlantic (Gulf of Mexico, Caribbean, Brazil).

Depth range

Intertidal to 30 m.

Anoplodactylys ganchiformis Lucena & Christoffersen, 2018

Anoplodactylus ganchiformis Lucena & Christoffersen, 2018b: 374, 375 (key), 384, fig. 4.

nec *Anoplodactylus stictus* Marcus, 1940 – Sabroux *et al.* 2019b: 1525, tab. 1, fig. 3.

Material examined

MARTINIQUE • 1 ♀; Baie de Fort-de-France; 14°36.1′ N, 61°04′ W; depth 0–1 m; 29 Sep. 2016; st. AM034; MNHN-IU-2016-854/MK411167 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-575/MK411117 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-1413 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1414.

Type material

Holotype: UFPB PYC-242 (not examined). Type locality: Jericoacoara, Ceará, Brazil.

Remarks

The specimens were mistakenly listed as *Anoplodactylus stictus* Marcus, 1940 in Sabroux *et al.* (2019b). The distance between the lateral processes and the shape of proboscis extensions (alar rather than cordiform) do not match the descriptions in Marcus (1940) or Lucena & Christoffersen (2018b). The specimens from Martinique greatly resemble the description of *Anoplodactylus ganchiformis* Lucena & Christofersen, 2018 from Brazil, including the conical ocular tubercle, the more elongated trunk relative to other species of the *Anoplodactylus californicus-digitatus* species complex of Arango & Maxmen (2006), the shape of all the processes and the hook at the base of the third article of the oviger. The dorsodistal tubercles of the lateral processes are, however, much lower in Martinique specimens.

The specimen MNHN-IU-2016-1413 shows two differences compared to the other specimens assigned to *A. ganchiformis*: it is slightly more elongated and has completely inconspicuous lateral processes on the dorsodistal tubercles. No CO1 data could be sequenced for this specimen.

All these specimens were collected on ship hulks in the Baie de Fort-de-France.

Ditribution

Previously recorded in Brazil, and now in Martinique.

Depth range

0–1 m.

Anoplodactylus glandulifer Stock, 1954

Anoplodactylus glandulifer Stock, 1954b: 80–84, fig. 36.
Anoplodactylus multiclavus Child, 1977b: 593, fig. 4.
Anoplodactylus dauphinus Child, 1992b: 38 (key), 43–46, tab. 5, fig. 20.

Anoplodactylus glandulifer – Stock 1958b: 3; 1968a: 49; 1974: 16; 1992b: 94–95; 1994: 19 (list), 59. — Arnaud 1973a: 955, figs 1–2. — Child 1982c: 273–274; 1988b: 59; 1990: 331; 1991: 143–144; 1996a: 530; 1998b: 294 (list). — Nakamura & Child 1988b: 813. — Müller 1990d: 74; 1992b: 166, figs 27–30. — Bamber 1992: 193–194; 2004: tab. 2. — Arango 2002: tab. 1, fig. 2–4 (phylogeny); 2003b: 2747 (key), 2750–2751, 2765, tab. 2. — Lee & Arango 2003: 347. — Paulay *et al.* 2003: appendix (list). — Müller & Krapp 2009: 11–12, 85 (key), 95–97, 129–130, 133, 137 (list), tabs 1–2, fig. 50. — Lucena *et al.* 2018: tab. — Wang *et al.* 2020: tab. 1. — Ramírez-Tello *et al.* 2022: tab. 1.
Anoplodactylus multiclavus – Child 1979: 58; 1982a: 372. — Stock 1986: 404, 439.
Anoplodactylus dauphinus – Child 1998b: 293 (list); 2009: 819 (list).
Anoplodactylus glandulifera [sic] – Sabroux *et al.* 2019b: tab. 1.
Anoplodactylus cf. *glandulifer* – Sabroux *et al.* 2019b: fig. 3.

Type material

Anoplodactylus glandulifer Stock, 1954. Holotype: NHMD 110667 (material missing; not examined). Type locality: Singapore.

Anoplodactylus multiclavus Child, 1977. Holotype: USNM 154807 (not examined). Type locality: Pillsbury Sound, Vessup Bay, St Thomas, Virgin Islands.

Anoplodactylus dauphinus Child, 1992. Holotype: USNM 212648 (not examined). Type locality: NW of Clearwater, Florida Middle Ground, 28°32′ N, 84°18′ W.

Material examined

MARTINIQUE • 1 ♀ gr.; Baie de Fort-de-France; 14°36.1′ N, 61°04′ W; depth 0–1 m; 29 Sep. 2016; st. AM034; MNHN-IU-2016-877/MK411187 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2016-1148 • 1 ♂ ov.; Baie de Fort-de-France; 14°33′ N, 61°03.7′ W; depth 2 m; 7 Sep. 2016; st. AB104; MNHN-IU-2016-901 • 1 ♂; SE of Pointe Cerisier; 14°35.6′ N, 60°50.8′ W; depth 2–3 m; 15 Sep. 2016; st. AD235; MNHN-IU-2016-1111 • 1 ♂; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1401 • 1 ♀; same collection data as for preceding; MNHN-IU-2016-1402.

Remarks

Müller & Krapp (2009) suggested that *Anoplodactylus dauphinus* and *A. multiclavus* are two junior synonyms of this species. The only specimen for which barcoding worked is a female (MNHN-IU-2016-877), meaning that it was not possible to validate its identification by the observation of cement glands. However, females attributed to this species are similar to identified males for all other characters (including length of the sole lamina, presence of a propodal heel, shape of the ocular tubercle, shape of chelae carrying teeth, constriction near the tip of the proboscis), which in turn fit with the descriptions of Stock (1954b) and Müller & Krapp (2009). In addition, both females were collected at localities where males of *A. glandulifer* were found. We are therefore confident in the attribution of the CO1 barcode sequence MK411187 to the species *A. glandulifer*.

This species is mostly known from the Indo-Pacific, although it has regularly been sampled in the Western Atlantic. This is the first record of this species from Martinique; the species was collected on the Atlantic and Caribbean coasts, and in the Baie de Fort-de-France.

Distribution

Pantropical: Tropical West Atlantic (Caribbean, Gulf of Mexico), Indian Ocean (Aldabra, Madagascar, Seychelles, Kenya, Oman, Malaysia, Singapore), Australia (Great Barrier Reef and Timor Sea), Southern China Sea (Hong Kong), Pacific (Samoa, Guam, Marshall Islands, Marianas Island).

Depth range

Intertidal to 78 m.

Anoplodactylus imswe Child, 1982

Anoplodactylus imswe Child, 1982a: 369–371, fig. 166.

Anoplodactylus imswe – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: USNM 171122 (not examined). Type locality: Tobacco Reef, 500 m N of South Water Cay, Carrie Bow Cay, Belize.

Material examined

MARTINIQUE • 1 ♂; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-900 • 1 ♀; NE of Pointe Jacob; 14°36.1′ N, 60°49′ W; depth 23 m; 17 Sep. 2016; st. AB185; MNHN-IU-2016-1102/MK411050 • 1 ♀; Le Lorrain; 14°50.7′ N, 61°03.8′ W; depth 11–14 m; 6 Oct. 2016; st. AS565; MNHN-IU-2016-1117 • 1 ♂; NE of Pointe du Vauclin; 14°34.9′ N, 60°48.4′ W; depth 18–20 m; 26 Sep. 2016; st. AS409; MNHN-IU-2016-1205/MK411081 • 1 ♂ ov.; same collection data as for preceding; MNHN-IU-2017-215 • 1 ♂, 1 ♀; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1262.

Remarks

This is the first record of this species since its original description from Belize; it was only collected on the Atlantic coast of Martinique. Males are identical to those described by Child (1982a), except that the ventral spur of coxae 2 on the third and fourth legs are generally slightly less marked than shown by Child, although it remains very prominent. Females have no ventral spurs on coxae 2 of the third and fourth legs, but a conspicuous ventral bulge is present on coxae 2 of all four legs, on the top of which stand the gonopores. We note no other differences from males apart from sexual characters.

Distribution

Known from Belize and Martinique.

Depth range

Intertidal, extended to 23 m.

Anoplodactylus insignis (Hoek, 1881)

Phoxichilidium insigne Hoek, 1881b: 82–84, pl. 14 figs 5–7.

Anoplodactylus insignis var. *bermudensis* – Cole 1904a: 325–327, pl. 20 figs 1–3. — Marcus 1940: 40.
Anoplodactylus insignis – Marcus 1940: 58–60. — Hedgpeth 1943: 45; 1948: 226–228, fig. 28d–g. — Stock 1954a: 127; 1955: 235; 1975a: 1056–1058, fig. 44; 1986: 437. — Kraeuter 1973: 494. — Krapp & Kraeuter 1976: 337. — Child 1992b: 39 (key), 46–49, tabs 5, 12, 14, fig. 21. — Arango 2000: 62–63, fig. 2; 2002: tab. 1, figs 2–4 (phylogeny). — Lucena & Christoffersen 2018a: 102, 112; 2018b: 374, 375 (key), 377–378, fig. 2. — Sabroux *et al.* 2019b: tab. 1, fig. 3. — Ramírez-Tello *et al.* 2022: 154, 162, tab. 1.
Anoplodactylus insignis var. *calcaratus* – Stock 1986: 437–438, fig. 15a–b.

Type material

Holotype: NHMUK ZOO-1881.38 (not examined). Type locality: off Bahia, Brazil.

Material examined

MARTINIQUE • 1 ♀; Canal de Ste Lucie; 14°24.46′ N, 60°53.06′ W; depth 60 m; 11 Sep. 2016; st. AD226; MNHN-IU-2016-808/MK411130 • 1 ♂; Macouba; 14°55.1′ N, 61°09.2′ W; depth 100 m; 24 Sep. 2016; st. AD262; MNHN-IU-2016-809/MK411131.

Remarks

This is the first record of this species from Martinique. One specimen was collected in the north and another in the south.

Distribution

Widespread in the Western Atlantic: North Carolina, Georgia, Florida, Strait of Florida, Caribbean, Yucatan Channel, Gulf of Mexico, Guiana, Surinam, French Guiana, Brazil.

Depth range

0–90 m, extended to 100 m.

? ***Anoplodactylus justi*** Müller, 1992

Anoplodactylus justi Müller, 1992a: 48–50, figs 15–19.

Anoplodactylus cf. *justi* – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: NHMD 110625 (not examined). Type locality: 800 m off Holetown shore, Barbados, West Indies.

Material examined

MARTINIQUE • 1 ♀; Bellefontaine; 14°40.4′ N, 61°10.6′ W; depth 70 m; 4 Oct. 2016; st. AD298; MNHN-IU-2016-1273/MK411093.

Remarks

Anoplodactylus justi has not been found since original description and is known from only one male specimen from Barbados. According to Müller (1992a), the best criterion for identification of *A. justi* relies on the shape and position of the cement gland tubes, but these are only present in males. Other characters correspond to Müller's description.

Distribution

West Indies. Apart from the present record, known only from the type locality in Barbados.

Depth range

Anoplodactylus justi is known to live at a depth of 54 m. The present collection was made at 70 m.

Anoplodactylus madibenthos sp. nov.

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Figs 22A–J, 23

Anoplodactylus sp. 1. – Sabroux *et al.* 2019b: 1531, tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • ♂; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 2 m; 24 Sep. 2016; st. AB452; MNHN-IU-2016-1071/MK411043.

Paratypes

MARTINIQUE • 1 ♀; Les Anses-d'Arlet; 14°29.6′ N, 61°05.5′ W; depth 8–12 m; 7 Sep. 2016; st. AR103; MNHN-IU-2016-807/MK411129 • 1 ♀; Pointe Michel; 14°26.4′ N, 60°49.3′ W; depth 2 m; 12 Sep. 2016; st. AB120; MNHN-IU-2016-537 • 1 juv.; Case-Pilote; 14°38.9′ N, 61°09.1′ W; depth 0–14 m; 27 Sep. 2016; st. AS365; MNHN-IU-2016-1078 • 1 ♀; Trois Rivières; 14°27.8′ N, 60°57.9′ W; depth 3–4 m; 25 Sep. 2016; st. AB356; MNHN-IU-2016-1202/MK411079 • 1 ♂ ov., 1 ♀; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1235 • 1 ♂; same collection data as for preceding; MNHN-IU-2019-3401 • 1 juv.; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 1–3 m; 24 Sep. 2016; st. AR453; MNHN-IU-2016-1321 • 1 ♂, 1 ♀, 4 juvs; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-1453.

Etymology

Apposition. Named after the Madibenthos Expedition.

Description (holotype, ♂, MNHN-IU-2016-1071)

BODY. Small-sized species, slender, cuticle granular. Trunk incompletely segmented with segments 3 and 4 fused. No dorsal ornamentation. Post-ocular neck short. Ocular tubercle about twice as tall as wide, with rounded tip and four pigmented eyes. 1st and 2nd lateral processes about 1.5 times as long as wide, 3rd and 4th articles about as long as wide, all well separated by about their own diameter, without ornamentation.

PROBOSCIS. Elongated and cylindrical, widening at mid-length; proboscis tip not reaching further than chelifore scape.

ABDOMEN. Long, tapering distally, oriented diagonally. No basal articulation.

CHELIFORE. 2-articled, fingers reaching not far beyond mouth. Scape 1-articled, slender, about 5 times as long as wide. Chela small, palm and fingers of about same size. Fingers curved, subequal, with few teeth: four teeth on movable finger, six on immovable finger.

PALP. Absent.

OVIGER. 6-articled. 1st article about as long as wide. 2nd article about 3 times as long as wide, carrying scarce setae. 3rd article longest, gently curved, about 1.5 times as long as 2nd and 10 times as long as wide, with scarce setae. 4th article gently curved, about 3 times as long as wide, with setae on outer surface. 5th article about ⅔ length of 4th, less than 3 times as long as wide, with scarce setae on inner and outer surfaces. 6th article shortest, about ⅔ length of 5th and twice as long as wide, carrying setae on inner surface.

LEGS. Slender. Coxae 1 and 3 subequal, slightly longer than wide, coxa 1 carrying dorsodistal setae. Coxa 2 about 3 times as long as basal width, slightly shorter than coxae 1 and 3 together; small spur present on ventral surface near distal margin carrying gonopore on 3rd and 4th legs. Coxa 3 carrying ventral setae. Femur, tibia 1, tibia 2 and propodus longer on 1st and 2nd legs than on 3rd and 4th legs. Femur widening distally, about 5 times (1st leg) and 4 times (3rd leg) as long as distal width, carrying scarce setae; one dorsal spur on distal margin carrying one long seta. Cement gland pore carried on femur as low, straight and elongated aperture. Tibia 1 curved, about 10 times (1st leg) and 7 times (3rd leg) as long as basal width and subequal to femur, carrying many setae along and one long dorsal seta at distal margin. Tibia 2 10 times (1st leg) and 8 times (3rd leg) as long as wide and subequal to femur and tibia 1, with several setae along and one long dorsal seta on distal fourth. Tarsus short, about as long as wide, carrying setae and one ventral spine on distal margin. Propodus about 0.6 times as long as tibia 2 and about 4 times as long as wide, straight, with setae and one long seta distally; heel carrying 2 heel spines, the distal larger and pectinated; sole carrying 12 short spines and very short lamina distally. Main claw reaching heel spines, slightly curved, slenderer and longer on 1st and 2nd legs than on 3rd and 4th legs. No auxiliary claw.

