



Zootaxa 5387 (1): 001–127

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Monograph

ISSN 1175-5326 (print edition)

ZOOTAXA

ISSN 1175-5334 (online edition)

<https://doi.org/10.11646/zootaxa.5387.1.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:0AD29F74-D349-4E12-8CA4-310275A847B3>

ZOOTAXA

5387

The marine palaemonid shrimps (Crustacea, Deapoda, Caridea) of the Dutch Caribbean

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Magnolia Press
Auckland, New Zealand

Accepted by S. De Grave: 28 Nov. 2023; published: 15 Dec. 2023

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(*Zootaxa* 5387)

127 pp.; 30 cm.

15 Dec. 2023

ISBN 978-1-77688-948-8 (paperback)

ISBN 978-1-77688-949-5 (Online edition)

FIRST PUBLISHED IN 2023 BY

Magnolia Press

P.O. Box 41-383

Auckland 1041

New Zealand

e-mail: magnolia@mapress.com

<https://www.mapress.com/zt>

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ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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Abstract

Species of the decapod family Palaemonidae are common components of tropical coastal waters and coral reefs. The majority of these species are symbionts of various invertebrate phyla. Despite a long history of research on their species diversity in the Dutch Caribbean, recent field expeditions have yielded much new information. Combined with examinations of specimens housed in Naturalis Biodiversity Center and information from literature, a comprehensive list of Dutch Caribbean palaemonids is provided. Newly collected material was primarily identified via morphological analyses. Additional molecular phylogenetic analyses based on mitochondrial COI and 16S and nuclear Histone 3 (H3) genes were conducted in search of cryptic species on the one hand and to check conspecificity in species that were found on multiple host species on the other hand. In total, 46 species are here listed for the Dutch Caribbean of which 24 are here recorded for the first time for one of the islands. One species new to science was discovered and is herein described. Sixty new host associations are recorded. In light of biodiversity loss and increasing anthropogenic pressure on declining coral reefs, documenting the diversity of palaemonids and other coral reef species to provide baseline data takes on a new urgency.

Key words: new taxa, new host associations, symbiosis, Aruba, Bonaire, Curaçao, Saba, Sint Eustatius, Sint Maarten

Introduction

The first records of marine palaemonids from Aruba, Curaçao and Sint Eustatius were made by Rathbun (1920). Schmitt (1924) recorded some more species when studying material collected at Curaçao by C.J. van der Horst, curator of invertebrates at that time at the Rijksmuseum van Natuurlijke Historie, Leiden. Subsequently, Schmitt (1936) worked on a collection made by Wagenaar Hummelinck on Aruba, Bonaire, and Curaçao in 1930. In 1951 and 1952, Holthuis published his extensive volumes on the Palaemonoidae of the Americas in which he recorded five marine palaemonid species from Aruba, Bonaire, Curaçao and Sint Eustatius (Holthuis, 1951, 1952). Chace (1969) described the crinoid associated species *Periclimenes crinoidalis* and *P. meyeri*, and the echinoid associated *Tuleariocaris neglecta* from Curaçao. The extensive report on the Smithsonian-Bredin Caribbean Expeditions by Chace (1972) listed new records of palaemonids from the Saba Bank. Criales (1980) investigated the caridean shrimp fauna associated with Octocorallia and Antipatharia in the waters around Curaçao and Bonaire. Abele and Kim (1986) recorded *Palaemonella americana* (Kingsley, 1878) from Aruba. Wicksten (1995a, b) studied the behaviour of cleaning shrimps *Ancylomenes pedersoni* (Chace, 1958) and *Periclimenes yucatanicus* (Ives, 1891), at Bonaire. She listed six species, of which *Pseudopontonides principes* was new to science. Fransen (2000) recognized that specimens of *Pontonia margarita* Smith in Verrill, 1869, recorded from the Caribbean were different from those of the type-locality in the East Pacific and described the Caribbean specimens as *Pontonia manningi* Fransen, 2000 with including specimens from Bonaire. In his monograph on *Pontonia* s.l., Fransen (2002) listed new records of *Pontonia mexicana* Guérin-Méneville, 1855 [in Guérin-Méneville, 1855–1856] from both Curaçao and Bonaire. Snijders & Fransen (2010) described *Pseudopontonia plumosus* from Curaçao, which was found in association with antipatharian hosts. In 2013, Humann *et al.* issued their identification guide for the Caribbean which included several new photographic records for palaemonids from Curaçao and Bonaire (Humann *et al.* 2013). In 2013, the ‘Curasub’ dove to 220 m depth to collect the rare shrimp *Diapontonia maranus* Bruce, 1986, reported upon by Fransen (2014). Brinkmann & Fransen (2016) reported the first association between a palaemonid shrimp, *Periclimenes rathbunae* Schmitt, 1924, and a stony coral, *Dendrogyra cylindrus* (Ehrenberg, 1834), in the Caribbean and listed another four species from Curaçao. Horká *et al.* (2016) in their study of host-switching in symbiotic marine palaemonid shrimps, incorporated several species from Curaçao. Faasse (2016) reported upon various invertebrate taxa collected during a marine biodiversity survey of Sint Eustatius carried out under the supervision of the Naturalis Biodiversity Center, which included five marine Palaemonidae. Hoeksema & Fransen (2017) reported on the enigmatic association between *Periclimenes rathbunae* and the sacoglossan sea slug *Elysia crispata* Mörch, 1863. Olthof *et al.* (2018) reported upon a collection of shrimps collected during the Bonaire Deep Reef Expedition (2013) made in deep water, including three palaemonids, of which one was new to science. Poupin (2018) published an extensive overview of the Decapoda of the Lesser Antilles including new records of marine Palaemonidae for St. Martin. In total, five palaemonid species have their type locality in Curaçao and two in Bonaire.

The present checklist compiles literature sources using the nomenclature and classification by De Grave & Fransen (2011), updated by De Grave *et al.* (2015), as well as yet unpublished collections made in the last two

decades at Curaçao and Bonaire, and additional material deposited in Naturalis Biodiversity Center (Fig. 1). This includes material collected from Curaçao by Nicolette Snijders (2005), Charles Fransen (2013, 2015, 2016, 2017), Cessa Rauch (2014), Peter Wirtz (2017), and from Bonaire by Charles Fransen (2019) and Peter Wirtz (2019).

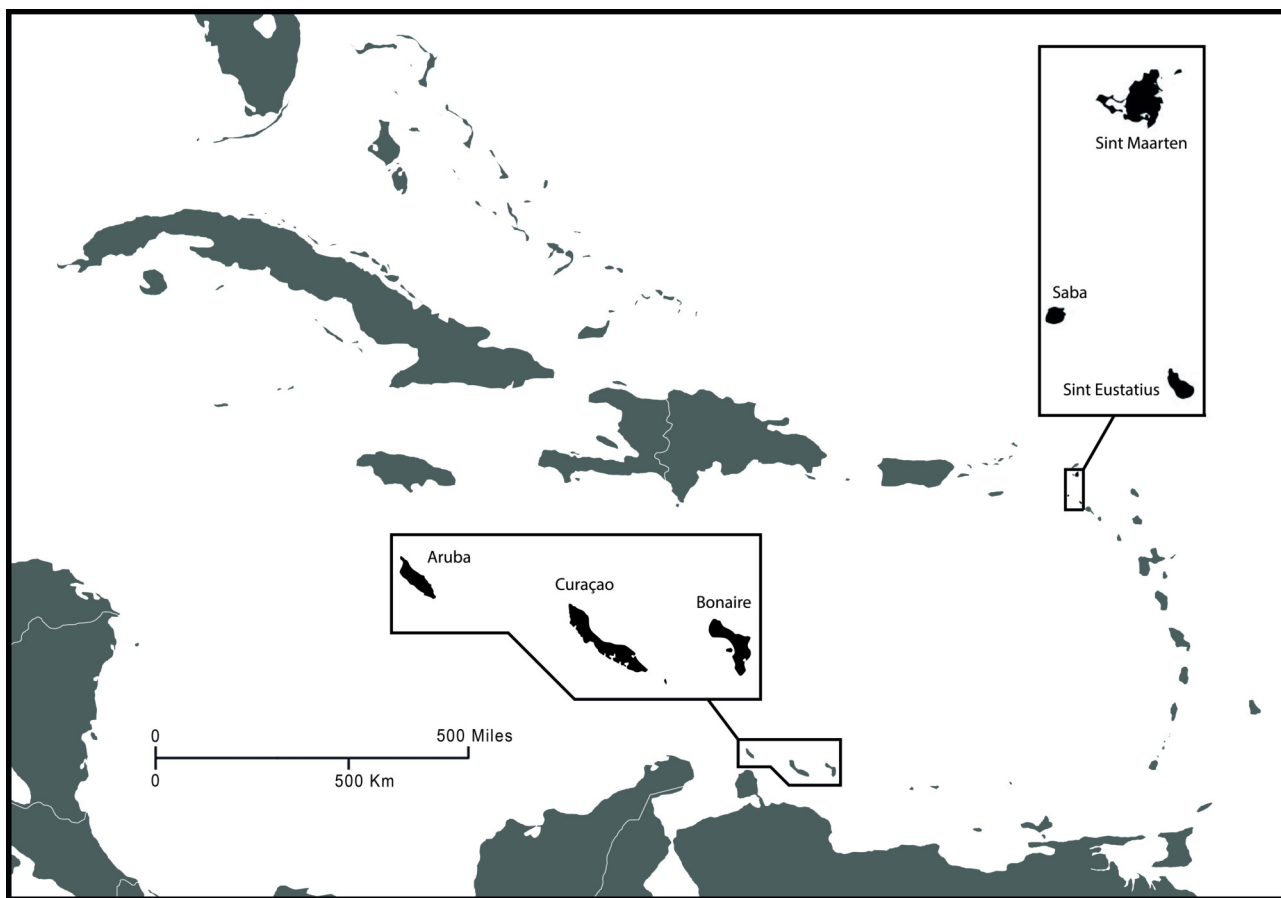


FIGURE 1. Map of the Dutch Caribbean islands.

Material and methods

Specimens analyzed

Collecting was done by snorkeling and using SCUBA equipment. Photographs were taken with a Nikon D80 digital camera, both under water (in a Sea & Sea underwater housing) and in the laboratory. Under water videos were taken with a GoPro Hero 4 Silver video camera with a MacroMate Mini 55mm +15 close-up lens at 1080 dpi and 60 fps and edited in iMovie 10.2.5 using slowmotion (50%) and stabilization video motion enabled. Specimens were observed, measured and illustrated using a Zeiss Discovery V8 dissecting microscope and an Olympus BX53 stereo microscope, both with drawing tubes. Drawings were mounted using Adobe Photoshop CC2021 software.

Material has been deposited in Naturalis Biodiversity Center (formerly Rijksmuseum van Natuurlijke Historie, RMNH) and the Oxford University Museum of Natural History (OUMNH). For the nomenclature of host names, the WoRMS database was used (WoRMS Editorial Board 2023). Post-orbital carapace length (pocl.) was measured from the posterior margin of the orbit to the posterior margin of the carapace. The rostral formula (R) is defined as: number of postorbital teeth on carapace + number of teeth on rostrum proper / number of ventral rostral teeth. Field collection number is abbreviated as fcn.

Specimen identification

Newly collected material was primarily identified via morphological analyses. Additional molecular phylogenetic analyses based on mitochondrial COI and 16S and nuclear Histone 3 (H3) genes were conducted in search of cryptic species on the one hand and to check conspecificity in species that were found on multiple host species on the other hand (Table 1).

TABLE 1. Specimens used in molecular analyses, with their voucher identification numbers, sampling locations, host, and GenBank accession numbers (COI, 16S, H3). NA, not available; new sequences listed in bold face.

Species	Voucher id.	Locality	host	COI	16S	H3
<i>Ancylomenes pedersoni</i>	RMNH.CRUS.D.56996/BW0010	Curaçao	<i>Condylactis gigantea</i>	KX090106	KX090083	NA
<i>Ancylomenes pedersoni</i>	RMNH.CRUS.D.56997/BW0020	Curaçao	<i>Bartholomea annulata</i>	KX090107	KX090084	KX090129
<i>Ancylomenes pedersoni</i>	RMNH.CRUS.D.53153/G004	Curaçao	<i>Bartholomea annulata</i>	KX090128	KX090103	NA
<i>Ancylomenes pedersoni</i>	RMNH.CRUS.D.53154/G012	Curaçao	<i>Bartholomea annulata</i>	NA	KX090104	NA
<i>Ancylomenes pedersoni</i>	RMNH.CRUS.D.53147/G010	Curaçao	<i>Condylactis gigantea</i>	NA	KX090105	NA
<i>Ascidonia quasipusilla</i>	RMNH.CRUS.D.57001/57050/BW1200	Curaçao	<i>Pyura torpida</i>	KX090119/ KU064957	KX090096	KX090140
<i>Brachycarpus biunguiculatus</i>	RMNH.CRUS.D.58071/Cessa-119, CAR.19.039	Curaçao	<i>Aphysina cauliformis</i>	OQ445969	OQ437417	OQ450324
<i>Brachycarpus biunguiculatus</i>	RMNH.CRUS.D.57936/BON.18-1	Bonaire	<i>Callyspongia (Cladochalina) aculeata</i>	NA	OQ437418	OQ450325
<i>Diapontonia maranulus</i>	RMNH.CRUS.D.57052 (=56690)/BW1210	Curaçao	<i>Paleopneustes tholoformis</i>	KU064967	KU064815	KU065050
<i>Diapontonia maranulus</i>	RMNH.CRUS.D.57052 (=56690)/BW1211	Curaçao	<i>Paleopneustes tholoformis</i>	OQ445973	NA	OQ737830
<i>Gnathophylloides mineri</i>	RMNH.CRUS.D.57000/BW1050	Curaçao	<i>Tripneustes ventricosus</i>	KX090118	KX090095	KT224392
<i>Gnathophylloides mineri</i>	RMNH.CRUS.D.58082/BW1050	Curaçao	<i>Tripneustes ventricosus</i>	NA	NA	OQ737834
<i>Gnathophylloides mineri</i>	RMNH.CRUS.D.58082/BW1051	Curaçao	<i>Tripneustes ventricosus</i>	OQ445976	OQ437421	OQ737833
<i>Gnathophylloides mineri</i>	RMNH.CRUS.D.58083/BW1140	Curaçao	<i>Lytechinus variegatus</i>	OQ445974	NA	OQ737831
<i>Gnathophylloides mineri</i>	RMNH.CRUS.D.58083/BW1141	Curaçao	<i>Lytechinus variegatus</i>	OQ445975	NA	OQ737832
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58088/BW1110	Curaçao	<i>Aphysina archeri</i>	OQ445984	NA	OQ737845
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58089/BW1180	Curaçao	<i>Aphysina archeri</i>	OQ445985	NA	OQ737843
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58089/BW1181	Curaçao	<i>Aphysina archeri</i>	OQ445986	NA	OQ737842
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58090/Cessa-002 CAR02.001	Curaçao	<i>Aiolochroia crassa</i>	OQ445977	NA	OQ737835
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58107/Cessa-063 CAR13.029	Curaçao	<i>Aphysina archeri</i>	OQ445982	OQ437427	OQ737844
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58105/Cessa- CAR11.024	Curaçao	<i>Svenzea zaei</i>	OQ445979	OQ437422	OQ737838
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58117/Cessa- CAR23.041	Curaçao	<i>Aphysina lacunosa</i>	OQ445978	OQ437423	OQ737840
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58092/Cessa- CAR03.015	Curaçao	<i>Aphysina lacunosa</i>	NA	OQ437424	OQ737836
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58101/Cessa- CAR09.019	Curaçao	<i>Aphysina lacunosa</i>	OQ445983	OQ437425	OQ737841
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58110/Cessa- CAR14.031	Curaçao	<i>Aphysina lacunosa</i>	OQ445981	OQ437426	OQ737837
<i>Holthuisaeus bermudensis</i>	RMNH.CRUS.D.58109/Cessa- CAR14.030	Curaçao	<i>Agelas conifera</i>	OQ445980	NA	OQ737839

...Continued on the next page

TABLE I. (Continued)

Species	Voucher id.	Locality	host	COI	16S	H3
<i>Leander paulensis</i>	ULLZ13685	Panama: Bocas Del Toro		NA	MK971547.1	NA
<i>Leander paulensis</i>	CCDB_3436	Brazil: Ubatuba, Sao Paulo		MF490132	KP179007	KPI79127
<i>Leander tenuicornis</i>	ULLZ13351	Panama: Bocas Del Toro		MN184147	NA	NA
<i>Leander tenuicornis</i>	BOC-122a_OUMNH:ZC:2008-14-034	Panama: Bocas Del Toro	Free-living	MN184096	MK971534	NA
<i>Neopontonides chacei</i>	RMNH.CRUS.D.51659	Curaçao	<i>Plexaurella dichotoma</i>	NA	OQ437429	NA
<i>Neopontonides chacei</i>	RMNH.CRUS.D.51656	Curaçao	<i>Eunicea clavigera</i>	NA	OQ437433	NA
<i>Neopontonides chacei</i>	RMNH.CRUS.D.51654	Curaçao	not known	NA	OQ437428	NA
<i>Neopontonides chacei</i>	RMNH.CRUS.D.51655	Curaçao	<i>Eunicea flexuosa</i>	NA	OQ437430	NA
<i>Neopontonides chacei</i>	RMNH.CRUS.D.51660	Curaçao	<i>Pseudoplexaura porosa</i>	NA	OQ437431	NA
<i>Neopontonides chacei</i>	RMNH.CRUS.D.51657	Curaçao	<i>Antilogorgia bipinnata</i>	NA	OQ437432	NA
<i>Palaemon northropi</i>	BOC-033	Panama: Bocas Del Toro		MN184002	MK971435	NA
<i>Palaemonella americana</i>	RMNH.CRUS.D.58072/BW1150	Curaçao	<i>Niphates digitalis</i>	OQ445970	NA	OQ450326
<i>Palaemonella americana</i>	RMNH.CRUS.D.57051/BW1170	Curaçao	<i>Desmapsamma anchorata</i>	KU064961	NA	KU065045
<i>Palaemonella americana</i>	RMNH.CRUS.D.58074/Cessa-059 CAR13.027	Curaçao	<i>Desmapsamma anchorata</i>	OQ445971	OQ437419	OQ450327
<i>Palaemonella americana</i>	RMNH.CRUS.D.58077/Cessa-099 CAR18.036	Curaçao	<i>Aphysina lacunosa</i>	OQ445972	OQ440237	OQ450328
<i>Palaemonella americana</i>	RMNH.CRUS.D.57313	Curaçao	<i>Erythropodium caribaeorum</i>	NA	OQ437420	NA
<i>Periclimenaeus ascidianum</i>	RMNH.CRUS.D.57939/BON.18-5	Bonaire	<i>Diplosoma spec.</i>	OQ445987	OQ437434	OQ737846
<i>Periclimenaeus ascidianum</i>	RMNH.CRUS.D.57946/BON.34-4	Bonaire	<i>Diplosoma spec.</i>	NA	OQ437435	OQ737847
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58131/BW1011	Curaçao	<i>Niphates digitalis</i>	NA	OQ437446	OQ737861
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58132/BW1160	Curaçao	<i>Desmapsamma anchorata</i>	NA	NA	OQ737860
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58132/BW1161	Curaçao	<i>Desmapsamma anchorata</i>	NA	OQ437447	OQ737859
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58133/BW1190	Curaçao	<i>Niphates digitalis</i>	NA	OQ437444	OQ737855
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58133/BW1191	Curaçao	<i>Niphates digitalis</i>	NA	OQ437445	OQ737856
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.57931/BON.02-1	Bonaire	Red encrusting sponge	NA	OQ437436	OQ737858
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58139/Cessa CAR15.033	Curaçao	<i>Niphates erecta</i>	NA	OQ437442	OQ737853

...Continued on the next page

TABLE I. (Continued)