MEASUREMENTS (mm). Trunk 1.06; abdomen 0.40; proboscis 0.57; chelifore 0.55; coxa 1 0.23; coxa 2 0.45; coxa 3 0.28; femur 1.23 (1st leg), 1.04 (3rd leg); tibia 1 1.12 (1st leg), 0.93 (3rd leg); tibia 2 1.08 (1st leg), 0.93 (3rd leg); tarsus 0.17 (1st leg), 0.15 (3rd leg); propodus 0.67 (1st leg), 0.57 (3rd leg); main claw 0.56 (1st leg), 0.42 (3rd leg).

Sexual dimorphism

Females larger, without oviger, femur moderately inflated, without cement gland. All four pairs of coxa 2 carrying gonopore on ventral surface, at the tip of a low distal bulge (Fig. 23).

Remarks

The propodal pectinated spine is observed in five species: *Anoplodactylus madibenthos* sp. nov., *A. exageratus* Stock, 1994 from Indonesia, *A. perissoporus* Arango & Krapp, 2007 from Australia, *A. tenuicorpus* Child, 1991 from the Indoacific and *A. pectinus* Hedgpeth, 1948, which is included in the present report. The three former species, which belong to the same *tenuicorpus* complex, differ a lot from *A. madibenthos* by their extreme slenderness and the ovigers which articulate with the first pair of lateral processes.

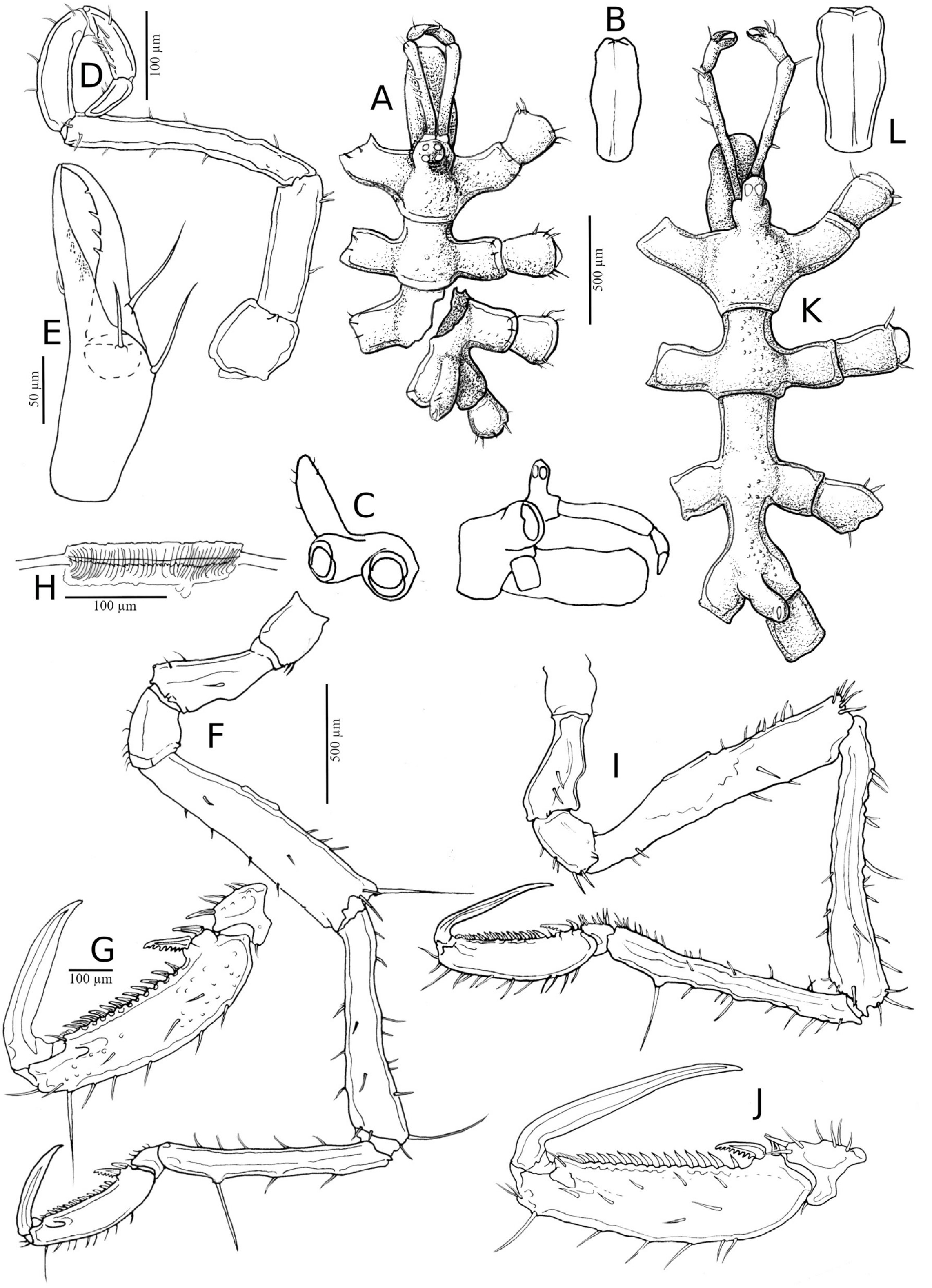

Fig. 22. Comparison of *Anoplodactylus madibenthos* sp. nov. (A–J) and *A. pectinus* Hedgpeth, 1948 (K–L). **A–J**. Holotype, ♂, MNHN-IU-2016-1071. **K–L**. MNHN-IU-2016-1254. **A**. Body, dorsal view. **B**. Proboscis in ventral view. **C**. Body lateral view (same scale as A). **D**. Oviger. **E**. Chela. **F**. Third leg. **G**. Tarsus and propodus of third leg. **H**. Cement gland opening. **I**. First leg. **J**. Tarsus and propodus of first leg. **K**. Body, dorsal view. **L**. Proboscis in ventral view (same scale a A).

The species *Anoplodactylus pectinus* (Fig. 22K–L) is morphologicaly the closest relative to *A. madibenthos* sp. nov. *Anoplodactylus pectinus* was sampled in Martinique, and we also consulted the holotype of Hedgpeth (1948). The distance between the lateral processes is larger in *A. pectinus* (peculiarly between segments 2 and 3), and the proboscis is distally widened in *A. pectinus*, whereas it is cylindrical in *A. madibenthos*. The CO1 analysis also supported a deep divergence between the two species (intraspecific p-distance = 0–0.1, interspecific p-distance = 0.174–0.180) (Sabroux *et al.* 2019b; see Appendix).

Specimens were collected on both the Atlantic and Caribbean coasts.

Distribution

Only known from Martinique.

Depth range

2–15 m.

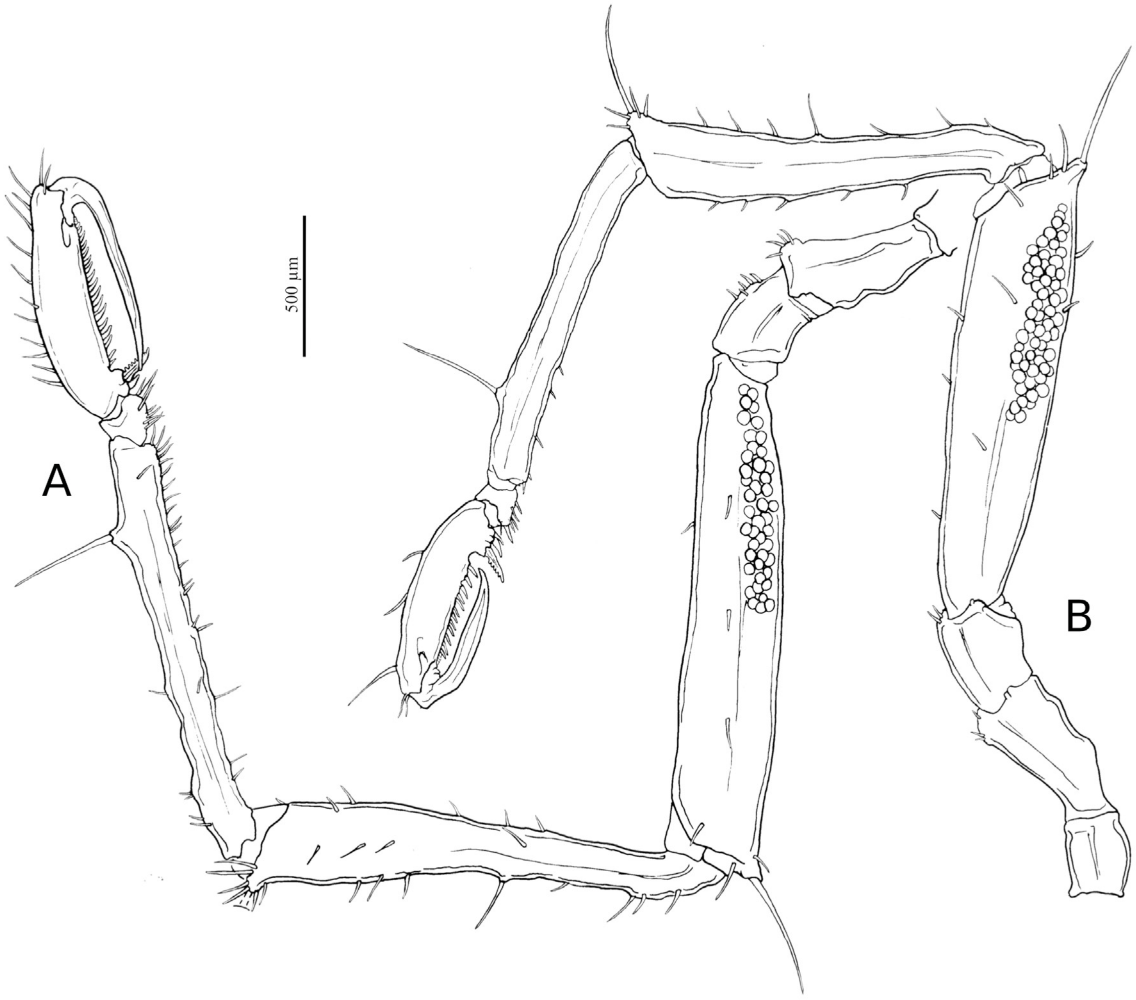

Fig. 23. *Anoplodactylus madibenthos* sp. nov., paratype, ♀, MNHN-IU-2016-1202. **A**. First leg. **B**. Third leg.

Anoplodactylus maritimus Hodgson, 1914

Anoplodactylus maritimus Hodgson, 1914: 164.
Anoplodactylus parvus Giltay, 1934a: 1–3, figs 1–5.

Anoplodactylus maritumus – Hodgson 1915: 148; 1927: 357. — Marcus 1940: 60. — Child 1982b: 21; 1992b: 39 (key), 52–53, tab. 5, fig. 23; 2009: 820 (list). — Stock 1990: 229; 1992a: 131, 139; 1994: 19 (list), 61, 63. — Bamber & Costa 2009: 168 (list), 174, fig. 3d. — Bamber 2010: 16 (list), 200, fig. 236. — Turpaeva & Raiskiy 2014: 243. — Lucena & Christoffersen 2018a: 112; 2018b: 375 (key), 378–382. — Sabroux *et al.* 2019b: tab. 1.
Anoplodactylus parvus – Hedgpeth 1948: 223–224, fig. 27e–f. — Stock 1951: 13, figs 14–16; 1954a: 127; 1957: 85; 1975a: 1069–1074, fig. 54. — Bourdillon 1955: 590–591, pl. 1 fig. 1. — Fage & Stock 1966: 326. — Kraeuter 1973: 494–495. — Ramírez-Tello *et al.* 2022: 161, 165, tab. 1.

non ?*Anoplodactylus maritimus* (= *Anoplodactylus iuleus* Stock, 1975) – Hedgpeth 1948: 230, fig. 29d–e.

Type material

Anoplodactylus maritimus Hodgson, 1914. Type(s): unknown. Type locality: Sargasso Sea.

Anoplodactylus parvus Giltay, 1934. Holotype: USNM 72790 (not examined). Type locality: Bermuda.

Material examined

MARTINIQUE • 1 ♂; Presqu’Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1140.

Remarks

This is the first record of this species in Martinique, sampled off Presqu’Île de la Caravelle.

Distribution

Amphi-Atlantic, including Virginia, Bermuda, the Caribbean, Gulf of Mexico, Brazil, Sargasso Sea, Middle Atlantic and Macaronesia (Madeira, Canary Islands, Azores).

Depth range

0–120 m.

Anoplodactylus massiliformis Stock, 1975

Anoplodactylus massiliformis Stock, 1975a: 1063–1066, figs 48–49.

Anoplodactylus massiliformis – Stock 1986: 439. — Child 1979: 56. — Lucena & Christoffersen 2018a: 103, 112. — Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: NL ZMA.PYC.P.1091 (not examined). Type locality: off the mouth of the Amazon River, Brazil.

Material examined

MARTINIQUE • 1 ♂; Rocher du Diamant; 14°26.5′ N, 61°02.4′ W; depth 26–32 m; 14 Sep. 2016; st. AS071; MNHN-IU-2016-1051/MK411037 • 1 ♂; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2016-1124/MK411055 • 1 juv.; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17–19 m; 9 Oct. 2016; st. AS579; MNHN-IU-2016-1128/MK411057 • 1 juv.; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 29 m; 18 Sep. 2016; st. AS253; MNHN-IU-2016-1263.

Remarks

This is the first record of this species in Martinique. The four specimens were collected at very different locations around the Island, on both the Atlantic and Caribbean coasts.

Distribution

Brazil, French Guiana, Guyana, Caribbean (Barbados, Martinique, Panama, Aruba), Panama Canal.

Depth range

0–100 m.

Anoplodactylus micros Bourdillon, 1955

Figs 20, 24

Anoplodactylus micros Bourdillon, 1955: 591–592, pl. 1 fig. 3–8.

Anoplodactylus micros – Stock 1986: tab. 1. — Montoya Bravo *et al.* 2009: 22–24. — Müller & Krapp 2009: 10, 86 (key), 103–105, 137 (list), tab. 1, fig. 55. — Lucena *et al.* 2015: tab. 1. — Sabroux *et al.* 2019b (pro parte): tab. 1, figs 3, 5.

Material examined

Neotype

MARTINIQUE • ♂; Les Anses-d'Arlet; 14°29.7′ N, 61°05.4′ W; depth 19 m; 7 Sep. 2016; st. AB155; MNHN-IU-2016-1325/MK411100.

Other material

MARTINIQUE • 1 ♀, 3 juvs; same collection data as for neotype; MNHN-IU-2016-1230 • 1 ♀; same collection data as for neotype; MNHN-IU-2016-1387/MK411110 • 1 ♀; same collection data as for neotype; MNHN-IU-2016-1388 • 1 ♂; Anse Noire; 14°32′ N, 61°05.3′ W; depth 13 m; 6 Sep. 2016; st. AB150; MNHN-IU-2016-802/MK411125 • 1 ♂; Grande Anse d'Arlets; 14°30.5′ N, 61°06.1′ W; depth 20–23 m; 6 Sep. 2016; st. AB152; MNHN-IU-2016-803 • 1 preadult ♀; Pointe du Vauclin; 14°33.6′ N, 60°49.7′ W; depth 2 m; 12 Sep. 2016; st. AD230; MNHN-IU-2016-804/MK411126 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-568 • 1 ♀; Grande Anse d'Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-536 • 1 ♂, 1 ♂ ov.; Baie de St-Pierre; 14°45.1′ N, 61°11′ W; depth 17 m; 4 Oct. 2016; st. AB388; MNHN-IU-2016-1059 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1386 • 1 ♂; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1080 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1218 • 1 ♂; Le Prêcheur; 14°49.1′ N, 61°13.8′ W; depth 20–25 m; 8 Oct. 2016; st. AS576; MNHN-IU-2016-1087 • 1 ♂, 1 ♀; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1139 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1250 • 1 preadult ♂; same collection data as for preceding; MNHN-IU-2016-1391 • 1 ♀; Grande Anse du Diamant; 14°27.9′ N, 61°01.4′ W; depth 17 m; 26 Sep. 2016; st. AB358; MNHN-IU-2016-1211 • 1 ♀, 1 juv.; Anse des Galets; 14°51.4′ N, 61°12.8′ W; depth 10 m; 7 Oct. 2016; st. AB567;

MNHN-IU-2016-1246 • 2 ♀♀, 4 ♀♀ gr.; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 17–19 m; 30 Sep. 2016; st. AB369; MNHN-IU-2016-1258 • 1 ♀; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2019-3390.