Species	Voucher id.	Locality	host	COI	16S	H3
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58140/Cessa CAR17.035	Curaçao	<i>Desmapsamma anchorata</i>	NA	OQ437437	OQ737848
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58142/Cessa CAR22.038	Curaçao	<i>Callyspongia (Cladochalina) plicifera</i>	NA	OQ437438	OQ737849
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58138/Cessa CAR13.028	Curaçao	<i>Desmapsamma anchorata</i>	NA	OQ437439	OQ737852
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58135/Cessa CAR04.012	Curaçao	<i>Niphates erecta</i>	NA	OQ437440	OQ737854
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58134/Cessa CAR03.013	Curaçao	<i>Phorbas amaranthus</i>	NA	OQ437441	OQ737851
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58137/Cessa CAR11.025	Curaçao	<i>Desmapsamma anchorata</i>	NA	NA	OQ737850
<i>Periclimenaeus carabicus</i>	RMNH.CRUS.D.58131/BW1010	Curaçao	<i>Niphates digitalis</i>	NA	OQ437443	OQ737857
<i>Periclimenaeus cloacola</i> spec. nov.	RMNH.CRUS.D.58146/BW1130	Curaçao	<i>Diplosoma</i> aff. <i>listerianum</i>	OQ445988	NA	OQ737862
<i>Periclimenaeus cloacola</i> spec. nov.	RMNH.CRUS.D.57933/BON.05-1	Bonaire	<i>Diplosoma</i> aff. <i>listerianum</i>	OQ445989	OQ437448	OQ737863
<i>Periclimenaeus cloacola</i> spec. nov.	RMNH.CRUS.D.57937/BON.21-1	Bonaire	<i>Diplosoma</i> aff. <i>listerianum</i>	NA	OQ437449	OQ737864
<i>Periclimenaeus maxillulidens</i>	ME.012		Unknown	NA	NA	OQ511308
<i>Periclimenaeus maxillulidens</i>	ME.013		Unknown	NA	NA	OQ511309
<i>Periclimenaeus pearsei</i>	ME.015		Unknown	NA	OQ437450	OQ737865
<i>Periclimenaeus perlatus</i>	RMNH.CRUS.D.58149/BW1120	Curaçao	Yellos sponge	OQ445991	NA	OQ737870
<i>Periclimenaeus perlatus</i>	RMNH.CRUS.D.58153/Cessa-028 CAR06.016	Curaçao	<i>Aphysina archeri</i>	NA	OQ437454	OQ737869
<i>Periclimenaeus perlatus</i>	RMNH.CRUS.D.58155/Cessa-040 CAR12.022	Curaçao	<i>Aphysina archeri</i>	NA	OQ437452	OQ737868
<i>Periclimenaeus perlatus</i>	RMNH.CRUS.D.58154/Cessa-047 CAR09.020	Curaçao	<i>Aphysina archeri</i>	OQ445990	NA	OQ737867
<i>Periclimenaeus perlatus</i>	RMNH.CRUS.D.58151/Cessa-012 CAR04.010	Curaçao	<i>Aphysina archeri</i>	NA	OQ437451	OQ737866
<i>Periclimenaeus perlatus</i>	RMNH.CRUS.D.58152/Cessa-013 CAR04.011	Curaçao	<i>Aphysina lacunosa</i>	NA	OQ437453	NA
<i>Periclimenaeus schmitti</i>	ME.016		Unknown	NA	NA	OQ737871
<i>Periclimenaeus schmitti</i>	ME.017		Unknown	NA	OQ437455	OQ737872
<i>Periclimenaeus schmitti</i>	BOC-062c_OUMNH:ZC:2008-14-073	Panama: Bocas Del Toro	Unidentified sponge	MN183841	MK971272	NA
<i>Periclimenaeus wilsoni</i>	ULLZ7384	Gulf of Mexico, off Louisiana	Unidentified sponge	NA	EU868702	NA
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.51641	Curaçao	<i>Antipathes</i> sp.	OQ445997	NA	NA

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TABLE I. (Continued)

Species	Voucher id.	Locality	host	COI	16S	H3
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.51642	Curaçao	<i>Antipathes</i> sp.	OQ445994	OQ437456	NA
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.58161/BW1060	Curaçao	<i>Antipathes</i> sp.	OQ445992	OQ437459	OQ737873
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.58162/BW1061	Curaçao	<i>Antipathes</i> sp.	OQ445993	OQ437460	OQ737874
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.57054/BW1062	Curaçao	<i>Antipathes</i> sp.	KU064988	KU064834	KU065077
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.51639	Curaçao	<i>Pseudoplexaura porosa</i> forma a	OQ445995	OQ437458	NA
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.51640	Curaçao	<i>Pseudoplexaura porosa</i> forma porosa	OQ445996	OQ437457	NA
<i>Periclimenes antipathophilus</i>	RMNH.CRUS.D.57934/BON.07-1	Bonaire	Branching Octocorallia	NA	OQ437461	OQ737875
<i>Periclimenes bowmani</i>	RMNH.CRUS.D.57056/BW1090	Curaçao	<i>Davidaster rubiginosus</i>	KU064995	KU064839	KU065083
<i>Periclimenes bowmani</i>	RMNH.CRUS.D.57056/BW1091	Curaçao	<i>Davidaster rubiginosus</i>	OQ445998	OQ437462	OQ737876
<i>Periclimenes colesi</i>	RMNH.CRUS.D.57942/BON.31-1	Bonaire	<i>Madracis pharensis</i>	NA	OQ437463	OQ737878
<i>Periclimenes colesi</i>	RMNH.CRUS.D.57944/BON.34-2	Bonaire	<i>Madracis pharensis</i>	NA	OQ437464	OQ737877
<i>Periclimenes colesi</i>	RMNH.CRUS.D.57055/BW0080	Curaçao	<i>Callyspongia (Cladochalina)</i> <i>aculeata</i>	KU064992	KU064837	KU065080
<i>Periclimenes colesi</i>	RMNH.CRUS.D.57055/BW0081	Curaçao	<i>Callyspongia (Cladochalina)</i> <i>aculeata</i>	NA	OQ437469	OQ737887
<i>Periclimenes colesi</i>	RMNH.CRUS.D.57055/BW0220	Curaçao	<i>Callyspongia (Cladochalina)</i> <i>aculeata</i>	OQ446000	OQ437477	NA
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58173/BW0090	Curaçao	Unidentified sponge	OQ446002	OQ437471	OQ737889
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58173/BW0091	Curaçao	Unidentified sponge	NA	NA	OQ737891
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58174/BW0100	Curaçao	Unidentified sponge	NA	NA	OQ737892
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58175/BW0110	Curaçao	<i>Callyspongia (Cladochalina)</i> <i>aculeata</i>	OQ446004	OQ437473	OQ737893
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58175/BW0111	Curaçao	<i>Callyspongia (Cladochalina)</i> <i>aculeata</i>	OQ446005	OQ437476	OQ737894
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58176/BW0120	Curaçao	<i>Niphates digitalis</i>	OQ446006	OQ437475	OQ737896
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58176/BW0121	Curaçao	<i>Niphates digitalis</i>	OQ445999	OQ437474	OQ737895
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58177/BW0130	Curaçao	<i>Callyspongia (Cladochalina)</i> <i>aculeata</i>	OQ446001	OQ437470	OQ737888

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TABLE I. (Continued)

Species	Voucher id.	Locality	host	COI	16S	H3
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58177/BW0131	Curaçao	<i>Calyspongia (Cladochalina) aculeata</i>	OQ446003	OQ437472	OQ737890
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58214/CAR24.042	Curaçao	<i>Aphysina lacunosa</i>	NA	OQ437465	OQ737879
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58191/CAR13.026	Curaçao	<i>Desmapsamma anchorata</i>	NA	OQ437466	OQ737881
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58178/CAR03.014	Curaçao	<i>Desmapsamma anchorata</i>	NA	OQ437467	OQ737880
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58210/CAR22.037	Curaçao	<i>Calyspongia (Cladochalina) plicifera</i>	NA	OQ437468	OQ737884
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58197/CAR16.034	Curaçao	<i>Aphysina cauliformis</i>	NA	NA	OQ737882
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58189/CAR12.021	Curaçao	<i>Niphates erecta</i>	NA	NA	OQ737883
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58190/CAR12.023	Curaçao	<i>Aphysina cauliformis</i>	NA	NA	OQ737885
<i>Periclimenes colesi</i>	RMNH.CRUS.D.58205/CAR19.040	Curaçao	<i>Aphysina cauliformis</i>	NA	NA	OQ737886
<i>Periclimenes crinoidalis</i>	RMNH.CRUS.D.57940/BON.26-1	Bonaire	<i>Nemaster grandis</i>	OQ446007	OQ437478	OQ737897
<i>Periclimenes harringtoni</i>	RMNH.CRUS.D.58224/Cessa-035 CAR2.002	Curaçao	<i>Neofibularia nolitangere</i>	OQ446011	OQ437481	OQ737901
<i>Periclimenes harringtoni</i>	RMNH.CRUS.D.58227/Cessa-025 CAR6.017	Curaçao	<i>Neofibularia nolitangere</i>	OQ446009	OQ437482	OQ737899
<i>Periclimenes harringtoni</i>	RMNH.CRUS.D.582281/Cessa-037 CAR8.018	Curaçao	<i>Neofibularia nolitangere</i>	OQ446010	OQ437480	OQ737900
<i>Periclimenes harringtoni</i>	RMNH.CRUS.D.57943/BON.34-1	Bonaire	<i>Neofibularia nolitangere</i>	OQ446008	OQ437479	OQ737898
<i>Periclimenes aff. iridescens</i>	RMNH.CRUS.D.57941/BON.26-2	Bonaire	<i>Nemaster grandis</i>	NA	OQ437483	OQ737902
<i>Periclimenes mclellandi</i>	RMNH.CRUS.D.51648	Curaçao	<i>Pseudoplexaura porosa</i> forma ^a	NA	OQ437484	NA
<i>Periclimenes mclellandi</i>	RMNH.CRUS.D.51649	Curaçao	<i>Plexaura nina</i>	OQ446014	OQ437485	NA
<i>Periclimenes mclellandi</i>	RMNH.CRUS.D.51650	Curaçao	<i>Plexaura nina</i>	KUI170687	KUI170690	NA
<i>Periclimenes mclellandi</i>	RMNH.CRUS.D.51644	Curaçao	<i>Eunicea clavigera</i>	OQ446012	NA	NA
<i>Periclimenes mclellandi</i>	RMNH.CRUS.D.51645	Curaçao	<i>Eunicea clavigera</i>	OQ446013	OQ437486	NA
<i>Periclimenes patae</i>	RMNH.CRUS.D.51662	Curaçao	<i>Eunicea tourneforti</i> forma <i>tourneforti</i>	OQ446016	OQ437487	NA
<i>Periclimenes patae</i>	RMNH.CRUS.D.57057/BW1080	Curaçao	<i>Gorgonia ventalina</i>	KU065002	KU064844	KU065090
<i>Periclimenes patae</i>	RMNH.CRUS.D.57057/BW1081	Curaçao	<i>Gorgonia ventalina</i>	OQ446017	NA	OQ737903
<i>Periclimenes perryae</i>	RMNH.CRUS.D.57058/BW1100	Curaçao	<i>Astrophyton muricatum</i>	KU065004	KU064845	KU065091
<i>Periclimenes perryae</i>	RMNH.CRUS.D.57058/BW1101	Curaçao	<i>Astrophyton muricatum</i>	OQ446019	NA	OQ737904

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TABLE I. (Continued)

Species	Voucher id.	Locality	host	COI	16S	H3
<i>Periclimenes perryae</i>	RMNH.CRUS.D.57058/BW1102	Curaçao	<i>Astrophyton muricatum</i>	OQ446018	NA	OQ737905
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57034/BW0050	Curaçao	<i>Stichodactyla helianthus</i>	KX090110	KX090087	KX090132
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57036/BW0060	Curaçao	<i>Stichodactyla helianthus</i>	KX090111	KX090088	KX090133
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57035/BW0070	Curaçao	<i>Condylactis gigantea</i>	KX090112	KX090089	KX090134
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57032/BW0170	Curaçao	<i>Dendrogyra cylindrus</i>	KX090113	KX090090	KX090135
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57032/BW0171	Curaçao	<i>Dendrogyra cylindrus</i>	KX090114	KX090091	KX090136
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57031/BW0180	Curaçao	<i>Dendrogyra cylindrus</i>	KX090115	KX090092	KX090137
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57031/BW0181	Curaçao	<i>Dendrogyra cylindrus</i>	KX090116	KX090093	KX090138
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57033/BW0190	Curaçao	<i>Dendrogyra cylindrus</i>	KX090117	KX090094	KX090139
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.53148/G014	Curaçao	<i>Stichodactyla helianthus</i>	KX090120	OQ437488	NA
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.53150/G019	Curaçao	<i>Stichodactyla helianthus</i>	KX090121	OQ437489	NA
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57044/JE-009	Curaçao	unknown	KX090122	KX090097	KX090141
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57048/JE-013	Curaçao	<i>Stichodactyla helianthus</i>	NA	KX090098	KX090142
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57044/JE-014	Curaçao	unknown	KX090123	KX090099	NA
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57047/JE-015	Curaçao	<i>Stichodactyla helianthus</i>	KX090124	KX090100	KX090143
<i>Periclimenes rathbunae</i>	RMNH.CRUS.D.57037/JE-016	Curaçao	<i>Stichodactyla helianthus</i>	KX090125	NA	KX090144
<i>Periclimenes yucatanicus</i>	RMNH.CRUS.D.53149/G015	Curaçao	<i>Condylactis gigantea</i>	KX090126	KX090101	NA
<i>Periclimenes yucatanicus</i>	RMNH.CRUS.D.53151/G017	Curaçao	<i>Condylactis gigantea</i>	KX090127	KX090102	NA
<i>Periclimenes yucatanicus</i>	RMNH.CRUS.D.56998/BW0030	Curaçao	<i>Condylactis gigantea</i>	KX090108	KX090085	KX090130
<i>Periclimenes yucatanicus</i>	RMNH.CRUS.D.56999/BW0040	Curaçao	<i>Condylactis gigantea</i>	KX090109	KX090086	KX090131
<i>Pontonia manningi</i>	RMNH.CRUS.D.58263/BW0150	Curaçao	<i>Spondylus americanus</i>	NA	OQ437490	OQ737908
<i>Pontonia manningi</i>	RMNH.CRUS.D.58263/BW0151	Curaçao	<i>Spondylus americanus</i>	NA	OQ437491	OQ737906
<i>Pontonia manningi</i>	RMNH.CRUS.D.58264/BW0160	Curaçao	Unknown	OQ446020	OQ437492	OQ737907
<i>Pontonia manningi</i>	RMNH.CRUS.D.58264/BW0161	Curaçao	Unknown	NA	OQ437493	NA
<i>Pontonia mexicana</i>	RMNH.CRUS.D.58265/BW0140	Curaçao	<i>Pinna carnea</i>	NA	OQ437494	OQ737909
<i>Pontonia mexicana</i>	RMNH.CRUS.D.58265/BW0141	Curaçao	<i>Pinna carnea</i>	NA	OQ437495	OQ737910
<i>Pseudocouiterea antillensis</i>	RMNH.CRUS.D.51631	Curaçao	<i>Pseudoplexaura porosa</i>	OQ446026	OQ437499	NA
<i>Pseudocouiterea antillensis</i>	RMNH.CRUS.D.51633	Curaçao	<i>Plexaurella dichotoma</i>	OQ446028	OQ437501	NA

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TABLE I. (Continued)

Species	Voucher id.	Locality	host	COI	16S	H3
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51626	Curaçao	<i>Antillogorgia bipinnata</i>	OQ446023	NA	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51629	Curaçao	<i>Antillogorgia americana</i>	OQ446024	OQ437506	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51630	Curaçao	<i>Eunicea flexuosa</i>	OQ446025	OQ437498	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51627	Curaçao	<i>Eunicea mammosa</i>	OQ446029	NA	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51628	Curaçao	<i>Plexaura nina</i>	OQ446030	OQ437500	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51632	Curaçao	<i>Eunicea calyculata</i>	OQ446031	OQ437505	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51634	Curaçao	<i>Briareum asbestinum</i>	OQ446027	OQ437503	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51635	Curaçao	<i>Pseudoplexaura flagellosa</i>	OQ446022	OQ437504	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.51651/g120a	Curaçao	<i>Antillogorgia americana</i>	NA	OQ437502	NA
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.57935/BON.14-1	Bonaire	<i>Ellisella elongata</i>	NA	OQ437497	OQ737912
<i>Pseudocoutierea antillensis</i>	RMNH.CRUS.D.57947/BON.36-2	Bonaire	<i>Pseudoplexaura spec.</i>	OQ446021	OQ437496	OQ737911
<i>Pseudopontonides plumosus</i>	RMNH.CRUS.D.51661	Curaçao	<i>Antipathes sp.</i>	OQ446034	OQ437507	NA
<i>Pseudopontonides plumosus</i>	RMNH.CRUS.D.58313/BW1070	Curaçao	<i>Antipathes sp.</i>	OQ446032	OQ437508	OQ737913
<i>Pseudopontonides plumosus</i>	RMNH.CRUS.D.58313/BW1071	Curaçao	<i>Antipathes sp.</i>	OQ446033	OQ437509	OQ737914
<i>Pseudopontonides principis</i>	RMNH.CRUS.D.51636	Curaçao	<i>Stichopathes luetkeni</i>	OQ446038	NA	NA
<i>Pseudopontonides principis</i>	RMNH.CRUS.D.58314/BW1000	Curaçao	<i>Stichopathes luetkeni</i>	OQ446035	OQ437511	OQ737917
<i>Pseudopontonides principis</i>	RMNH.CRUS.D.58315/BW1020	Curaçao	<i>Stichopathes luetkeni</i>	OQ446036	OQ437512	OQ737919
<i>Pseudopontonides principis</i>	RMNH.CRUS.D.58315/BW1030	Curaçao	<i>Stichopathes luetkeni</i>	OQ446037	OQ437513	OQ737915
<i>Pseudopontonides principis</i>	RMNH.CRUS.D.57932/BON.04-1	Bonaire	<i>Stichopathes luetkeni</i>	NA	OQ437510	OQ737918
<i>Pseudopontonides principis</i>	RMNH.CRUS.D.57938/BON.19-2	Bonaire	<i>Stichopathes luetkeni</i>	NA	NA	OQ737916
<i>Rapipontonia platalea</i>	RMNH.CRUS.D.51643	Curaçao	<i>Briareum asbestinum</i>	OQ446039	OQ437514	NA
<i>Typton carneus</i>	ULLZ13711	Panama: Bocas Del Toro	Unidentified sponge	MN184057	MK971495	NA
<i>Typton cf. distinctus</i>	ULLZ13698	Panama: Bocas Del Toro	Unidentified sponge	MN184076	MK971514	NA
<i>Typton cf. distinctus</i>	ULLZ13448	Panama: Bocas Del Toro	Unidentified sponge	MN183846	MK971277	NA
Outgroup						
<i>Stenopus hispidus</i>	UO<CZE_:V10-17	Viet Nam	Free-living	KJ690260	KU064859	KU065104

DNA extraction

Total genomic DNA was extracted with the NucleoMag® 96 Tissue kit (Machery-Nagel, Düren, Germany) using a Thermo Scientific KingFisher™ Flex Magnetic Particle Processor. Extraction was performed with 200 µl lysis buffer and 20 µl proteinase K. Incubation took place overnight at 56°C.

Polymerase chain reaction

Partial COI, 16S, and H3 sequences were amplified by polymerase chain reactions (PCR) in a total reaction volume of 25 µl.