Description (neotype, ♂, MNHN-IU-2016-1325)

BODY. Small-sized species; trunk segmentation incomplete with 3rd and 4th segments fused; cuticle smooth. No dorsomedian ornamentation. Ocular tubercle less than twice as tall as wide, distal tip triangular, with two pointy lateral sense organs above four large pigmented eyeseyes. Two setae laterally positioned on ocular tubercle between anterior and posterior eyes. Post-ocular neck medium-sized. Lateral processes about as long as wide, well separated by less than their own diameter, 3rd and 4th the closest. Lateral processes ornamented with a rounded tubercle, bearing one seta.

PROBOSCIS. Cylindrical, with setae on ventral surface, constricted medially and distally.

ABDOMEN. Medium-sized, diagonally oriented, reaching beyond lateral processes of 4th trunk segment.

CHELIFORE. 2-articled, reaching beyond mouth. Scape 1-articled, about 4 times as long as wide, carrying setae distally. Chela carrying setae, fingers slightly longer than palm. Fingers subequal, crossing at tip, with few teeth.

PALP. Absent.

OVIGER. 6-articled, with scarce setae. 1st article about 1.5 times as long as wide. 2nd article about ¼ longer than 1st article, slenderer. 3rd article longest, 1.5 times as long as 1st, with constriction at base. 4th and 5th articles about half as long as 3rd, 5th most setose. 6th article smallest, bud-like, with distal seta.

LEGS. Stout. Coxa 1 slightly longer than wide, carrying setae at distal margin. Coxa 2 about ⅔ longer than coxa 1 or 3, with small ventrodistal spur on 3rd and 4th legs. Femur longest, more than 3 times as long as median width, with one long dorsal seta on distal margin, and one short cement gland tube, about mid-sized and slightly constricted at base. Tibia 1 about ¾ of femur length, with one long seta near distal margin. Tibia 2 about ⅔ of femur size, with one long seta on distal half rising from low tubercle. Tarsus short, trapezoid, with one ventrodistal spine. Propodus about 0.9 times as long as tibia 2, sole straight, with strong heel carrying 2 large heel spines followed by 2 smaller spines; sole carrying 2 small spines on proximal 3rd directed distally. Lamina on distal part of sole, about ⅔ of sole length. Main claw almost reaching heel, straight with terminal bending. Auxiliary claws present, very small.

MEASUREMENTS (mm). Trunk 0.44; abdomen 0.18; proboscis 0.25; chelifore 0.26; coxa 1 0.10; coxa 2 0.17; coxa 3 0.13; femur 0.41; tibia 1 0.32; tibia 2 0.3; tarsus 0.05; propodus 0.22; main claw 0.13.

Sexual dimorphism

Females with dilated femorae, no oviger.

Individual variability

Number of propodus heel spines variable, with 2 or 3 large spines and 2 or 3 smaller spines. Sole spines also variable in number, 1 or 2.

Remarks

Because the holotype is considered to be lost (Müller & Krapp 2009 and MNHN collections data), we propose the selection of a new specimen from type locality (Martinique, southern Caribbean coast) to designate as a neotype.

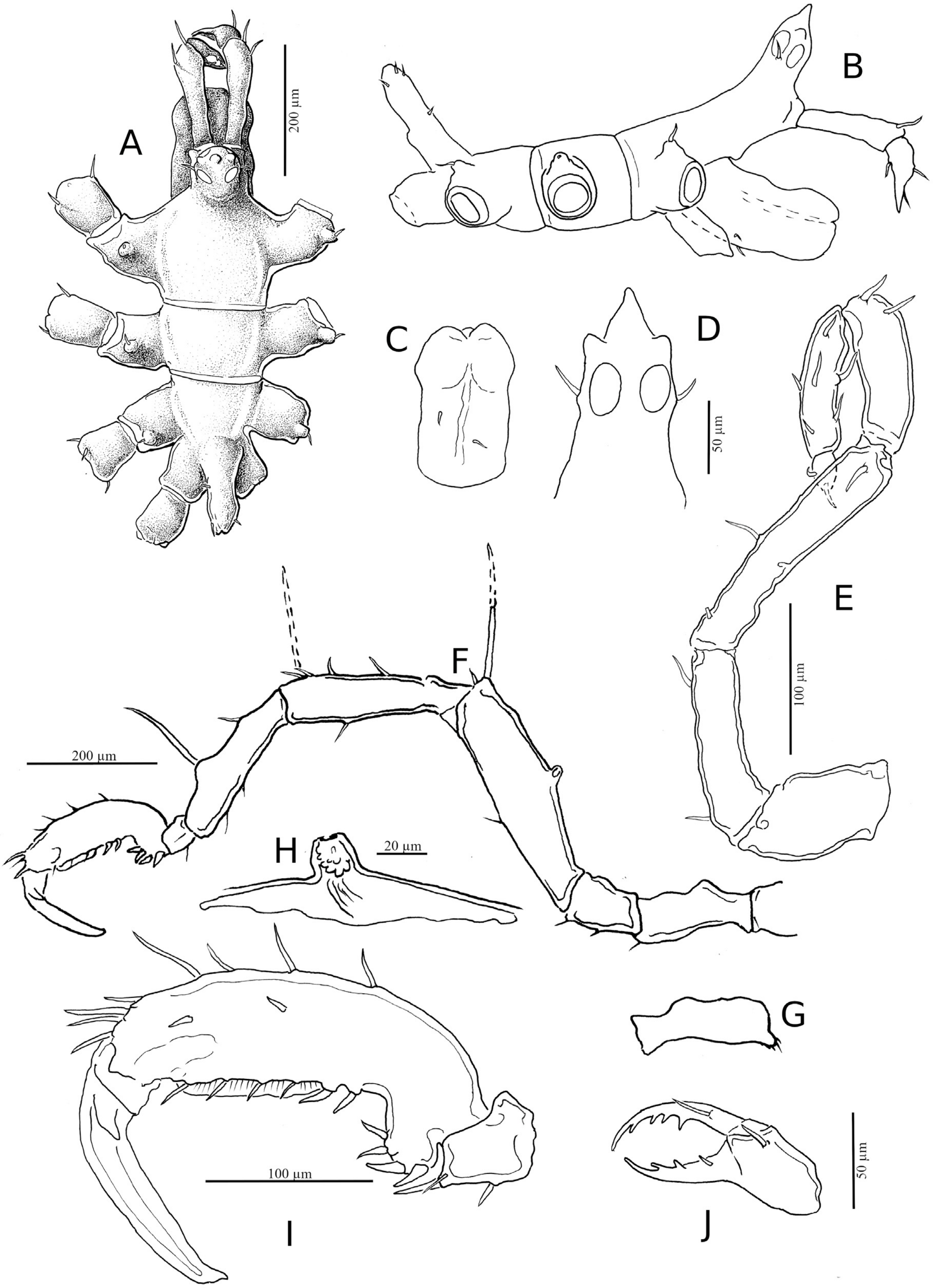

Fig. 24. *Anoplodactylus micros* Bourdillon, 1955, neotype, ♂, MNHN-IU-2016-1325. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Proboscis in ventral view (same scale as A). **D**. Ocular tubercle, frontal view. **E**. Oviger. **F**. Second leg. **G**. Cement gland opening of second leg. **H**. Coxa 2 of third leg. **I**. Tarsus and propodus of second leg. **J**. Chelifore.

According to Müller & Krapp (2009), the two similar species *Anoplodactylus micros* and *A. bahamensis* can be distinguished based on the setae on the ventral side of the proboscis in *A. bahamensis*. However, both species exhibit setae in Madibenthos material. The species differ in two aspects: (i) the most obvious is the size of the specimens, the trunk of *A. micros* in the present material and in the original description being about half as long as *A. bahamensis* as measured by Child (1977b); (ii) the cement gland opening is larger in *A. bahamensis* than in *A. micros*, although in some specimens this distinction may be tricky (Fig. 20). Regarding molecular data, the two species are clearly distinct (interspecific p-distance = 0.077–0.1). Interestingly, within the material identified as *A. micros* the presence of two clusters (Sabroux *et al.* 2019) with p-distances similar to that between *A. micros* and *A. bahamensis* (intercluster p-distance = 0.077–0.079) suggests that there may be at least two cryptic species. We thus informally describe two groups: group 1 includes the neotype, MNHN-IU-2016-1325, and specimens MNHN-IU-2016-802 and MNHN-IU-2016-1387, and group 2 is only represented by MNHN-IU-2016-804 (see Appendix for complete list).

The species *Anoplodactylus micros* was originally collected in Petite Anse du Diamant on the southern Caribbean coast (Bourdillon 1955). Here, the species was mostly found on the Caribbean coast, except six specimens sampled at Pointe du Vauclin and Presqu'Île de la Caravelle.

Distribution

So far only recorded from the Colombian Caribbean and Martinique.

Depth range

2–30 m.

Anoplodactylus monotrema Stock, 1979

Anoplodactylus monotrema Stock, 1979: 15–18, figs 4–5.

Anoplodactylus monotrema – Child 1979: 56–58, fig. 19c; 1982a: 372; 1992a: 37–38; 1992b: tab. 5. — Stock 1986: 404; 1992a: 131, 139. — Müller 1990a: 284. — Montoya Bravo *et al.* 2009: 24, figs 14–15. — Lucena & Christoffersen 2018a: 103, 112; 2018b: 374 (key), 378–382, fig. 2. — Lucena *et al.* 2019: tab. 1. — Sabroux *et al.* 2019b: tab. 1, figs 3, 5. — Ramírez-Tello *et al.* 2022: tab. 1.

Type material

Holotype: NL ZMA.PYC.P.1076 (not examined). Type locality: Santa Marta Bay, Curaçaõ.

Material examined

MARTINIQUE • 1 ♀; Presqu'Île de la Caravelle; 14°44.1′ N, 60°50.8′ W; depth 16 m; 18 Sep. 2016; st. AB189; MNHN-IU-2016-797/MK411120 • 1 ♂ ov.; E of Le Vauclin; 14°34.2′ N, 60°44.8′ W; depth 90 m; 14 Sep. 2016; st. AD231; MNHN-IU-2016-890 • 1 ♂ ov.; Baie de Fort-de-France; 14°34.3′ N, 61°02.7′ W; depth 7 m; 7 Oct. 2016; st. AB394; MNHN-IU-2016-1046/MK411034 • 1 ♂ ov., 1 juv.; Le Robert; 14°43.2′ N, 60°50.6′ W; depth 23 m; 25 Sep. 2016; st. AB405; MNHN-IU-2016-1048 • 1 ♀; Ste-Marie; 14°46.3′ N, 60°57.5′ W; depth 20 m; 20 Sep. 2016; st. AB260; MNHN-IU-2016-1065 • 1 ♂; Baie du Robert; 14°42′ N, 60°53.8′ W; depth 2 m; 24 Sep. 2016; st. AB452; MNHN-IU-2016-1072 • 1 ♀; Case-Pilote; 14°38.9′ N, 61°09.1′ W; depth 14 m; 27 Sep. 2016; st. AS365; MNHN-IU-2016-1079 • 1 ♀; Le Prêcheur; 14°49.1′ N, 61°13.8′ W; depth 20–25 m; 8 Oct. 2016; st. AS576; MNHN-IU-2016-1086 • 1 ♂, 1 ♀; Case-Pilote; 14°38.3′ N, 61°08.4′ W; depth 12 m; 8 Sep. 2016; st. AB159; MNHN-IU-2016-1092 • 1 ♀; same collection data as for preceding; MNHN-IU-2017-223.• 1 juv.; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 19–21 m; 9 Sep. 2016; st. AS057; MNHN-IU-2016-1094 • 1 juv.; Banc du Diamant;

14°26.4′ N, 61°01.7′ W; depth 18 m; 15 Sep. 2016; st. AB177; MNHN-IU-2016-1106 • 1 ♂; Rocher du Diamant; 14°26.7′ N, 61°02.4′ W; depth 14 m; 14 Sep. 2016; st. AB175; MNHN-IU-2016-1130 • 2 ♂♂; Presqu'Île de la Caravelle; 14°48.4′ N, 60°52.8′ W; depth 23–25 m; 20 Sep. 2016; st. AB197; MNHN-IU-2016-1138 • 1 ♂; Schœlcher; 14°37.7′ N, 61°07.2′ W; depth 4 m; 27 Sep. 2016; st. AB460; MNHN-IU-2016-1155/MK411066 • 1 ♀; Rocher du Diamant; 14°26.5′ N, 61°02.4′ W; depth 24 m; 14 Sep. 2016; st. AB173; MNHN-IU-2016-1157 • 1 ♂; Pointe Michel; 14°26.4′ N, 60°49.3′ W; depth 2 m; 12 Sep. 2016; st. AB120; MNHN-IU-2016-1179 • 1 juv.; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1185 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1216 • 1 ♂; Grande Anse d'Arlets; 14°30.5′ N, 61°06.1′ W; depth 20–23 m; 6 Sep. 2016; st. AB152; MNHN-IU-2016-1191 • 1 ♂; Presqu'Île de la Caravelle; 14°47.3′ N, 60°57.4′ W; depth 19 m; 21 Sep. 2016; st. AB301; MNHN-IU-2016-1227 • 1 ♂; Grande Anse du Diamant; 14°27.9′ N, 61°01.2′ W; depth 15 m; 15 Sep. 2016; st. AB179; MNHN-IU-2016-1242 • 1 ♂ ov.; Presqu'Île de la Caravelle; 14°46.5′ N, 60°51.5′ W; depth 15 m; 22 Sep. 2016; st. AB350; MNHN-IU-2016-1301.

Remarks

This species was first recorded in Martinique by Müller (1990a) from Petite Anse Macabou and was abundantly sampled in the present study.

Distribution

Tropical West Atlantic: Gulf of Mexico, Caribbean, South Florida, Bahamas, Brazil. The distribution may be extended with misidentifications as *Anoplodactylus robustus* (Dohrn, 1881) in the Tropical Western Atlantic (Stock 1979).

Depth range

0–41 m, extended to 90 m.

Anoplodactylus pectinus Hedgpeth, 1948

Fig. 22K–L

Anoplodactylus pectinus Hedgpeth, 1948: 234–236, fig. 34.

Anoplodactylus pectinus – Hedgpeth 1954: 427. — Stock 1955: 235, fig. 11; 1974: 17; 1979: 15; 1986: 404; 1994: 19 (list), 64. — Arnaud 1973a: 955–957. — Child 1974: 500; 1979: 58; 1982a: 372–373; 1988a: 20; 1996c: 552; 1998b: 295; 2004: 158; 2009: 820 (list). — Nakamura & Child 1988a: 662. — Bamber 1998: 30; 2004: tab. 2. — Arango 2003b: 2746 (key), 2752–2753, 2755, tab. 2, fig. 10. — Arango & Krapp 2007: 20, 23. — Montoya Bravo *et al.* 2009: 24–26. — Müller & Krapp 2009: 10–13, 85 (key), 107–110, 132 (phenology), 137 (list), tabs 1, 3, fig. 57. — Sabroux *et al.* 2019b: 1530, 1532, tab. 1, fig. 3. — Ramírez-Tello *et al.* 2022: 161–162, tab. 1.