A 533–654 bp fragment of the mitochondrial cytochrome c oxidase subunit I gene (COI) was amplified with LCOI1490 and HCO2198 universal DNA primers (Folmer *et al.* 1994) mixed with Lepidoptera LepF1 and LepR1 primers (Hebert *et al.* 2004) in an equal volume ratio (1:1). If the desired COI fragment could not be amplified using the two above mentioned primer pairs, alternative jgLCO1490 and jgHCO2198 COI primers were used, redesigned by Geller *et al.* (2013). The PCR reaction was performed with 1.0 µl forward primer (10 µmol/l), 1.0 µl reverse primer (10 µmol/l), 0.5 µl dNTP (2.5 mM) (Amersham), 0.25 µl Taq DNA polymerase (5 U/µl) (QIAGEN), 2.5 µl CoralLoad 10x PCR buffer (QIAGEN) and 1–2 µl template DNA. The reaction mixtures were performed using 1.0 µl template DNA. Initial denaturation took place for 3 minutes at 94°C, followed by 39 cycles of denaturation, annealing and extension (15 seconds at 94°C; 30 seconds at 50°C and 40 seconds at 72°C respectively). Final extension was performed for 5 minutes at 72°C.

A 459–509 bp fragment of the 16S mitochondrial ribosomal gene was amplified with 16Sar and 16Sbr rDNA primers (Palumbi *et al.* 1991). The PCR reaction was performed with 1.0 µl forward primer (10 µmol/l), 1.0 µl reverse primer (10 µmol/l), 2.5 µl dNTP (2.5 mM) (Amersham), 0.25 µl Taq DNA polymerase (5 U/µl) (QIAGEN), 2.5 µl CoralLoad 10x PCR buffer (QIAGEN) and 1 µl template DNA. Initial denaturation took place for 3 minutes at 94°C, followed by 39 cycles of denaturation, annealing and extension (10 seconds at 94°C; 1 minute at 50°C and 1 minute at 72°C respectively). Final extension was performed for 5 minutes at 72°C.

A 327 bp fragment of the nuclear histone H3 (H3) gene was amplified with a F1 and R1 primer pair (Colgan *et al.* 1998). The PCR reaction was performed with 1 µl forward primer (10 µmol/l), 1 µl reverse primer (10 µmol/l), 2.5 µl dNTP (2.5 mM) (Amersham), 0.25 µl Taq DNA polymerase (5 U/µl) (QIAGEN), 2.5 µl CoralLoad 10x PCR buffer (QIAGEN) and 1 µl template DNA. Initial denaturation took place for 3 minutes at 95°C, followed by 39 cycles of denaturation, annealing and extension (10 seconds at 95°C; 1 minute at 48°C and 1 minute at 72°C respectively). Final extension was performed for 5 minutes at 72°C.

Sequencing

Raw PCR products were purified, diluted and sequenced by BaseClear, Leiden. Sanger sequences were obtained with an ABI3730xl DNA Analyzer. M13F and M13R primers were used by BaseClear to sequence COI fragments. For sequencing of the 16S and H3 gene fragments, the same primers as those that were used for PCR were supplied at a concentration of 5.0 pmole/ µl.

Molecular phylogenetic analyses

Of the specimens selected for this study, 73 COI sequences, 98 16S sequences, and 97 H3 new sequences were obtained (Table 1). Chromatograms were corrected manually using Sequencher (v. 4.10.1) and aligned using the MUSCLE algorithm (Edgar 2004) in MEGA X (Kumar *et al.* 2018). To verify no stop codons were included, COI alignments were translated using an invertebrate mitochondrial genetic code. H3 sequences were translated with a standard genetic code. None of the COI and H3 sequences coded for stop codons. COI and H3 alignments did not include any indels.

Analyses were carried out for the complete dataset, a subset comprising species of the genera *Periclimenes* and *Ancylomenes*, and a subset comprising species of the genera *Periclimenaeus*, *Holthuisaeus* and *Typton*. Substitution saturation in COI and H3 was tested with DAMBE v5.3 (Xia 2009) using the index proposed by Xia *et al.* (2003). The third coding position in COI was found saturated in the complete dataset and left out of the analyses. Trees were displayed using FigTree v1.4.2 (Rambaut 2009) and Adobe Illustrator version 25.2.3 (2021).

The complete dataset. The single-gene alignment based on sequence data derived from the codon positions 1 and 2 of the mitochondrial gene encoding cytochrome c oxidase subunit I (COI) comprised 111 sequences with 97 variable sites of which 76 were parsimony informative. The 16S ribosomal RNA single-gene alignment of 139 sequences had 308 sites variable of which 272 are parsimony informative. The histone 3 (H3) single-gene alignment contained 124 sequences with 105 variable sites of which 94 were parsimony informative. The best-fitting models for sequence evolution of the three genes were determined in MEGA X and selected by the BIC scores (Bayesian Information Criterion): COI (TN93+G), 16s (HKY+G+I), and H3 (K2+G+I). The Bayesian inference of concatenated dataset of the three genes comprising 1272 bp were estimated in MrBayes 3.1.2 (Ronquist *et al.* 2012) with the previously determined evolutionary models set for each partition. The programme was run for 1,000,000 generations with sample frequency set to 1000 with a burnin set to 25%. A ML analysis of the same concatenated dataset was analysed using RAxML-NG (Kozlov *et al.*, 2019) with the previously determined evolutionary models set for each partition and 100 bootstrap iterations. Trees were rooted by outgroup taxon *Stenopus hispidus* (Olivier, 1811) from the family Stenopodidae.

The *Periclimenes* and *Ancylomenes* subset. The single-gene alignment based on sequence data derived from the gene encoding cytochrome c oxidase subunit I (COI) comprised 58 sequences with 251 variable sites of which 238 were parsimony informative. The 16S ribosomal RNA single-gene alignment of 63 sequences had 175 sites variable of which 161 are parsimony informative. The histone 3 (H3) single-gene alignment contained 59 sequences with 51 variable sites of which 48 were parsimony informative. The best-fitting models for sequence evolution of the three genes were determined in MEGA X and selected by the BIC scores (Bayesian Information Criterion): COI (GTR+G+I), 16s (HKY+G+I), and H3 (K2+G). The Bayesian inference of concatenated dataset of the three genes comprising 1446 bp were estimated in MrBayes 3.1.2 (Ronquist *et al.* 2012) with the previously determined evolutionary models set for each partition. The programme was run for 1,000,000 generations with sample frequency set to 1000 with a burnin set to 25%. A ML analysis of the same concatenated dataset was analysed using RAxML-NG (Kozlov *et al.* 2019) with the previously determined evolutionary models set for each partition and 100 bootstrap iterations. Trees were rooted by outgroup taxon *Gnathopylloides mineri* Schmitt, 1933.

The *Periclimenaeus*, *Holthuisaeus* and *Typton* subset. The single-gene alignment based on sequence data derived from the gene encoding cytochrome c oxidase subunit I (COI) comprised 22 sequences with 235 variable sites of which 216 were parsimony informative. The 16S ribosomal RNA single-gene alignment of 35 sequences had 183 sites variable of which 171 are parsimony informative. The histone 3 (H3) single-gene alignment contained 45 sequences with 66 variable sites of which 61 were parsimony informative. The best-fitting models for sequence evolution of the three genes were determined in MEGA X and selected by the BIC scores (Bayesian Information Criterion): COI (TN93+G+I), 16s (HKY+G+I), and H3 (T92+G). The Bayesian inference of concatenated dataset of the three genes comprising 1450 bp were estimated in MrBayes 3.1.2 (Ronquist *et al.* 2012) with the previously determined evolutionary models set for each partition. The programme was run for 1,000,000 generations with sample frequency set to 1000 with a burnin set to 25%. A ML analysis of the same concatenated dataset was analysed using RAxML-NG (Kozlov *et al.* 2019) with the previously determined evolutionary models set for each partition and 100 bootstrap iterations. Trees were rooted by outgroup taxon *Gnathopylloides mineri* Schmitt, 1933.

Systematics

Infraorder Caridea Dana, 1852a

Superfamily Palaemonoidea Rafinesque, 1815

Family Palaemonidae Rafinesque, 1815

Genus *Ancylomenes* Okuno & Bruce, 2010

Ancylomenes pedersoni (Chace, 1958)

(Fig. 2, video 1)

Periclimenes pedersoni—Williams 1984: 88 (Bonaire); Abele & Kim 1986: 16 (Bonaire); Spotte 1995: 546 (Bonaire); Wicksten 1995b: 477 (Bonaire); Wicksten 1998: 13 (Bonaire).

Ancylomenes pedersoni—Brinkmann & Fransen 2016: 438 (Curaçao); Faasse 2016: 52 (Sint Eustatius); Poupin 2018: 105 (Sint Maarten).