Anoplodactylus pectinis – Stock 1975a: 1050–1052, fig. 41a.

Type material

Holotype: USNM 81095 (examined). Type locality: Loggerhead Key, Tortugas, Florida (Gulf of Mexico).

Material examined

MARTINIQUE • 1 ♂ ov.; Case-Pilote; 14°38.3′ N, 61°08.4′ W; depth 12 m; 8 Sep. 2016; st. AB159; MNHN-IU-2016-805/MK411127 • 1 ♂; Anse Noire; 14°32′ N, 61°05.3′ W; depth 13 m; 6 Sep. 2016; st. AB150; MNHN-IU-2016-806/MK411128 • 1 ♂; Passe du Marin; 14°26.8′ N, 60°54.3′ W; depth

15 m; 9 Sep. 2016; st. AB165; MNHN-IU-2016-897 • 1 ♂, 1 ♀; Grande Anse d'Arlets; 14°29.9′ N, 61°05.4′ W; depth 28 m; 7 Sep. 2016; st. AB157; MNHN-IU-2016-898 • 1 ♀, 2 juvs; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 19–21 m; 9 Sep. 2016; st. AS057; MNHN-IU-2016-899 • 1 ♂, 1 ♀; Ste-Luce; 14°27.3′ N, 60°55.5′ W; depth 15 m; 10 Sep. 2016; st. AB062; MNHN-IU-2016-1040 • 1 ♀; Les Anses-d'Arlet; 14°28.5′ N, 61°05.1′ W; depth 29 m; 26 Sep. 2016; st. AD271; MNHN-IU-2016-1093 • 1 juv.; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17–19 m; 9 Oct. 2016; st. AS579; MNHN-IU-2016-1126 • 1 juv.; Fond Boucher; 14°39.3′ N, 61°09.4′ W; depth 14 m; 27 Sep. 2016; st. AS363; MNHN-IU-2016-1161 • 2 ♂♂, 2 juvs; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17 m; 9 Oct. 2016; st. AB578; MNHN-IU-2016-1167 • 1 ♂ ov.; Pointe de la Baleine; 14°31.1′ N, 61°05.9′ W; depth 17–19 m; 30 Sep. 2016; st. AB369; MNHN-IU-2016-1254/MK411086.

Remarks

This species is reported for the first time from Martinique, where it was only sampled on the Caribbean coast. The species is morphologically close to *A. madibenthos* sp. nov., with the same characteristic pectinated propodal spine; however, this species is much more elongated, with a wider separation between the lateral processes.

Distribution

Pantropical: Tropical West Atlantic (Caribbean, Gulf of Mexico, Florida), Indian Ocean (Madagascar, Indonesia), Easter Australia, Pacific Ocean (Philippines, Ryukyu Archipelago, Fiji Islands, Caroline Islands). It is possible that some of these records were mistaken with *Anoplodactylus madibenthos* sp. nov.

Depth range

0–34 m.

Anoplodactylus petiolatus (Krøyer, 1844)

Phoxichilidium petiolatum Krøyer, 1844: 123.
Phoxichilidium mutilatum Frey & Leuckart, 1847: 165.
Anoplodactylus petiolatus ssp. *hedgpethi* Băcescu, 1959: 123.
Anoplodactylus guyanensis Child, 1977b: 591–593, fig. 3.

Anoplodactylus petiolatus – Sars 1891: 25–29, pl. 2 fig. 2a–i. — Marcus 1940: 61–62, fig. 5a–b. — Lebour 1945: 157–159, fig. 6a–h. — Hedgpeth 1948: 222, fig. 27a–d. — Kurien 1948: 195. — Sawaya 1950: 73. — Stock 1951: 16; 1957: 85; 1958b: 4; 1962: 218; 1966a: 52; 1975a: 1072–1075, fig. 53; 1978: 216; 1987: 514. — Băcescu 1959: 117. — King 1972: 622; 1974: 35 (key), 44–45, fig. 18. — Arnaud 1973b: 151–152; 1976: 69; 1987: 45–46. — Kraeuter 1973: 495. — Krapp 1973: 72. — Krapp & Kraeuter 1976: 338–340, fig. 2. — Child 1982b: 21; 1992b: 39 (key), 53–55, tab. 5, fig. 24; 1995: 113 (summary), 122, 123 (key), 126; 2004: 158–159; 2009: 820 (list). — Chimenz & Cottarelli 1986: 138. — Bitar 1987: 163. — Schüller 1989: 290. — Bamber & Thurston 1993: 850; 1995: 137 (key and record). — Chimenz *et al.* 1993: tab. 1. — Harms 1993: tab. 3. — Bamber 1995a: 61, tab. 7, tabs a3.3, a4.3; 2010: 16 (list), 29 (key), 192 (key), 194, fig. 233. — Cancela da Fonseca *et al.* 1995: tab. 1. — Heß *et al.* 1996: 25–35 (biology). — Cunha *et al.* 1997: appendix 1. — Dauvin & Vallet 1997: 264. — Excoffon *et al.* 1999: tab. 1. — Piscitelli & Barone 2000: tab. 1. — Genzano 2002: 84, 88, 90, tab. 1, figs 2–3. — Chimenz Gusso & Lattanzi 2003: tab. 1. — Ros-Santaella 2004: 7 (list), tabs 2–3, fig. 6. — Albano *et al.* 2006: tab. 1. — Raiskii & Turpaeva 2006: 58. — Arango & Krapp 2007: 19. — Arango & Wheeler 2007: appendix 1, tab. 3, figs 1–4 (phylogeny), fig. 8 (phylogeny). — Cano-Sánchez & López-González 2007: tabs 1–2. — Carranza

et al. 2007: 374, fig. 2a. — Dunlop *et al.* 2007: 71–72. — Moreira & Troncoso 2007: 119. — Veena *et al.* 2008: tab. 1. — Bamber & Costa 2009: 168 (list), 170, 173, 176, fig. 2g. — Müller & Krapp 2009: 10–11, 86 (key), 110–112, 133, 137 (list), tab. 1, fig. 59. — Bartolino & Chimenz 2010: 396 (list). — Esquete *et al.* 2013: 31, tab. 1. — Bakir *et al.* 2014: tab. 1. — Brenneis & Scholtz 2014: 18. — Lehmann *et al.* 2014: 165 (list), 167, figs 45–48. — Turpaeva & Raiskiy 2014: 243–244. — Koçak 2015: 192–193, tab. 1; 2019: 49 (list); 2020: 376. — Ringvold *et al.* 2015: 65, 70, 73, tabs 2–3. — Soler-Membrives & Munilla 2015: tab. 2. — Dietz *et al.* 2018: figs 1b, 3c, 5–6, 8, 10. — Lucena & Christoffersen 2018a: 112–113, 118; 2018b: 375 (key), 382. — Galli *et al.* 2019: 242, tabs 1–3. — Sabroux *et al.* 2019b: tab. 1, fig. 3. — Scarabino *et al.* 2019: 193, tab. 1. — Colasanto & Galli 2021: tab. 1. — Ramírez-Tello *et al.* 2022: 162, tab. 1.
Anaphia petiolata – Norman 1908: 202, tab.
Anaphia petiolate – Lebour 1916: 51–56, figs 1–3.
Anoplodactylus guyanensis – Stock 1986: tab. 1.
Anoplodactylus cf. *petiolatus* – Chimenz *et al.* 1993: 340, fig. 2.

nec *Phoxichilidium pygmaeum* Hodge, 1864 – Hoek 1881a: 514, pls 26–27, figs 22–25.

Type material

Phoxichilidium petiolatum Krøyer, 1844. Syntypes: NHMD 110693 and 110694 (material missing, not examined). Type locality: Øresundsbroen Strait, Denmark.

Phoxichilidium mutilatum Frey & Leuckart, 1847. Type(s): unknown. Type locality: Helgoland, Germany.

Anoplodactylus petiolatus ssp. *hedgpethi* Băcescu, 1959. Type(s): not designated. Type locality: West Atlantic.

Anoplodactylus guyanensis Child, 1977. Holotype: USNM 154805 (not examined). Type locality: NE of Georgetown (07°40′ N, 57°34′ W), Guyana.

Material examined

MARTINIQUE • 1 ♂; Rocher du Diamant; 14°26.7′ N, 61°02.3′ W; depth 4–10 m; 14 Sep. 2016; st. AB123; MNHN-IU-2016-1069 • 1 ♀; Trois Rivières; 14°27.5′ N, 60°58.2′ W; depth 17–19 m; 9 Oct. 2016; st. AS579; MNHN-IU-2016-1127/MK411056 • 1 ♀; Bellefontaine; 14°40.2′ N, 61°10′ W; depth 40 m; 2 Oct. 2016; st. AD286; MNHN-IU-2016-1195/MK411078 • 1 ♂; Anse Couleuvre; 14°50.4′ N, 61°13.4′ W; depth 7 m; 1 Oct. 2016; st. AB463; MNHN-IU-2016-1382.

Remarks

This is the first record of this species from Martinique, only from the Caribbean coast. *Anoplodactylus petiolatus* subsp. *hedgpethi* was originally proposed by Băcescu (without designating type material) in order to mark the difference between the West Atlantic material described by Hedgpeth (1948) and Mediterranean/Black Sea material. Differences noted by Băcescu include thinner legs, different propodal armature of the propodal sole and the longer coxae 2 of the fourth legs. In this regard, our material seems to be similar to Hedgpeth's material.

Distribution

Widespread in Atlantic: West Atlantic (off New York state, North Carolina, Georgia, Bahamas, Gulf of Mexico, Caribbean, Guyana, Surinam, French Guiana, Brazil, Uruguay, Argentina), East Atlantic (northern Norway, Northern Sea, English Channel, British Isles, Irish Sea, Celtic Sea, Galicia, Portugal, Gibraltar region, West African Atlantic, Cape Verde, Azores). It is also recorded from the entire Mediterranean, Marmara Sea and Black Sea. There are additional records from India and Chile.

Depth range

4–1520 m; one record at 4825 m potentially linked to sampling contamination (Child 1982b).

Anoplodactylus quadratispinosus Hedgpeth, 1943

Anoplodactylus quadratispinosus Hedgpeth, 1943: 47–48, pl. 8a–g.

Anoplodactylus quadratispinosus – Hedgpeth 1948: 232. — Stock 1986: 404. — Child 2009: 820 (list). — Müller & Krapp 2009: 12, 86 (key), 93, 112, 137 (list), tab. 1, fig. 59. — Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: MCZ CRU-12259 (not examined). Type locality: near channel to Key West, Florida.

Material examined

MARTINIQUE • 1 ♂; Le François; 14°37′ N, 60°49.5′ W; depth 1 m; 17 Sep. 2016; st. AB134; MNHN-IU-2016-1143/MK411063 • 1 ♀; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2016-1220.

Remarks

This is the first record of this species from Martinique. The two collected specimens were sampled at two localities on both the Caribbean and Atlantic coasts.

Distribution

So far only recorded from Key West (Florida), Caribbean Colombia, Martinique.

Depth range

0.5 m. We extend the depth-range to 12 m.

Anoplodactylus robustus (Dohrn, 1881)

Phoxichilidium robustum Dohrn, 1881: 188–190, pl. 7 figs 13–18.

Halosoma robustum – Marcus 1940: 68–71, fig. 8a–c. — Hedgpeth 1948(?): 218.
Phoxichilidium robustum – Lebour 1945: 153. — Dunlop *et al.* 2007: 61, fig. 49.
Anoplodactylus robustus – Stock 1954a(?): 128; 1955: fig. 12b–c, 237; 1975a: 1080; 1979: 18–22, fig. 6. — Child & Hedgpeth 1971: 609 (list), 612–613. — Arnaud 1987: 46–47. — Munilla 1993: tab. 4. — Krapp 1996: 526. — Child 1998b: 294 (list). — Chimenz Gusso & Lattanzi 2003: tab. 1. — Cano-Sánchez & López-González 2007: tab. 1. — Bartolino & Chimenz 2010: 396 (list). — Tirado-Sanchez 2014: 2. — Soler-Membrives & Munilla 2015: tab. 2. — Sabroux *et al.* 2019b: 1525, tab. 1, figs 3, 5.

Type material

Syntype (?) (see Dunlop *et al.* 2007): ZMB_Pyc_39 (not examined). Type locality: Naples Bay, Italy.

Material examined

MARTINIQUE • 1 ♀; Case-Pilote; 14°38.3′ N, 61°08.4′ W; depth 12 m; 8 Sep. 2016; st. AB159; MNHN-IU-2016-796/MK411119 • 1 ♂; same collection data as for preceding; MNHN-IU-2016-1415 • 1 ♀; Case-Pilote; 14°38.6′ N, 61°08.5′ W; depth 8 m; 8 Sep. 2016; st. AB108; MNHN-IU-2016-798/MK411121 • 1 ♂; Vétiver; 14°37.9′ N, 61°07.7′ W; depth 10 m; 8 Sep. 2016; st. AS054; MNHN-IU-2016-1096/MK411048 • 1 ♀; Grande Anse du Diamant; 14°28′ N, 61°00.1′ W; depth 12 m; 26 Sep. 2016; st. AB360; MNHN-IU-2017-224.

Remarks

This species is relatively rare compared to its closest relative, *Anoplodactylus monotrema* Stock, 1979; similar rarity was mentioned by Arnaud (1987) for the fauna of the Mediterranean Sea. Previous records of *A. robustus* from the Western Atlantic were regarded as doubtful or incorrect by Stock (1979), who suggested that most of the older records of this species were mistaken with *A. monotrema*. Child (1979), however, considered that the Brazilian specimens identified as *Halosoma robustum* by Marcus (1940) should be treated as *A. robustus*. All our specimens come from three localities on the Caribbean coast. They match very well with Stock's description in showing angulous proboscis corners around the mouth, five-articled ovigers and multiple cement gland pores.

Distribution

Most records are from the Western Mediterranean (Gibraltar Strait, Alboran Sea, Balearic Sea, Gulf of Lion, Tyrrhenian Sea). Additional records from Brazil, the Caribbean and Galápagos, some of which were regarded as possibly mistaken with *Anoplodactylus monotrema* by Stock (1979) (see remarks above).

Depth range

4–44 m.

Anoplodactylus sp. 4

Fig. 25

Anoplodactylus sp. 4 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

MARTINIQUE • 1 juv.; Baie de Sans-Souci; 14°34.7′ N, 60°50.7′ W; depth 0–1 m; 9 Oct. 2016; st. AM325; MNHN-IU-2016-1100/MK411049 • 1 ♀; Trois Rivières; 14°27.8′ N, 60°57.9′ W; depth 3–4 m; 25 Sep. 2016; st. AB356; MNHN-IU-2016-1165/MK411068.

Remarks

These specimens were collected at two localities on Atlantic and Caribbean coasts. This species differs from most of other *Anoplodactylus* by the combination of the following characters: lateral processes separated by more than their own diameter, less than twice; low rounded tubercles on the lateral processes; chela fingers simple; leg articles elongated; auxillary claw present, short; length of propodal lamina about half that of propodal sole. The species furthermore differs from *A. dissitus* Child, 2004 in showing no tubercle on coxae 1; from *A. trispinosus* Stock, 1951 in having slenderer leg articles (Stock 1975a; Child 2004; Müller & Krapp 2009). This species could be assigned to *A. petiolatus* (Krøyer, 1864), *A. arcuatus* Child, 1977 or another undescribed species. Without male specimens it is, however, impossible to provide a definitive conclusion.

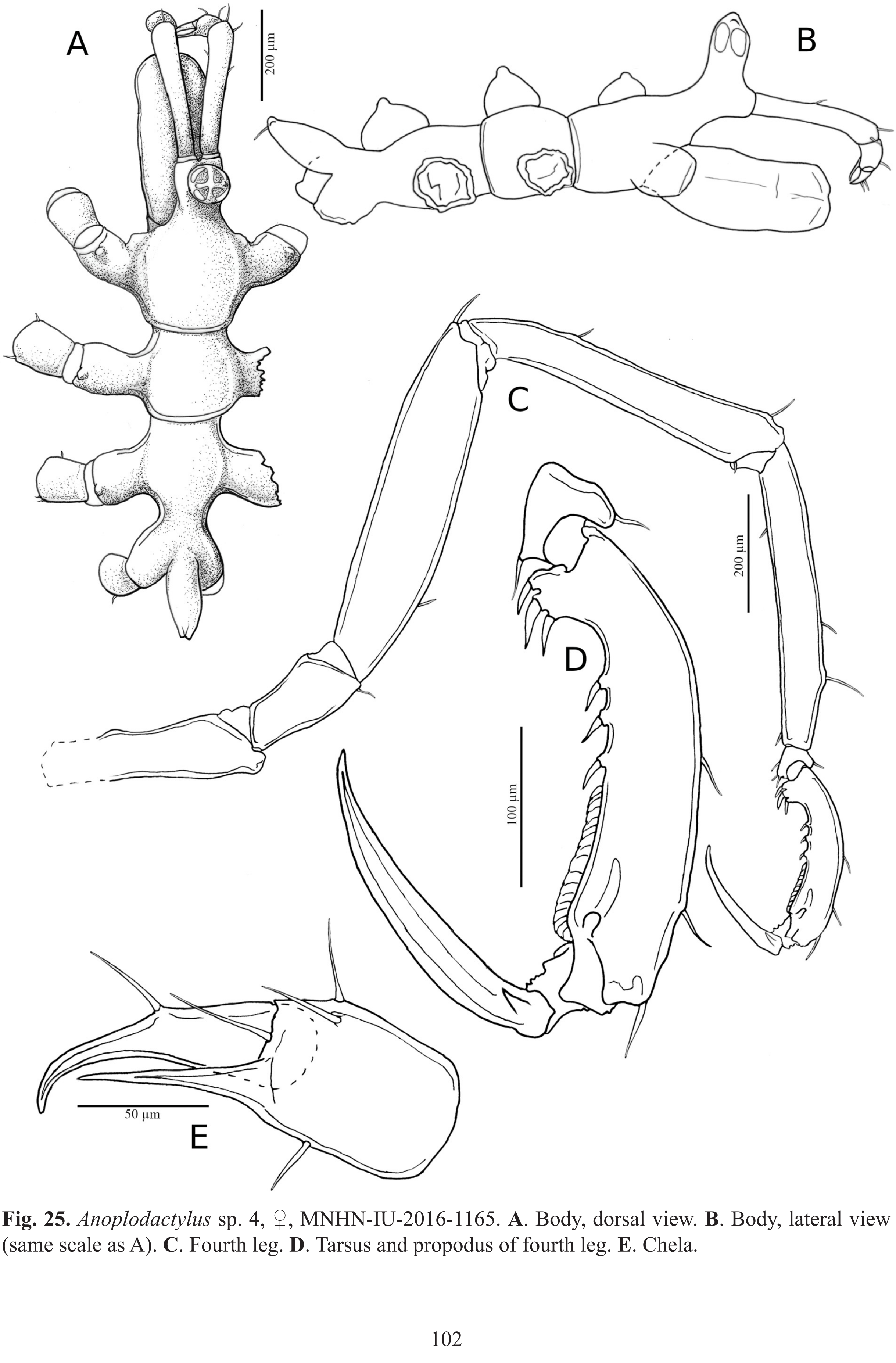

Fig. 25. *Anoplodactylus* sp. 4, ♀, MNHN-IU-2016-1165. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Fourth leg. **D**. Tarsus and propodus of fourth leg. **E**. Chela.

Depth range

0–3 m.

Anoplodactylus sp. 7

Fig. 26

Anoplodactylus sp. 7 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

MARTINIQUE • 1 ♂; Basse Pointe; 14°53.1′ N, 61°06.9′ W; depth 35 m; 10 Oct. 2016; st. AD626; MNHN-IU-2016-1163/MK411067.

Remarks

This specimen differs from other species of *Anoplodactylus* by the combination of the following characters: lateral processes separated by about their own diameter or more, less than twice their own diameter, and with one low dorsomedian tubercle; chela fingers simple; propodal lamina about half of propodal length; cement gland tube as a medium dorsomedian spur slightly anterior to half length of femur; propodal auxillary claw present, minute. The single available specimen was collected in northern Martinique. It is damaged, with the ocular tubercle missing. It may be related to *Anoplodactylus stictus* Marcus, 1940, which it resembles in the characters above and in showing a constriction at the base of the 3rd article oviger (Lucena & Christoffersen 2018b), but several other characters show differences with the original description (Marcus 1940), including the position of the cement gland tubes and the more elongated lateral processes, post-ocular neck and oviger articles.

Depth range

35 m.

Anoplodactylus sp. 8

Fig. 27

Anoplodactylus sp. 8 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

MARTINIQUE • 1 ♀; Canal de Ste Lucie; 14°23.1′ N, 60°50.2′ W; depth 65 m; 11 Sep. 2016; st. AD224; MNHN-IU-2016-539/MK411113 • 1 ♀; Baie de St-Pierre; 14°45.1′ N, 61°11′ W; depth 17 m; 4 Oct. 2016; st. AB388; MNHN-IU-2016-1060/MK411039.

Remarks

These two specimens were collected on the Caribbean coast and southern Martinique; only females are available, preventing us from providing a complete description. The specimens differ from other species of *Anoplodactylus* by the combination of the following characters: body stout; ocular tubercle low, rounded; trunk without dorsomedian ornamentation; lateral processes well separated by less than their own diameter, and without ornamentation; proboscis barrel-shaped, truncated; legs stout; no propodal lamina; auxillary claw minute. The specimens strongly resemble *A. pycnosoma* (Helfer, 1938), a species only recorded in the Indo-Pacific (Bamber 2000), from which it differs by the absence of angulate distal projections on the proboscis; it also differs from *A. dentimanus* Stock, 1979 from the West Indies

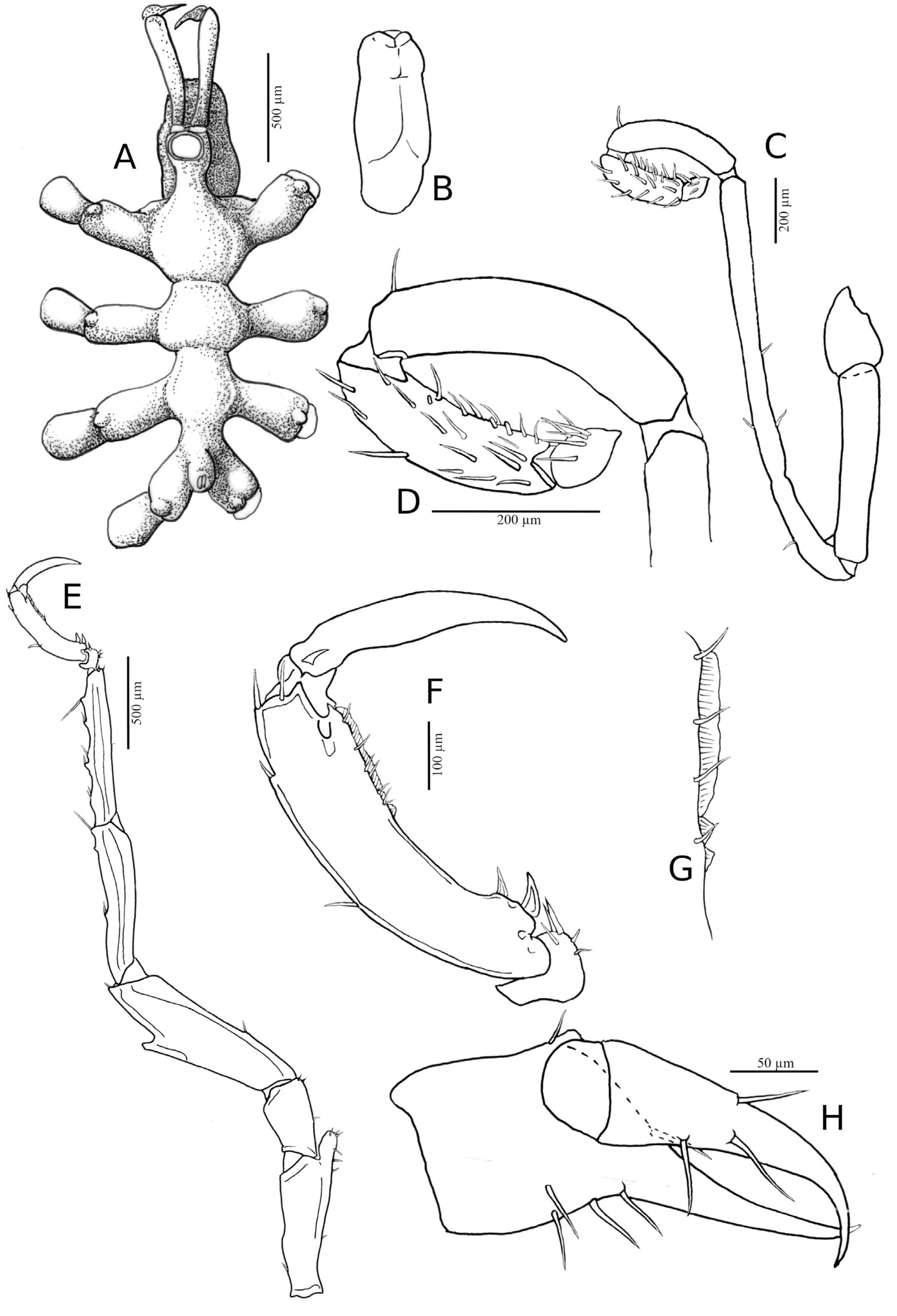

Fig. 26. *Anoplodactylus* sp. 7, ♂, MNHN-IU-2016-1163. **A**. Body, dorsal view. **B**. Proboscis in ventral view (same scale as A). **C**. Oviger. **D**. Oviger terminal articles. **E**. Fourth leg. **F**. Tarsus and propodus of fourth leg. **G**. Propodal sole lamina. **H**. Chela.

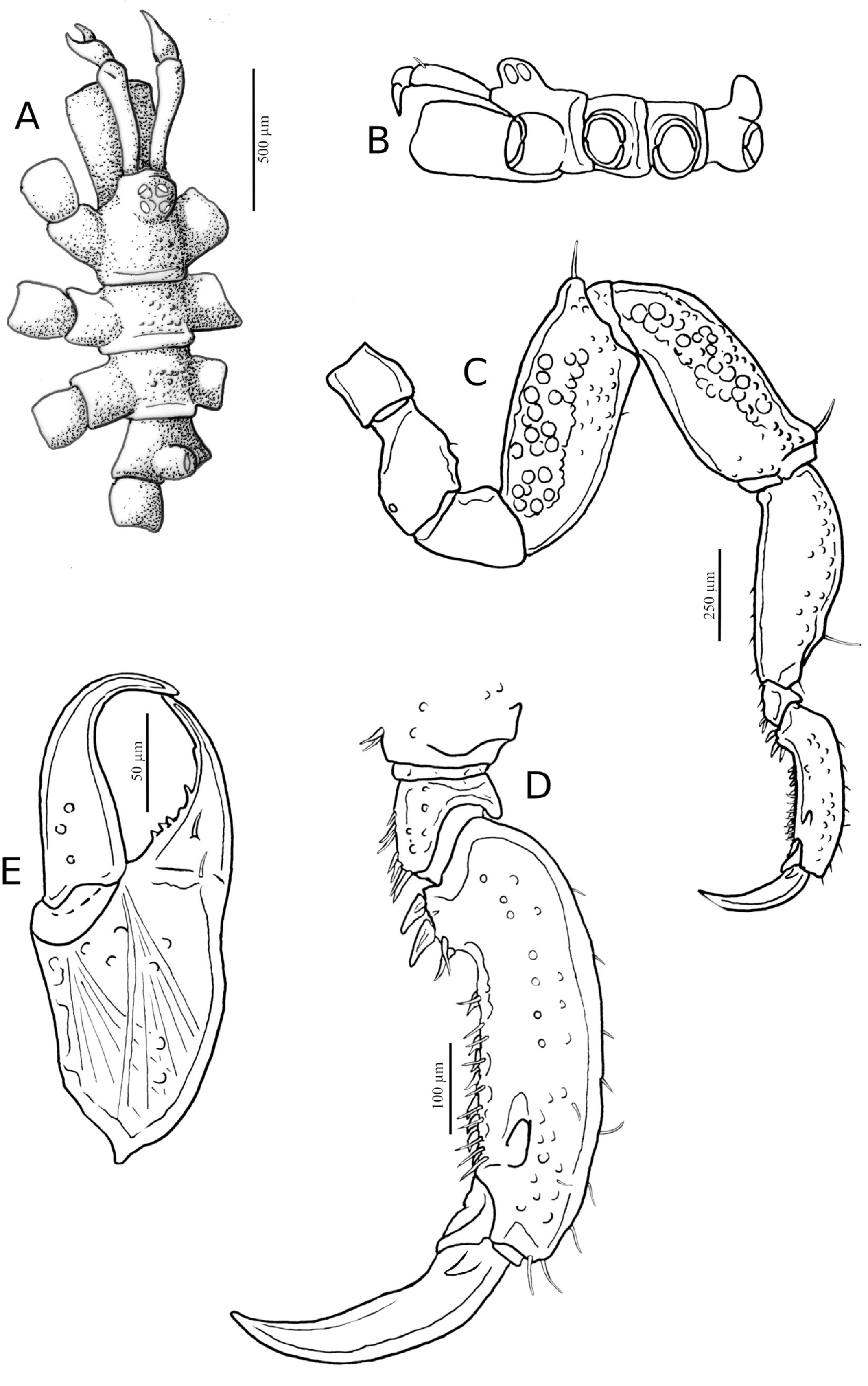

Fig. 27. *Anoplodactylus* sp. 8, ♀, MNHN-IU-2016-1060. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Third leg. **D**. Tarsus and propodus of third leg. **E**. Chela.

(Stock 1979) by the greater space between the lateral processes, the more elongate chela palms and the truncated proboscis end. Finally, the specimens are similar to *Anoplodactylus nanus* Krapp, Koçak & Katagan, 2008 from the Eastern Mediterranean (Krapp *et al.* 2008), except that their low dorsodistal femoral tubercles carry one seta.

Depth range

17–65 m.

Family Pycnogonidae Wilson, 1878

Genus ***Pentapycnon*** Bouvier, 1910

Type species

Pentapycnon charcoti Bouvier, 1910 by monotypy.

Pentapycnon geayi Bouvier, 1911

Pentapycnon geayi Bouvier, 1911a: 491–494.