Material examined. **Curaçao:** RMNH.CRUS.D.26238: 2 ovigerous females, pochl. 3.8 mm; Piscaderabaai, off Carmabi, viii.1968, mangrove, collected by F. Nijhout. RMNH.CRUS.D.28322: 1 non-ovigerous female, pochl. 2.9 mm; Piscaderabaai, 22.iii.1963, depth 20 m, on *Nemaster grandis* Clark, 1909 and sea anemone, collected by H. Verbruggen. RMNH.CRUS.D.30621: 1 ovigerous female, pochl. 4.3 mm; between Piscaderabaai and Blauwbaai, 19.vii.1973, depth 16 m, on *Condylactis gigantea* (Weinland, 1860), collected by J.C. den Hartog. RMNH.CRUS.D.30622: 1 ovigerous female, pochl. 3.7 mm; between Piscaderabaai and Blauwbaai, 19.vii.1973, 16 m, coral reef, on *Laviactis lucida* (Duchassaing de Fonbressin & Michelotti, 1860), collected by J.C. den Hartog. RMNH.CRUS.D.37649: 1 non-ovigerous female, pochl. 3.2 mm; 2 ovigerous females, pochl. 4.0, 4.5 mm; 2 males, pochl. 2.5, 3.3 mm; Bojeo, 22.vii.1978, depth 10–20 m, on *Bartholomea annulata* (Le Sueur, 1817), collected by Svoboda. RMNH.CRUS.D.58063: 2 males, pochl. 1.6, 2.9 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 24.2 m, 26.iv.2005, scuba diving, on *C. gigantea*, collected by N. Snijders (fcn. g001). RMNH.CRUS.D.53153: 1 ovigerous female, pochl. 3.8 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 15.4 m, 26.iv.2005, scuba diving, on *B. annulata*, collected by N. Snijders. RMNH.CRUS.D.58064: 1 non-ovigerous female, pochl. 2.6 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 16.9 m, 26.iv.2005, scuba diving, on *C. gigantea*, collected by N. Snijders (fcn. g008). RMNH.CRUS.D.53147: 1 non-ovigerous female, pochl. 2.4 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 20.2 m, 26.iv.2005, scuba diving, on *C. gigantea*, collected by N. Snijders. RMNH.CRUS.D.53154: 1 male, pochl. 2.8 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 20 m, 26.iv.2005, scuba diving, on *B. annulata*, collected by N. Snijders. RMNH.CRUS.D.58065: 1 non-ovigerous female, pochl. 2.7 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 8.8 m, 26.iv.2005, scuba diving, on *B. annulata*, collected by N. Snijders (fcn. g013). RMNH.CRUS.D.58066: 1 non-ovigerous female, pochl. 2.9 mm; stn CUR.02, south coast, Atlantis diving/Drielstraat, 12°05'42.1"N 068°54'43.0"W, depth 19 m, 26.iv.2005, scuba diving, on *Lobophora variegata* (J.V. Lamouroux) Womersley ex E.C. Oliveira, 1977, collected by N. Snijders (fcn. g018). RMNH.CRUS.D.58067: 1 male, pochl. 2.7 mm; stn CUR.11, west point, Playa Kalki, 12°22'29.8"N 069°09'27.7"W, depth 15.4 m, 10.v.2005, scuba diving, on *Lebrunia neglecta* Duchassaing & Michelotti, 1860, collected by N. Snijders (fcn. g060). RMNH.CRUS.D.56996: 1 ovigerous female; stn COA.01, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 31.x.2013, depth 21 m, scuba diving, near *C. gigantea*, collected by C.H.J.M. Fransen (photo COA.01 046–050). RMNH.CRUS.D.56997: 1 ovigerous female; stn COA.18, Playa Forti, 12°21'58.10"W 69°09'13.50"N, 01.xi.2013, 15 m depth, scuba diving, near *B. annulata*, collected by C.H.J.M. Fransen (photo COA.18 009–010). Stn COA.19, Kleine Knip, 12°20'28.50"N 69°09'08.10"W, 01.xi.2013, scuba diving, near *B. annulata*, not collected (photo COA.19 099–043). Stn CF09A, Hilton Reef, 9.vi.2017, depth 15 m, scuba diving, on *C. gigantea* and *Lebrunia coralligens* (Wilson, 1890), C.H.J.M. Fransen (video 1), not collected. Stn CF10B, St. Michielsbaai, 10.vi.2017, depth 20 m, scuba diving, on *C. gigantea* and near *Telmatactis cricoides* (Duchassaing, 1850), C.H.J.M. Fransen (video 1), not collected. Stn CF11B, Parasasa Beach, 11.vi.2017, depth 10 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (photo), not collected. Stn CF13A, Directors Bay, 13.vi.2017, depth 10 m, scuba diving, on *B. annulata*, C.H.J.M. Fransen (video 1), not collected. Stn CF13B, Tugboat, 13.vi.2017, depth 10 m, scuba diving, on *B. annulata*, C.H.J.M. Fransen (video 1), not collected. Stn CF17A, Habitat, 17.vi.2017, depth 10 m, scuba diving, on *B. annulata*, C.H.J.M. Fransen (video 1), not collected. **Bonaire:** stn BON.01, Punt Vierkant (Delfin's Beach Resort), 12°06.908'N 068°17.659'W 22.x.2019, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 1), not collected. Stn BON.02, Pink Beach (Kabayé), 12°03.849'N 068°16.896'W, 23.x.2019, depth 22 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 1), not collected. Stn BON.04, Alice in Wonderland, 12°05.993'N 068°17.118'W, 24.x.2019, depth 30 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 1), not collected. Stn BON.15, Red Beryl, 12°02.819'N 068°16.073'W, 28.x.2019, depth 8 m, scuba diving, near *B. annulata*, photo by C.H.J.M. Fransen, not collected. RMNH.CRUS.D.58068: 1 specimen, stn BON.43, Tori's Reef, 12°04.247'N, 068°16.835'W, 8.xi.2019, depth 9 m, scuba diving, near *L. lucida*, collected by C.H.J.M. Fransen (video 1).

Remarks. This genus *Ancylomenes* is polyphyletic (see Horká *et al.* 2016: fig. 2; Chow *et al.* 2021: fig. 2). *A. pedersoni* is closely related to two Caribbean anemone associated species of *Periclimes*, *P. rathbunae* and *P. yucatanicus*. Its final taxonomic placements await the revision of the genus *Periclimes*.

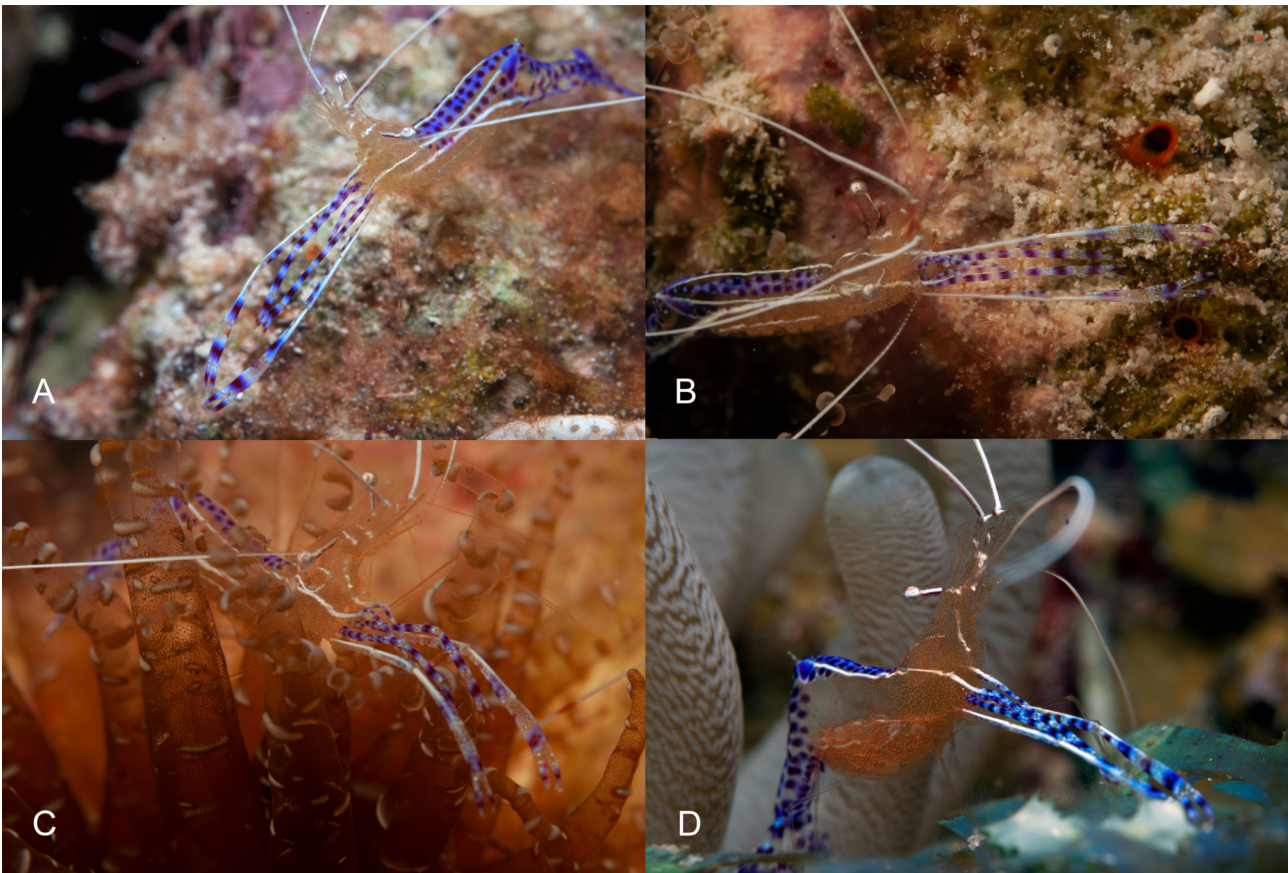


FIGURE 2. *Ancylomenes pedersoni* (Chace, 1958). A, stn CAO.19, Curaçao, Kleine Knip, 12°20'28.50"N 69°09'08.10"W, 1.xi.1913; near *Bartholomea annulata* (Lesueur, 1817); B, C, stn BON.15, Bonaire, Red Beryl, 12°02,819'N 068°16,073'W, 28.x.2019, depth 8 m, scuba diving, near *Bartholomea annulata* (Lesueur, 1817); D, stn CAO.01, Curaçao, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 31.x.2013, depth 21 m, near *Condylactis gigantea* (Weinland, 1860). (Photographs by C.H.J.M. Fransen.).

Ecology. Associated with sea anemones *Actinia bermudensis* (McMurrich, 1889), *Exaiptasia diaphana* (Rapp, 1829), *Bartholomea annulata*, *Bunodosoma granuliferum* (Le Sueur, 1817), *Cerianthus* sp., *Condylactis gigantea*, *Laviactis lucida*, *Lebrunia neglecta* (Silbiger & Childress 2008; Brooker *et al.* 2019). Occasionally found on the black coral *Plumapathes pennacea* (Pallas, 1766) (Spotte 1995, as *Antipathes pennacea*), the jellyfish *Cassiopea xamachana* Bigelow, 1892 (Criales 1984), the corallimorpharians *Ricordea florida* Duchassaing & Michelotti, 1860 and *Rhodactis osculifera* (Le Sueur, 1817) (as *Discosoma (Rhodactis) sanctithomae* (Duchassiang & Michelotti, 1860)) (Williams & Williams 2000) and the bivalve mollusk *Ctenoides scaber* (Born, 1778) (Spotte 1995). Known as fish cleaner (Brinkmann & Fransen 2016; De Grave & Anker 2017; Horká *et al.* 2018). Here recorded from algae *Lobophora variegata*, probably due to the retraction of a host sea anemone.

Distribution. Widely distributed in shallow waters of the tropical and subtropical western Atlantic from North Carolina to Espiritu Santo, Brazil, in depths between 1 and 40 m (De Grave & Anker 2017).

Genus *Ascidonia* Fransen, 2002

Ascidonia quasipusilla (Chace, 1972)

(Fig. 3)

Ascidonia quasipusilla—Brinkmann & Fransen 2016: 438, tab. 1 (Curaçao); Horká *et al.* 2016: supplementary table S1 (Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.57050: 1 ovigerous female; stn COA.01, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 07.xi.2013, depth 1 m, snorkeling, in solitary ascidian, red-yellow inside, inner surface of sac purple, *Pyura torpida* (Sluiter, 1898), collected by C.H.J.M. Fransen (photo COA.01 220–231).

Ecology. Endosymbiont of solitary ascidians: *P. torpida*, *Pyura* spec. (cf. Fransen 2002); *Microcosmus exasperatus* Heller, 1878, *Herdmania* spec. (Fransen 2006).

Distribution. Known from scattered shallow water localities in the tropical West Atlantic: Antigua (Chace 1972); Martinique (Fransen 2002); Guadeloupe (Fransen 2006); and from Mauritania in the East Atlantic (Fransen 2002).

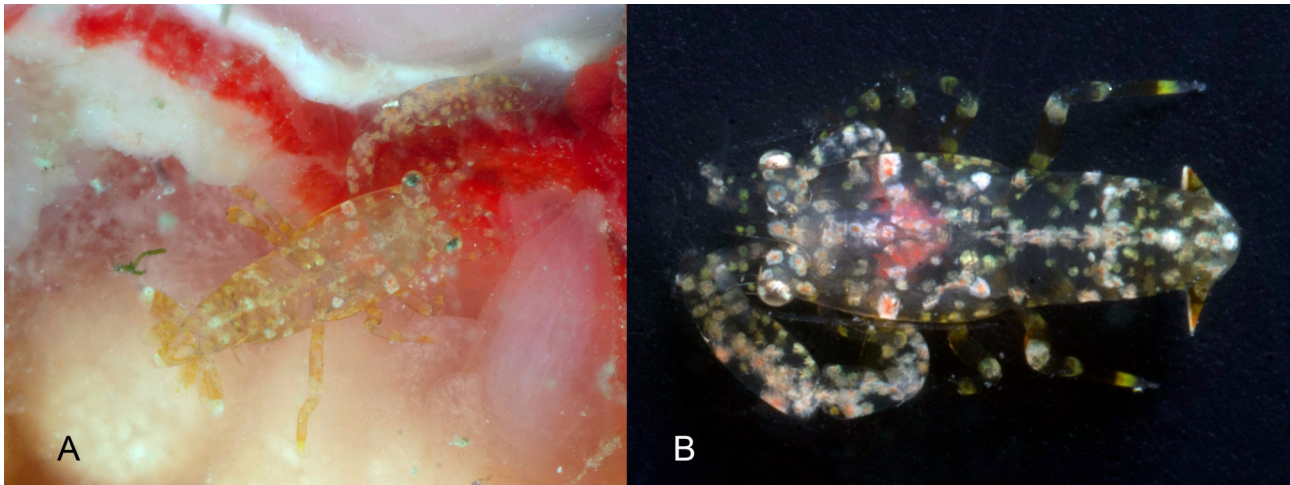


FIGURE 3. *Ascidonia quasipusilla* (Chace, 1972), stn COA.01, Curaçao, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 7.xi.2013, depth 1 m, in solitary ascidian, red-yellow inside, inner surface of sac purple, *Pyura torpida* (Sluiter, 1898). A, in host; B, habitus, dorsal view. (Photographs by C.H.J.M. Fransen.)

Genus *Brachycarpus* Spence Bate, 1888

Brachycarpus biunguiculatus (Lucas, 1846)

(Fig. 4, video 2)

Macrobrachium savignyi—Rathbun 1920: 8 (Bonaire); Schmitt 1924a: (Curaçao).

Brachycarpus biunguiculatus—Schmitt 1935: 157 (Curaçao); Holthuis 1952: 6 (Curaçao); Chace 1972: 18 (Saba Bank); Faasse 2016: 52 (Sint Eustatius); Poupin 2018: 105 (Sint Maarten).

Material examined. Curaçao: RMNH.CRUS.D.23630: 1 ovigerous female, pochl. 8.1 mm; Piscaderabaai, SE part of bay, 18.xii.1963, collected by P. Wagenaar Hummelinck. RMNH.CRUS.D.28301: 3 males, pochl. 7.0, 8.9, 9.0 mm; 1 ovigerous female, pochl. 7.8 mm; 1 non-ovigerous female, pochl. 7.6 mm; near Enoch, Piscaderabaai, 02.ii.1949, sublittoral, *Rhizophora* mud, collected by P. Wagenaar Hummelinck. RMNH.CRUS.D.28302: 1 male, pochl. 4.3 mm; 2 non-ovigerous females, pochl. 4.1, 4.6 mm; Entrance of Piscaderabaai, 12.xi.1956, depth 0–1 m, collected by L.B. Holthuis (fcn. 1002). RMNH.CRUS.D.28303: 1 male, pochl. 7.8 mm; Piscaderabaai, i.1957, depth 0.5 m, in empty *Pinna* shell, collected by L.B. Holthuis (fcn. 1002). ZMA.CRUS.D.103522: 1 male, pochl. 3.1 mm; St. Michielsbaai, 10.xi.1975, ca. 4 m depth, from *Meandrina meandrites* (Linnaeus, 1758), collected by J.H. Stock. RMNH.CRUS.D.58069: 1 specimen; stn COA.14, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 05.xi.2013, depth 5 m, scuba diving, under stone, collected by B.T. Reijnen. RMNH.CRUS.D.58070: 1 specimen; stn COA.14, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 05.xi.2013, depth 25 m, scuba diving, in *Niphates digitalis* (Lamarck, 1814), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58071: 1 specimen; stn CAR.23, Boka pos spano, 12°16.700'N 69°08.591'W, 14.iv.2014, depth 12 m, scuba diving, in *Aplysina cauliformis* (Carter, 1882), collected by C. Rauch. **Bonaire:** RMNH.CRUS.D.2331: 1 ovigerous female, pochl. 9.8 mm; locality unknown, 10.vii.1905–vi.1920, collected by Prof. Boeke. RMNH.CRUS.D.57879: 1 specimen; stn BON.18, Red Slave, 12°01.605'N, 068°15.079'W, 28.x.2019, depth 10 m, scuba diving, in *Callyspongia (Cladochalina) aculeata*

(Linnaeus, 1759), collected by C.H.J.M. Fransen (photograph). Stn BON.28, Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 03.xi.2019, depth 1–5 m, scuba diving, night dive, between rocks on harbour head, C.H.J.M. Fransen (video 2), not collected. **Aruba:** RMNH.CRUS.D.4933: 2 males, pochl. 7.2, 9.2 mm; Aruba, vii.1883, collected by A.J. van Koolwijk.

Ecology. Free-living or associated with sponges and sea anemones among others (De Grave & Anker 2017).

Distribution. Pantropical; from intertidal to around 100 m depth (De Grave & Anker 2017).



FIGURE 4. *Brachycarpus biunguiculatus* (Lucas, 1846), stn BON.18, Bonaire, Red Slave, 12°01,605'N, 068°15,079'W, 28.x.2019, depth 10 m, from *Callyspongia (Cladochalina) aculeata* (Linnaeus, 1759). (Photograph by C.H.J.M. Fransen.)

Genus *Diapontonia* Bruce, 1986

Diapontonia maranulus Bruce, 1986

Diapontonia maranulus—Fransen 2014: 591 (Curaçao); Van der Meij *et al.* 2014: 5 (Curaçao); Horká *et al.* 2016: supplementary table S1 (Curaçao); Olthof *et al.* 2018: 537 (Curaçao, Bonaire).

Ecology. Associated with regular sea urchins, *Paleopneustes tholoformis* Chesher, 1968 (Fransen 2014).

Distribution. Known from deeper waters (214–309 m) near the Bahama's, Curaçao and Bonaire (Olthof *et al.* 2018).

Genus *Gnathophylloides* Schmitt, 1933

Gnathophylloides mineri Schmitt, 1933

(Fig. 5, video 4)

Gnathophylloides mineri—Brinkmann & Fransen 2016: 438 (Curaçao); Faasse 2016: 52 (Sint Eustatius); Poupin 2018: 106 (Sint Maarten).

Material examined. **Curaçao:** RMNH.CRUS.D.27600: 1 male pochl. 1.2 mm; Piscaderabaai, Boca, 05.i.1964, depth 1–2 m, san, gravel, collected by P.Wagenaar Hummelinck no. 1457. RMNH.CRUS.D.58081: 1 ovigerous female; stn COA.01, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 07.xi.2013, snorkeling, depth 1 m, on *Lytechinus variegatus* (Lamarck, 1816), collected by C.H.J.M. Fransen (photo COA.01 196–198, 206–219). RMNH.CRUS.D.58082: many specimens; stn COA.03, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 02.xi.2013, depth 1 m, on *Tripneustes ventricosus* (Lamarck, 1816), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58083: 6 specimens; stn COA.14, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 05.xi.2013, scuba diving, depth 5 m, on *L. variegatus* collected by C.H.J.M. Fransen (photo COA.14 128–132). RMNH.CRUS.D.58084: 11 specimens; stn CF19B-3, Cas Abou, 19.vi.2017, scuba diving, depth 3 m, on *T. ventricosus*, collected by C.H.J.M. Fransen (video 4). **Bonaire:** RMNH.CRUS.D.58085: 13 specimens; stn BON.16, Tailor Made, 12°13.407'N 068°24.223'W, 29.x.2019, snorkeling, depth 2 m, on *T. ventricosus*, collected by Werner de Gier. RMNH.CRUS.D.58086: 3 specimens; stn BON.18, Red Slave, 12°01.605'N, 068°15.079'W, 28.x.2019, snorkeling, depth 2 m, on *T. ventricosus*, collected by Werner de Gier.