Pentapycnon geayi – Bouvier 1911b: 1140; 1913: 161–166, figs 105–109. — Hedgpeth 1948: 281, fig. 53. — Stock 1975a: 1088; 1986: tab. 1; 1992a: 137–139. — Cano-Sánchez & López-González 2007: tab. 1. — Krapp & Viquez 2011: 205–206, tab. 1. — Soler-Membrives & Munilla 2015: tab. 2. — Rabay *et al.* 2017: 1–3, figs 1–4. — Lucena & Christoffersen 2018a: 113. — Lucena *et al.* 2019: 3 (list), 19, 21. — Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Syntypes: MNHN PY566-569 (examined). Type locality: Cayenne, French Guiana.

Material examined

MARTINIQUE • 1 ♀; Pointe Baham; 14°24.7′ N, 60°50.1′ W; depth 2 m; 11 Sep. 2016; st. AB117; MNHN-IU-2016-4187/MK411112.

Remarks

Pentapycnon geayi is one of the few polymerous species in the world, and one of two known outside of the Southern Ocean, with the other being *Pentacolossendeis reticulata* Hedgpeth, 1943 (Arnaud & Bamber 1987). The two other known species of *Pentapycnon* have only been reported from the Southern Ocean (Child 1995). The species is here recorded for the first time in Martinique. The single specimen was collected on the southern Atlantic coast of Martinique.

Distribution

Recorded from Tropical West Atlantic (Puerto Rico, French Guiana, Surinam, Brazil) and Spanish Mediterranean coast (Gibraltar and Alboran Sea).

Depth range

5–70 m. We extend this depth range to 2 m.

Genus ***Pycnogonum*** Brünnich, 1764

Type species

Pycnogonum littorale (Strøm, 1762), by monotypy.

Pycnogonum cesairei sp. nov.
urn:lsid:zoobank.org:act:FEDED36A-EFA3-413B-8E4E-BE4010D1A5AE
Fig. 28

Pycnogonum sp. 1 – Sabroux *et al.* 2019b: 1531, tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • ♂; Grand'Rivière; 14°52′ N, 61°11.7′ W; depth 6 m; 3 Oct. 2016; st. AB556; MNHN-IU-2016-10338/MK411029.

Etymology

Latinized name, 2nd decl. (masc.), genitive singular. Named after the Martinique poet Aimé Césaire.

Description (holotype, ♂, MNHN-IU-2016-10338)

BODY. Trunk completely segmented, stout, reticulated. Dorsomedian tubercles on 1st to 3rd segments, rounded, very granulous, carrying small setae. Ocular tubercle slightly higher than dorsomedian tubercles, rounded, carrying four pigmented eyes. Lateral processes shorter than wide, separated by a narrow space all along their length, with bead at their distal margin and one spine on posterior side.

PROBOSCIS. About as long as distance from 1st to 3rd trunk segments, gently bent downward, tapering, truncated, very granular getting smoother at its tip, with four rows of spines (2 lateral, 2 dorsolateral) on proximal half, each separated at regular distance.

ABDOMEN. Trapezoidal and angulous dorsally, larger at tip than base.

CHELIFORE. Absent.

PALP. Absent.

OVIGER. 8-articled, cuticle reticulated. 1st article shortest, about as long as wide, fused with 2nd. 2nd article larger than 1st, as long as wide. 3rd article shorter than 2nd, about as long as wide, with distal blunt spine on inner surface. 4th and 5th articles subequal and longest, 5th carrying a blunt distal spine on inner surface. 6th, 7th and 8th articles subequal, about 0.8 times as long as 4th or 5th. 6th and 7th articles with blunt distal spine on inner surface, 8th article with 3 blunt spines on distal half. Terminal claw as long as 8th article.

LEGS. Stout, cuticle reticulated. Coxa 1 very wide dorsally, wider than long, with large bead at distal margin carrying some tiny spines, forming low dorsodistal tubercle on 4th leg. Coxa 2 wider than long, bearing several tiny spines, with white coxal pellicula on dorsal surface. Coxa 3 smaller than 1 or 2, bearing some tiny normal spines. Femur and tibia 1 subequal; femur about 1.4 times as long as wide, dorsally granulated on distal half; on ventral and dorsal surface, several blunt or slightly bifurcated spines mounted on tiny tubercles, plus tiny normal spines; dorsal side of distal margin forming short rounded spurs. Tibia 1 about 1.6 times as long as wide, with dorsal surface granulous, bearing a few blunt spines ventrally, mounted on small tubercles, and tiny normal spines dorsally. Tibia 2 short, less than half as long as femur or tibia 1, about as long as wide, with many blunt or slightly bifurcated spines

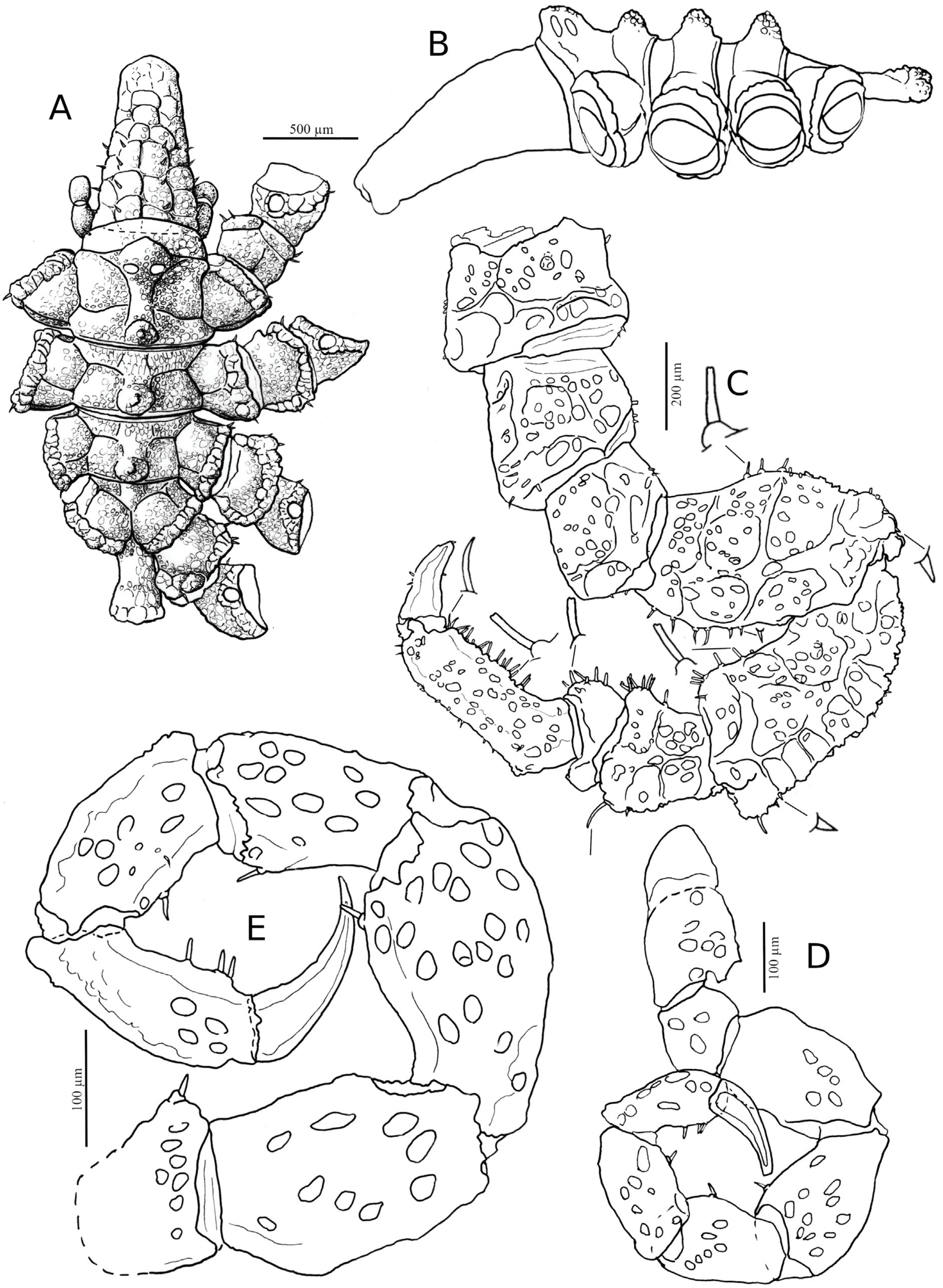

Fig. 28. *Pycnogonum cesairei* sp. nov., holotype, ♂, MNHN-IU-2016-10338. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Third leg. **D**. Oviger. **E**. Close-up of six terminal segments of oviger.

distally on ventral surface, longer blunt spine distally on dorsal surface. Tarsus shortest, with spines on ventral side. Propodus about 0.9 times as long as femur or tibia 1 and twice as long as tibia 2, 3 times as long as wide, straight except for most proximal part, which is bent with strong angle marked dorsally; spines of sole simple or slightly bifurcated at tip. Main claw about half as long as propodus. No auxiliary claw.

MEASUREMENTS (mm). Trunk 1.52; abdomen 0.49; proboscis 1.18; coxa 1 0.28; coxa 2 0.29; coxa 3 0.26; femur 0.49; tibia 1 0.53; tibia 2 0.24; tarsus 0.14; propodus 0.47; main claw 0.209.

Sexual dimorphism

No female currently available.

Individual variability

No other material available.

Remarks

Pycnogonum cesairei sp. nov. differs from most other species of the genus by the following combination of characters: the cuticula is strongly reticulated; the proboscis is conical, bent forward; there is no tubercle on coxa 1 (except on the fourth legs); the tibia 2 is very short, about as long as wide, and shorter than the propodus. Three other species of *Pycnogonum* share these characters: *P. tesselatum* Stock, 1968 from Pakistan, which has, however, a proboscis broader at the tip and a rounded abdomen (Stock 1968a; George *et al.* 2020); *P. clarki* Staples, 2002 from Australia, which differs from *P. cesairei* by its more rounded dorsal tubercles, a more deeply incised dichotomy of propodus spines, the presence of a bulge on the posterodorsal end of the abdomen, the presence of tubercles on the lateral processes of the fourth trunk segment and no bifurcated spine on the legs (Staples 2002); and *P. madagascariensis* Bouvier, 1911 from Madagascar. For this latter species, we reexamined the syntypes of Bouvier (1911a): the proboscis of *P. madagascariensis* is barrel-shaped (Arnaud 1971), the tibia 2 of *P. madagascariensis* is shorter than wide, while tibia 2 is about as long as wide in *P. cesairei*, and the abdomen of *P. madagascariensis* presents a distinctive posterodorsal bulge (visible in Arnaud 1971) with two distal rounded tips lateral to the anus, both characters not being present in *P. cesairei*. It also seems that none of these species have an angulous propodus, in contrast to *P. cesairei*.

However, the closest species to *Pycnogonum cesairei* sp. nov. may well be *P. calculum* Bamber, 1995 from the Falkland Islands, which also presents a rather angulous propodus, has a proboscis of the same size, has the same body proportions and carries blunt spines. The coloration indicated by Bamber (light brown culticle with yellowish reticulation; Bamber 1995b) also corresponds to that observed on the specimen from Martinique. However, *P. calculum* is described with a small rounded dorsomedian tubercle on the fourth trunk segment, which is absent in *P. cesairei*, as well as on all lateral processes, while *P. cesairei* only carries one on coxa 1 of the fourth leg.

In Caribbean waters, the new species can be mistaken at first glance with *Pycnogonum reticulatum* Hedgpeth, 1948, for which we could examine the holotype of Hedgpeth (1948), but the two species are readily distinguished by the wider proboscis and longer tibiae 2 of *P. reticulatum*.

The single sampled specimen was collected on the northern coast of Martinique.

Distribution

Only known from Martinique.

Depth range

6 m.

Pycnogonum cf. ***ornans*** Stock, 1992
Fig. 29

Pycnogonum (*Retroviger*) *ornans* Stock, 1992a: 136–137, 139, figs 76–80.

Pycnogonum ornans – Lucena & Christoffersen 2018a: 103, 114.
Pycnogonum cf. *ornans* – Sabroux *et al.* 2019b: 1525, tab. 1, fig. 3.

Type material

Pycnogonum ornans Stock, 1992. Holotype: NL ZMA.PYC.3441 and ZMA.PYC.P.1432 (not examined). Type locality: off Barra Sêca, Espírito Santo state, Brazil.

Material examined

MARTINIQUE • 1 ♀; Ste-Marie; 14°46.3′ N, 60°57.5′ W; depth 20 m; 20 Sep. 2016; st. AB260; MNHN-IU-2016-1064/MK411042.

Remarks

This specimen is similar to the description given by Stock (1992a) for *Pycnogonum ornans*, a monotypic species described from Brazil. In particular, propodal sole spines are found to be bifid as in Stock's description; it also agrees in the distance between the lateral processes, ornamentation of the trunk, the lateral processes, the coxae 1 and the proboscis. However, the Martinique specimen differs from Stock's description by the overall stouter appearance of the animal, as well as the less pronounced ornamentation of the trunk, lateral processes and coxae, and the less elongate propodus.

Distribution

Pycnogonum ornans is only known from Brazil. This would be the first record of this species in the Caribbean.

Depth range

Pycnogonum ornans is known to dwell at 38–47 m. The present specimen was sampled at 20 m.

Pycnogonum cf. ***pusillum*** Dohrn, 1881
Fig. 30

Pycnogonum pusillum Dohrn, 1881: 207, pl. 16 figs 4–8.

Pycnogonum pusillum – Carus 1885: 288. — D'Arcy Thompson 1909: 540. — Bouvier 1922: 115; 1923a: 61. — Schimkewitsch 1929: 6–7, 18. — Helfer & Schlottke 1935: 298. — Stock 1952: 1–6, fig. 1a–b; 1964: 32; 1968b: 36, fig. 30. — Barnard 1954: 155–156, fig. 33. — Bourdillon 1954b: 155. — Hoenigman & Stock 1955: 534. — Monniot 1962: 273. — Krapp 1983: 412–413. — Arnaud 1987: 51. — Munilla 1993: tab. 4. — Piscitelli & Barone 2000: tab. 1. — Chimenz Gusso & Lattanzi 2003: tab. 1. — Dunlop *et al.* 2007: 59, fig. 45. — Lehmann *et al.* 2014: 165 (list), 168, figs 53, 55. — Soler-Membrives & Munilla 2015: tab. 2. — Colasanto & Galli 2021: tab. 1.
Pycnogonum (*Retroviger*) *pusillum* – Stock 1990: 232.
Pycnogonum cf. *pusillum* – Sabroux *et al.* 2019b: 1525, tab. 1.

nec *Pycnogonum littorale* (Strøm, 1762) – Zavodnik 1968: 46, 49.

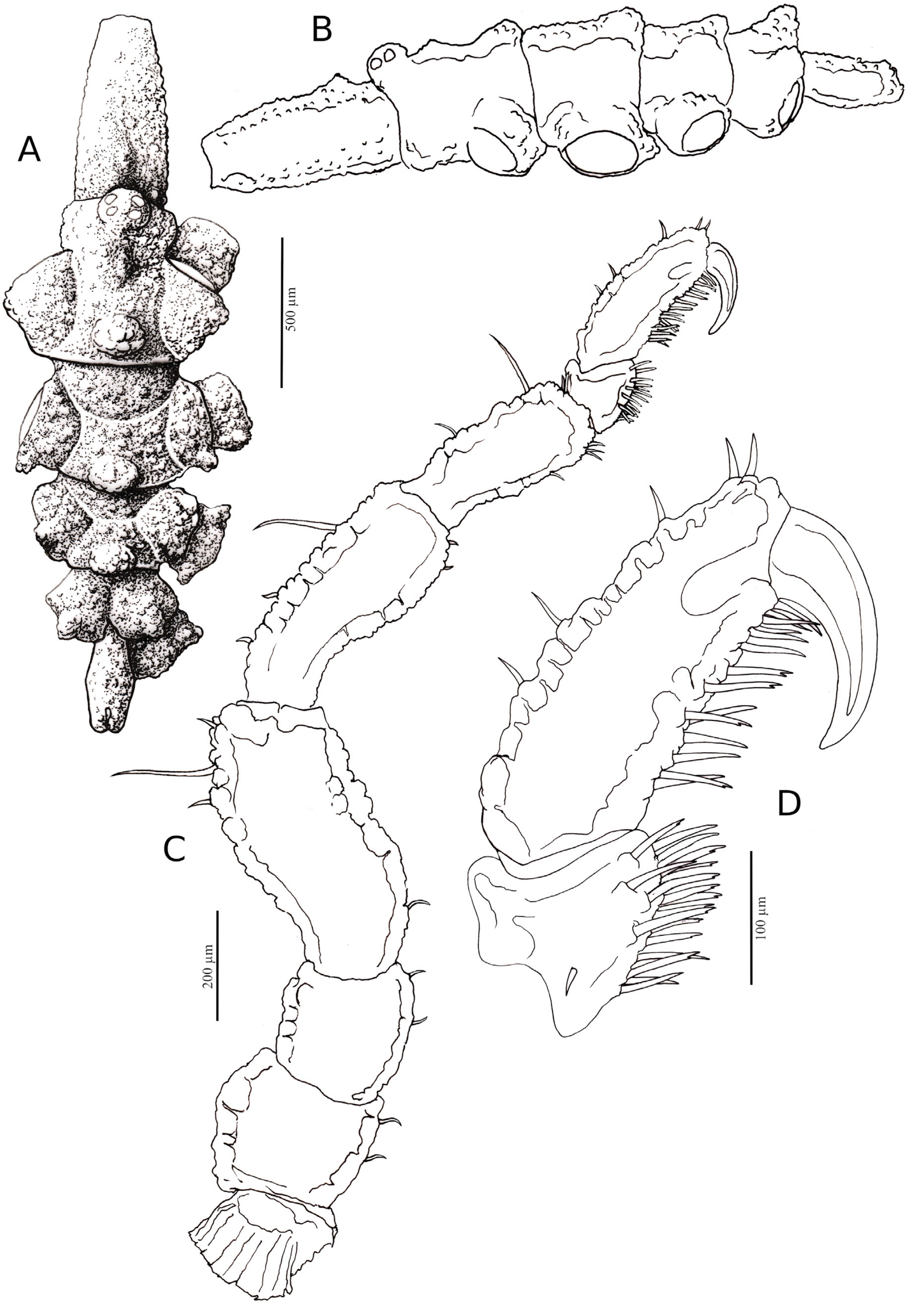

Fig. 29. *Pycnogonum* cf. *ornans* Stock, 1992, ♀, MNHN-IU-2016-1064. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. First leg. **D**. Tarsus and propodus of first leg.

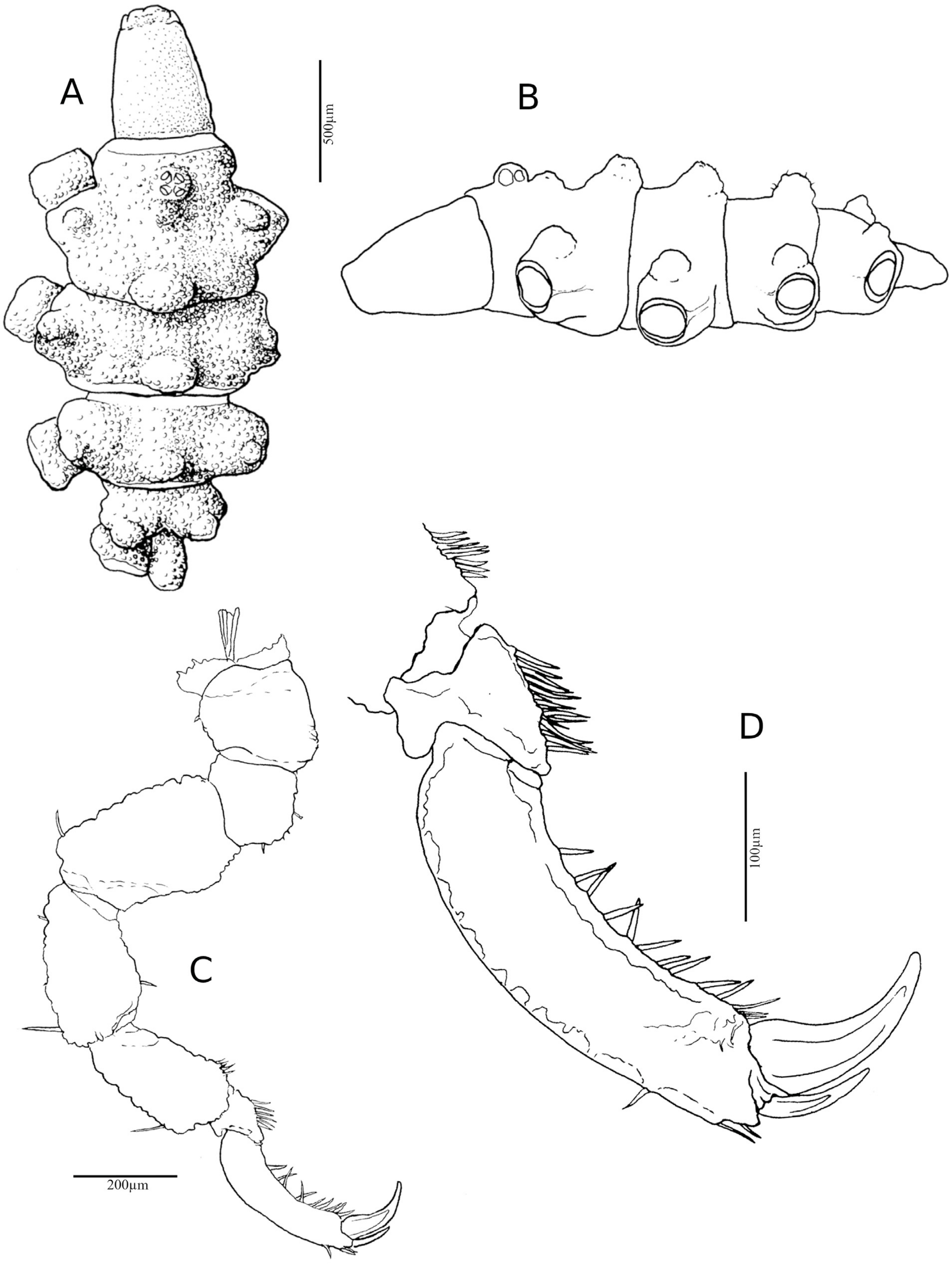

Fig. 30. *Pycnogonum* cf. *pusillum* Dohrn, 1881, ♀, MNHN-IU-2016-815. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Third leg. **D**. Tarsus and propodus of third leg.

Type material

Pycnogonum pusillum Dohrn, 1881. Syntypes (?) (see Dunlop *et al.* 2007): ZMB_Pyc_52 (not examined). Type locality: Naples Bay, Italy.

Material examined

MARTINIQUE • 1 ♀; Passe du Brigot; 14°33.8′ N, 60°47.6′ W; depth 17 m; 16 Sep. 2016; st. AB183; MNHN-IU-2016-815 • 1 ♀; Le Vauclin; 14°30.5′ N, 60°48.5′ W; depth 2 m; 10 Oct. 2016; st. AB419; MNHN-IU-2016-860.

Remarks

The Martinique specimens resemble the original illustration in Dohrn (1881) by their body shape, the conical proboscis being distally truncated and the relative sizes of the legs articles and main propodal claws; they similarly present the same tubercles on the lateral processes and first coxae as represented by Stock (1952), also illustrated by Lehmann *et al.* (2014) and Munilla & Soler-Membrives (2014). Unlike in Stock (1952), however, the specimens have a tubercle posterior to the ocular tubercle that is barely visible in dorsal view, and the auxiliary claws are longer (about half as long as the main claw). Since there is no available molecular data for comparison, we regard these two females as belonging to Dohrn's species for now.

The specimens are also morphologically very close to the Australian species *Pycnogonum carinatum* Staples, 2002, from which they chiefly differ by the presence of auxiliary claws in the Martinique material, as well as by the more granulous dorsal surface of the legs and the cleft spines on the propodal sole in the type material *P. carinatum* (Staples 2002).

Distribution

Pycnogonum pusillum is known from the Western Mediterranean (Balearic Sea, Adriatic Sea, Thyrrenian Sea, Ionian Sicily), and the Eastern Atlantic (Morocco, Angola, South Africa, Cap Verde).

Depth range

Pycnogonum pusillum was recorded from 0.5 to 1200 m. The present material was sampled at 2 and 17 m.

Family Rhynchothoracidae Thompson, 1909

Genus ***Rhynchothorax*** Costa, 1861

Type species

Rhynchothorax mediterraneus Costa, 1861, by monotypy.

Rhynchothorax crenatus Child, 1982

Rhynchothorax crenatus Child, 1982a: 374–376, fig. 167.

Rhynchothorax crenatus – Child 1996a: 530. — Stock 1986: tab. 1. — Sabroux *et al.* 2019b: tab. 1, fig. 3.

Type material

Holotype: USNM 170996 (not examined). Type locality: Carrie Bow Cay, Belize.

Material examined

MARTINIQUE • 1 juv.; Le Robert; 14°43.2′ N, 60°50.6′ W; depth 23 m; 25 Sep. 2016; st. AB405; MNHN-IU-2016-852/MK411165.

Remarks

The holotype of *Rhynchothorax crenatus* is a juvenile (Child 1982). Later, Child (1996a) found adults of *R. mediterraneus* Costa, 1861 and considered that they were the adult form of *R. crenatus*. Since there is no clear argument to justify that these two species are conspecific, we prefer to regard *R. crenatus* as valid for the moment. It is worth noting, however, that the Martinique specimen is also a juvenile, so we cannot refute Child's hypothesis. DNA barcode sequences will be useful to further investigate this question, when a sufficient sampling of DNA barcoding sequences from *R. mediterraneus* becomes available. *Rhynchothorax mediterraneus* is a species mostly known from the Mediterranean, with some records in the Indo-Pacific (Stock 1974; Miyazaki & Stock 1995) and Brazil (e.g., Stock 1992a), but it has only been recorded in the Caribbean by Child (1996a). *Rhynchothorax crenatus* is recorded for the first time outside of Belize. The single specimen was collected on the Atlantic coast of Martinique.

Distribution

Only recorded from Belize and Martinique.

Depth range

Recorded in literature at 27 m. The Martinique specimen was found at 23 m.

Rhynchothorax sidereus sp. nov.

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Fig. 31

Rhynchothorax sp. 1 – Sabroux *et al.* 2019b: tab. 1, fig. 3.

Material examined

Holotype

MARTINIQUE • 1 subadult?; Canal de Ste Lucie; 14°22.7′ N, 60°51.6′ W; depth 65 m; 11 Sep. 2016; st. AD222; MNHN-IU-2016-817/MK411138.

Etymology

From the Latin '*sidereus*', -*a*, -*um* (adj.), 'starry', in memory of long working nights sorting samples and of the nice starry sky above. The name also refers to the many tubercular projections of the specimen, which gives it a meteor-like shape.

Description (holotype, MNHN-IU-2016-817)

BODY. Trunk and legs cuticle granulated, incompletely segmented with 3rd and 4th segments fused. 1st to 3rd segments with mediodorsal conical granulose tubercle near posterior margin. Ocular tubercle grossly club-shaped, slender at base, leaning forward, with 4 large pigmented eyes, ornamented with 3 cones above eyes, one slender anterolateral pair corresponding to lateral sense organs plus single cone on dorsomedian surface. Cephalon ornamented with 2 tall, slender, conical tubercles situated posterior to ocular tubercle base. Lateral projections of cephalon (on which palps articulate) conspicuously diverging from cephalic segment, anteriorly directed. Lateral processes of 1st, 2nd and 3rd segments as long as wide, all well separated by less than half their diameter at base; lateral processes on 4th segment shorter than wide, touching 3rd pair at base. All lateral processes unornamented.

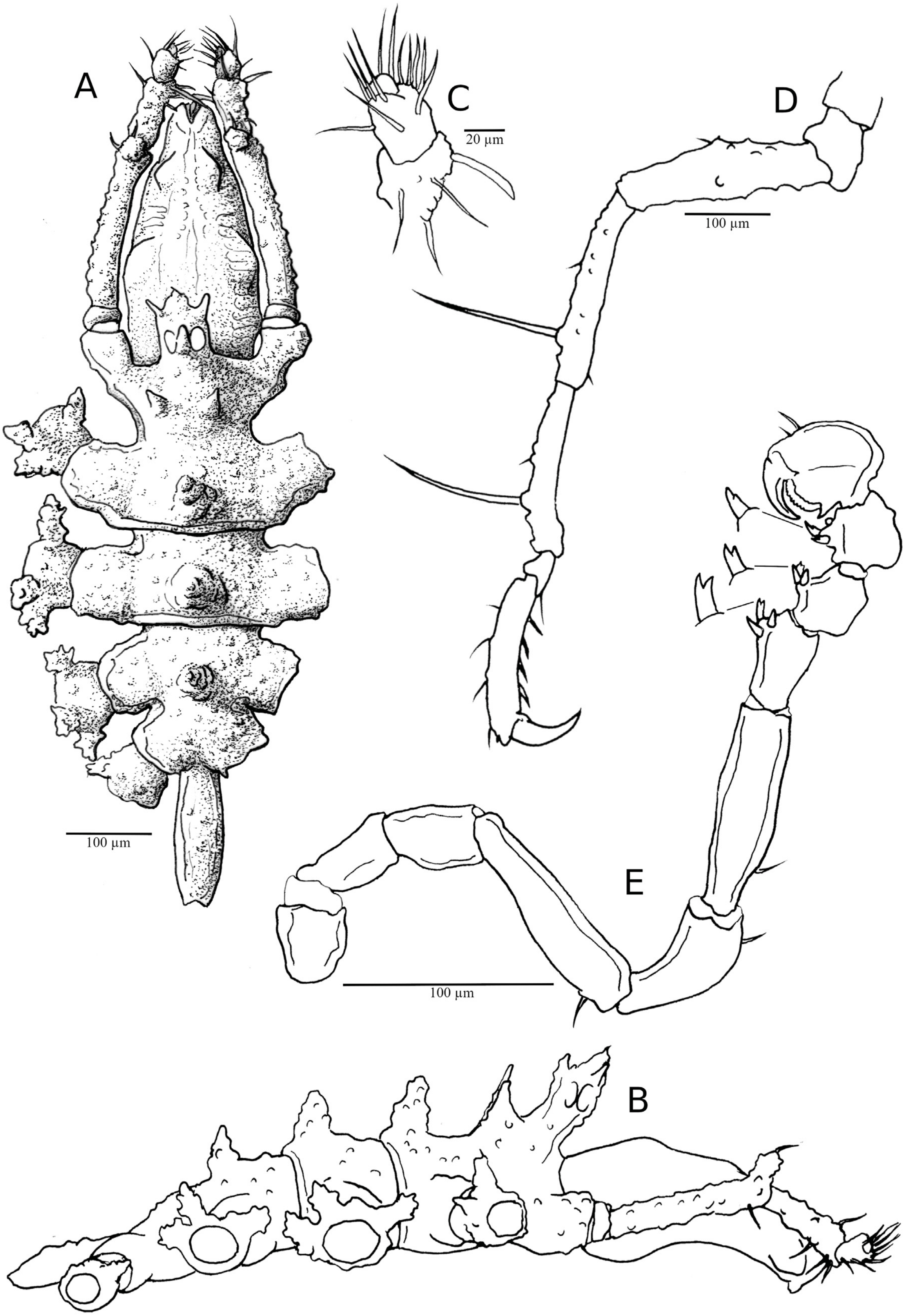

Fig. 31. *Rhynchothorax sidereus* sp. nov., holotype, MNHN-IU-2016-817. **A**. Body, dorsal view. **B**. Body, lateral view (same scale as A). **C**. Palp terminal segments, ventral view. **D**. Third leg. **E**. Oviger.

Proboscis. Surface smooth, reaching 3rd palp article, without conspicuous dorsomedian tubercle, with 2 pairs of dorsolateral bulges at about mid-length and ⅔ of proboscis length, latter most conspicous. Distal part down-curved. Lips bilateral, vertical, with inner and outer antimeres.

Abdomen. Horizontal, cylindrical, blunt, about 3 times as long as wide, extending lightly beyond coxae 2. No basal segmentation.

Chelifore. Absent.

Palp. 5-articled. 1st article shorter than wide, with inconspicuous articulation. 2nd article longest, about 7 times as long as wide, with dorsal tubercle at distal end, tip with spine. 3rd article about 0.6 times as long as 2nd and 4 times as long as 4th, carrying scarce setae, with large spine on inner side distally. 4th article about as long as wide, carrying many setae. 5th article shortest, bud-like, carrying many setae.

Oviger. 10-articled. 1st article about as long as wide, glabrous. 2nd article slightly longer than 1st, more than 1.5 times as long as wide, glabrous. 3rd article slightly longer than 2nd, about ⅘ times as long as wide, glabrous. 4th article longest, about 2.5 times as long as 3rd and 5 times as long as wide, with distal seta. 5th article half as long as 4th and more than 1.5 times as long as wide, curved, carrying distal seta. 6th article about 0.9 times as long as 4th and about 3 times as long as wide, carrying proximal seta. 7th article about ⅘ times as long as wide. 8th and 9th articles subequal, about as long as wide. 10th article larger, rounded, about as long as wide, typical of the genus in having lamina on inner strigilis surface in addition to strigilis spine and terminal claw. Striglis typical, formula 3 : 3 : 3 : 2, with bifurcated spine on each article. Terminal claw inner surface apparently flattened, about as long as strigilis lamina.

Legs. Slender. Coxa 1 bearing one dorsomedian and 2 lateral granulated projections on 1st, 2nd and 3rd legs, only one anterior projection on 4th leg. Coxa 2 of about same size, slenderer, unornamented. Coxa 3 small, unornamented. Femur approximately 4 times as long as wide. Tibiae 1 and 2 slenderer than femur, bearing long dorsomedian spine at distal end. Tibia 1 of about same size as femur, tibia 2 slightly shorter than femur or tibia 1. Tarsus medium-sized. Propodus about ⅙ shorter than tibia 2, setose, sole gently curved, bearing 4 spines. Main claw about half as long as propodus. No auxiliary claw. Gonopores inconspicuous.

Measurements (mm). Trunk 0.47; abdomen 0.16; proboscis 0.31; palp 0.33; coxa 1 0.07; coxa 2 0.07; coxa 3 0.06; femur 0.24; tibia 1 0.22; tibia 2 0.19; tarsus 0.04; propodus 0.18; main claw 0.08.

Remarks

Rhynchothorax sidereus sp. nov. is distinguished from most other species of the genus by the following combination of characters: presence of pigmented eyes; presence of one dorsodistal spur on second palp article; two conical tubercles posterior to ocular tubercle base; three tubercles on coxa 1 of first, second and third legs; no ornamentation on lateral processes. These characters are shared with *R. orientalis* Child, 1988 from Philippines. *Rhynchothorax sidereus* sp. nov. differs from Child's (1988a) specimen in showing no bifid extremity of the dorsomedian tubercles or any anterior projection of the ocular tubercle. The species *R. sidereus* is also morphologically similar to *R. swir* Staples, 2019 from the southwest Indian Ridge, but the former has distinctive tall tubercles on the ocular tubercle and is without conical tubercles on the lateral processes (Staples 2019).

Distribution

Only known from type locality.

Depth range

65 m.

Discussion

Composition of Martinique fauna

Together with species recorded by previous authors (Table 1), a total of 79 species (of which 72 are included in this study) have been recovered from Martinique shallow waters (< 100 m), which represents about half of the total shallow-water diversity of TNWA (Sabroux *et al.* 2019b). Among them, six morphospecies (two *Ascorhynchus*, one *Endeis*, three *Anoplodactylus*) were not identified to species level because the specimens were incomplete or identification was impeded by the absence of sex-dependent diagnostic characters. One was tentatively attributed to *Anoplodactylus justi*, but male characters are missing to confirm this identification. Five species (*Anoplodactylus* cf. *arcuatus*, *A*. cf. *californicus*, *Pallenoides* cf. *amazonicus*, *Pycnogonum* cf. *ornans* and *P.* cf. *pusillum*) were only tentatively identified to known species, as they lacked diagnostic characters or showed minor variations compared to the original descriptions, and had no support from genetic data. Finally, three other morphospecies (*Ammothella* aff. *krappi*, *Endeis* aff. *meridionalis* and *E.* aff. *mollis*) are related to described species but are probably new species on their own, though we refrained from describing them as new due to taxonomic complexity. Therefore, there are now 64 nominal species recorded from Martinique. Among them, 51 species were known to science prior to this study, including 32 species here recorded for the first time in Martinique, and 13 species are new to science.

Looking at the geographic distribution of species found in Martinique (Table 3), the species assemblage is dominated by endemics to TNWA (up to 18 species). Several Martinique species have their distribution extending to the Atlantic coast of South America (up to 11 species are strictly shared between the South American Atlantic coast and TNWA, and up to 26 are recorded from both regions), highlighting the potential role of the North Brazilian current in the distribution of shallow sea spiders in the region. The North Brasilian current originates from the Southern Equatorial current near the mouth of the Amazon River and extends north through the Caribbean to the Gulf of Mexico (Silveira *et al.* 2000; Miloslavich *et al.* 2010). It has previously been suggested that this current is responsible for the wide distribution of sea spider species on the North Brasilian Atlantic coast (Lucena & Christoffersen 2018a).

Another important part of Martinique pycnogonid species, up to 14, are cosmopolitan. In some cases, this may be the result of species introduction. For example, *Anoplodactylus digitatus* was recorded in the Indo-Pacific, as well as in the Eastern Mediterranean, but was also recorded from Martinique by Bourdillon (1955) (and potentially in the Azores; Arnaud 1974). We only found this species dwelling on pontoons in Fort-de-France, while Bourdillon found it on a hull at the same locality. Fort-de-France is the main economical port of Martinique, as well as an important cruise port, and it therefore has a high level of traffic involving international transports. Introduction by shipping (as already documented among sea spiders for *Ammothella hilgendorfi* (Böhm, 1879); Bamber 2012) is thus likely at least for *A. digitatus*. This is potentially also the case for other cosmopolitan species cited here, though we cannot exclude that some are truly cosmopolitan.

An alternative hypothesis is that supposed cosmopolitan species actually correspond to specimens sampled at various locations mistakenly identified by different authors to the same species. This is a high-risk, poorly documented issue in sea spider taxonomy, linked to the scarcity of discrete morphological diagnostic characters in this group. For example, it turned to be very difficult to provide a confident identification of the specimens morphologically close to *Anoplodactylus californicus* (here referred to as *A.* cf. *californicus*) due to the variability between descriptions, suggesting that confusion in previous studies is likely and that the real species distribution may be different from our present knowledge. This underpins the need for a revision of the the genus *Anoplodactylus*. The same could be said about the genera *Ammothella* (Lucena *et al.* 2019), *Callipallene* (Müller 1990d), *Endeis* (Müller & Krapp 2009), *Tanystylum* (Scarabino *et al.* 2019) – and actually all speciose genera within sea spiders.

Table 3. Distribution of species known from Martinique in the world, present records included (new species in this study excluded). * species recorded for the first time in the TNWA. † species not formally identified in Martinique (*cf.*, *aff.*, etc.). ‡ only known from Martinique.

Distribution (number of species)	**Species**
Endemic to TNWA (16–18)	*Ammothella exornata*, *Tanystylum birkelandi*, *T. hummelincki*, *T. geminum*, *T. tayronae*, *Ascorhynchus horologium*, *Callipallene cinto*, *C. longicoxa*, *Pallenoides spinulosus*, *Parapallene bermudensis*, *Nymphon macabou*‡, *Anoplodactylus arcuatus*†, *A. bahamensis*, *A. imswe*, *A. justi*†, *A. massiliformis*, *A. micros*, *Rhynchothorax crenatus*
TNWA and Atlantic coast of South America (9–11)	*Achelia gracilis*, *Ammothella rugulosa*, *Tanystylum acuminatum*, *Pallenopsis schmitti*, *Ascorhynchus castellioides*, *Pallenoides amazonicus*†, *Nymphon aemulum*, *Anoplodactylus evelinae*, *A. ganchiformis*, *A. monotrema*, *Pycnogonum ornans*†*
TNWA and Atlantic coast of North America (1)	*Anoplodactylus quadratispinosus*
West Atlantic (2)	*Pallenopsis candidoi**, *Anoplodactylus insignis*
Amphi-Atlantic (including West Mediterranean) (5–6)	*Ascorhynchus latipes*, *Eurycyde raphiaster*, *Callipallene emaciata*, *Anoplodactylus maritimus*, *Pentapycnon geayi*, *Pycnogonum pusillum*†
Atlantic and Pacific coast of Americas (5)	*Ammothella marcusi*, *A. spinifera*, *Nymphopsis duodorsospinosa*, *Tanystylum isthmiacum*, *Eurycyde clitellaria*
Cosmopolitan (12–14)	*Achelia sawayai*, *Ammothella appendiculata*, *Tanystylum duospinum*, *T. orbiculare, Callipallene brevirostris*, *Endeis flaccida*, *E. meridionalis*†, *E. mollis*†, *Anoplodactylus californicus*, *A. digitatus, A. glandulifer*, *A. pectinus*, *A. petiolatus, A. robustus* (?)

Impact of barcoding data on sea spider taxonomy

The use of molecular data to perform integrative taxonomy is now routinely employed in the literature (e.g., Kantor & Puillandre 2021; Šobáňová & Ďuriš 2021; Vaga *et al.* 2021), but surprisingly rarely for sea spiders, except for the Southern Ocean and Australia (Arango *et al.* 2011; Dietz *et al.* 2015a, 2015b; Dömel *et al.* 2015, 2017, 2019, 2020; Soler-Membrives *et al.* 2017; Brenneis *et al.* 2020). However, this is a paramount tool to overcome the complexity of sea spider taxonomy, which enabled us to delimit additional species compared to our preparative paper (Sabroux *et al.* 2019b) and to discriminate several closely related species: *Eurycyde kaiouti* sp. nov. and *E. raphiaster*; *Ammothella dirbergi* sp. nov. and *A. krappi* sp. nov.; *Tanystylum boucheti* sp. nov. and *T. hummelincki*; and *Anoplodactylus micros* and *A. bahamensis*. On a strictly morphological base, it is likely that these identifications would be regarded as over-splitting, resulting from an excessive emphasis on individual variations; but the very high CO1 p-distances that are observed for these groups (ranging from 7.7 to 18.7%), supported by observable morphological characters, provide convincing evidence that these represent different species (Dietz *et al.* 2015a). For comparison, Brenneis *et al.* (2020) recovered inter-species CO1 p-distances among morphologically distinct species of the genus *Pallenella* Schimkewitsch, 1909 ranging from 4.3% to 17.7%.

It is also remarkable that four species (*Achelia gracilis*, *A. sawayai*, *Nymphon ludovici* sp. nov., *Anoplodactylus micros*) present two or three CO1 clusters each (identified in this study as ‘groups’) with high CO1 p-distances (7.7–19.1%). These clusters may hide cryptic species, as suggested by the high p-distances. However, Dietz *et al.* (2015a) showed that highly divergent CO1 clusters could occur within the same species of the *Colossendeis megalonyx* Hoek, 1881 species complex (up to 8% of CO1 divergence in Kimura-2 parameter distances), since using nuclear internal transcribed spacers (ITS) suggested that they did not correspond to distinct species but to mitochondrial introgressions between distant populations. Pycnogonids do not generally have an obligate dispersive phase (Arnaud & Bamber 1987; but see Lehmann *et al.* 2021 for a possible exception), and adults are only occasional, 'bad' swimmers, so sea spider dispersivity is low, which may in turn foster strong geographic structuring (Modica *et al.* 2017). Even though genetic distances are peculiarly high here, it can thus not be totally excluded that sympatric cluster groups without morphological diagnostic characters could also result from hybridization between distant populations. This is why we refrain from describing these clusters as distinct species here.

Conclusion

The present list includes 761 sea spider specimens identified to 72 species, of which 13 are new to science. Our integrative taxonomy approach enabled us to identify species with unconspicous diagnostic characters, which may have been overlooked in previous studies. Furthermore, genetic distances suggest that nine cryptic species may be hiding in this material. Because of the scarcity of morphological characters available to the taxonomist, rarity of exhaustive sampling (see Sabroux *et al.* 2019b) and the poor dispersivity of sea spiders, it is likely that their diversity in the TNWA is much higher than presently known. The rare use of integrative taxonomy in this group led to this diversity being overlooked, and many cryptic species may remain to be described.

It is remarkable indeed, that our material also shows high CO1 genetic distances from conspecific specimens from other locations in the Caribbean (when genetic data available; Arango & Wheeler 2007): this is the case for *Achelia sawayai* (14.7–17.2%), *Ammothella appendiculata* (17.8–18.3%), *A. spinifera* (11.7%), *Nymphopsis duodorsospinosa* (10.5%), *Ascorhynchus castellioides* (16.5–16.7%), *Eurycyde raphiaster* (22.4–24.0%), *Callipallene brevirostris* (15.4–15.5%) and *Anoplodactylus batangensis* (9.1–9.5%). As we suggested above, this could be linked to geographic structuring, increased by the poor dispersivity of sea spiders. But this hypothesis is mitigated by the fact that we do not observe a similar divergence among some other species sampled at distant localities: e.g., *Endeis flaccida* sampled in French Guiana and Martinique with 0% divergence; or *Anoplodactylus* cf. *californicus* and Arango & Wheeler's (2007) *Anoplodactylus californicus* from the Colombian Caribbean with 4.7% divergence. Alternatively, they could be cryptic species, and comparison with Martinique material may enable (or not) the identification of diagnostic characters. It can also not be excluded that the previously sequenced material was simply misidentified as a consequence of the complexity of pycnogonid taxonomy; or that these sequences are simply of poor quality (see Arabi *et al.* 2010), generating artefactual divergences. In any case, these results call for a reevaluation of sea spider diversity in the Caribbean and the TNWA, using all the tools available to taxonomists.

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Appendix

Updated tree (unrooted) based on CO1 sequences from Madibenthos sea spiders presented in Sabroux *et al.* (2019b). Boxes corespond to species hypotheses proposed by ABGD analyses based on barcode sequences. Coloured boxes correspond to species including different clusters in the Madibenthos material. Taxon identifications that have been updated have their names coloured in red. Holotypes (or neotypes) have their collection numbers coloured in blue. See Sabroux *et al.* (2019b) for details and complete captions.