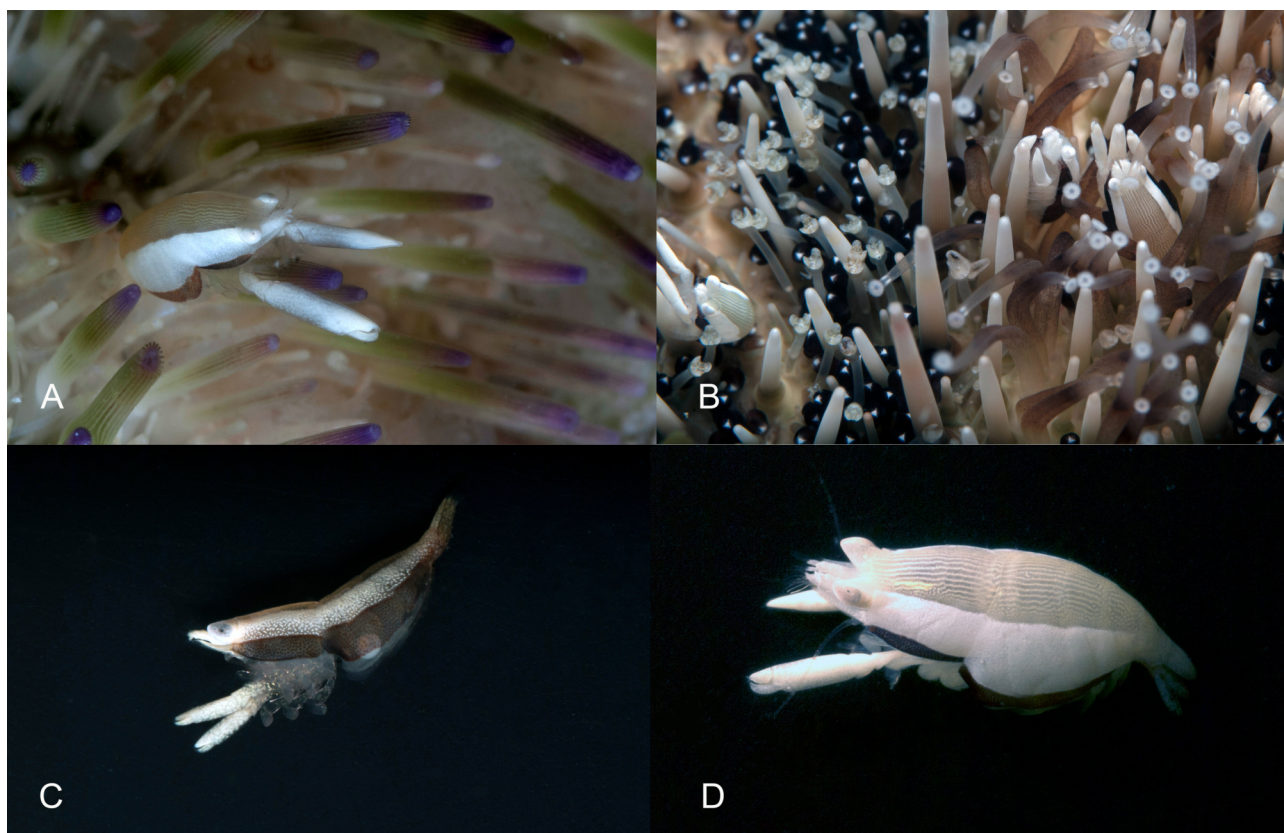


FIGURE 5. *Gnathophylloides mineri* Schmitt, 1933. A, stn CAO.01, Curaçao, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 7.xi.2013, depth 1 m, on *Lytechinus variegatus* (Lamarck, 1816); B, stn CAO.03, Curaçao, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 2.xi.2013, depth 1 m, on *Tripneustes ventricosus* (Lamarck, 1816); C, stn CAO.14, Curaçao, Playa Boka Sami, 12°08'51,40"N 68°59'55,50"W, 5.xi.2013, depth 5 m, from *L. variegatus*; D, stn BON.16, Bonaire, Tailor Made, 12°13,407'N 068°24,223'W, 29.x.2019, depth 2 m, from *T. ventricosus*, collected by Werner de Gier. (Photographs by C.H.J.M. Fransen.)

Ecology. Symbiont of shallow water regular sea urchins. In the western Atlantic recorded from *L. variegatus* and *T. ventricosus* (Marciá & Robinson 2009; Tavares *et al.* 2017; Vera-Caripe *et al.* 2017).

Distribution. Disjunct circumtropical, being absent from the central and eastern Atlantic, widely distributed in the western Atlantic from Florida south to Bahia, Espírito Santo and Trindade Island, Brazil (Chace 1956; De Grave & Anker 2017; Vera-Caripe *et al.* 2017; Tavares *et al.* 2017; Poupin 2018). This is the first record of the species from Bonaire.

Genus *Gnathophyllum* Latreille, 1819

Gnathophyllum americanum Guérin-Méneville, 1855

Gnathophyllum americanum—Rathbun 1920: 9 (Aruba, Bonaire); Schmitt 1924: 72 (Curaçao); Schmitt 1935: 166 (Curaçao); Schmitt 1936: 373 (Aruba); Poupin 2018: 106 (Sint Maarten).

Ecology. Free-living in various habitats or loosely associated with corals or echinoids (De Grave & Anker 2017; Tavares *et al.* 2017).

Distribution. Pantropic species, widely recorded in the western Atlantic from Bermuda southwards to Bahia en Trindade Island, Brazil, occurring in depths between 0 and 50 m (De Grave & Anker 2017; Tavares *et al.* 2017).

Gnathophyllum circellum Manning, 1963

Gnathophyllum circellum—Humann *et al.* 2013: 118 (Bonaire).

Material examined. Curaçao: RMNH.CRUS.D.26514: 2 males pocl. 6.1 and 6.5 mm; fishery port near Waterfabriek, Willemstad, 30.i.1968, depth 1 m, collected by T. v.d. Rijd.

Ecology. Free-living, found in rock ledges, reefs and coral heads (Manning 1963).

Distribution. Known from scattered shallow water localities in the Caribbean southwards to Brazil: Florida, Bahamas (Manning 1963); Martinique (Poupin 2018); Trindade Island, Brazil (Tavares *et al.* 2017), and Bonaire (Humann *et al.* 2013). Known to occur in depths between 1 and 18 m. Now recorded for the first time from Curaçao.

Genus *Holthuisaeus* Anker & De Grave, 2010

Holthuisaeus bermudensis (Armstrong, 1940)

(Fig. 6)

Material examined. Curaçao: ZMA.CRUS.D.103186: 1 juvenile, R=5/0, pocl. 1.4 mm; St. Michiel, 08.vi.1976, depth 3 m, in *Spherospongia vesparium* (Lamarck, 1815), collected by P. Hoetjes (fcn. S-080676-I). ZMA.CRUS.D.103187: 1 juvenile, R=4/0, pocl. 1.5 mm; St. Michiel, 20.v.1976, depth 3 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-200576-I). ZMA.CRUS.D.103188: damaged specimen, abdomen absent, R=8/0, pocl. 1.6 mm; 1 female, R=6/0, pocl. 2.0 mm; St. Michiel, 05.v.1976, depth 45 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-050576-I). ZMA.CRUS.D.103189: 5 damaged juveniles; St. Michiel, 18.viii.1976, depth 3 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-180876-I). ZMA.CRUS.D.103190: 1 ovigerous female, R=7/0, pocl. 3.8 mm; Oostpunt, 26.iv.1976, depth 50 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-260476-II). RMNH.CRUS.D.58087: 1 female, pocl. 1.9 mm, R=7/1; BW1010, stn COA.10, Waterfabriek II, 12°06'37.00"N 68°57'16.30"W, 31.x.2013, depth 30 m, in *Niphates digitalis* (Lamarck, 1814), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58088: 1 male, pocl. 3.6 mm, R=8/0; stn COA.17, Cas Abou, 12°13'40.30"N 69°05'30.40"W, 03.ix.2013, depth 15 m, scuba diving, in purple tube sponge (photo COA.17 034–036), *Aplysina archeri* (Higgin, 1875), collected by C.H.J.M. Fransen (photo COA.17 026–033). RMNH.CRUS.D.58089: 1 ovigerous female, pocl. 5.8 mm, R=8/0; 1 male, pocl. 1.6 mm, R=6/0; stn COA.21, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 05.ix.2013, depth 12 m, scuba diving, in small purple tube sponge, *A. archeri*, collected by C.H.J.M. Fransen (photo COA.21 084–095). RMNH.CRUS.D.58090: 1 ovigerous female; stn CAR.03, Sea Aquarium, 12°04.907'N 068°53.763'W, 25.iii.2014, depth 18 m, scuba diving, in *Aiolochoxia crassa* (Hyatt, 1875) (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58091: 1 specimen; stn CAR.03, Sea Aquarium, 12°04.907'N 068°53.763'W, 26.iii.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58092: 1 ovigerous female; stn CAR.04, Blue Bay, 12°08.063'N 068°59.138'W, 02.iv.2014, depth 10 m, scuba diving, in *Aplysina lacunosa* (Lamarck, 1814) (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58093: 1 specimen; stn CAR.05, Playa Kalki, 12°22.536'N 069°09.464'W, 01.iv.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van

Soest), collected by C. Rauch. RMNH.CRUS.D.58094: 1 specimen; stn CAR.06, Superior Producer, 12°06.354'N 68°56.572'W, 25.iv.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58095: 1 specimen; stn CAR.07, Kleine Knip, 12°20.475'N 069°09.154'W, 05.iv.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58096: 1 specimen; stn CAR.09, Sunset Waters, 12°16.046'N 069°07.657'W, 06.iv.2014, depth 24 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58097: 1 specimen, stn CAR.09, Sunset Waters, 12°16.046'N 069°07.657'W, 6.iv.2014, depth 16 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58098: 1 specimen; stn CAR.09, Sunset Waters, 12°16.046'N 069°07.657'W, 06.iv.2014, depth 13 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58099: 2 specimens; stn CAR.09, Sunset Waters, 12°16.046'N 069°07.657'W, 06.iv.2014, depth 22 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58101: 1 ovigerous female; stn CAR.10, Playa Lagun, 12°19.090'N 069°09.036'W, 08.ix.2014, depth 10 m, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58102: 1 specimen; stn CAR.10, Playa Lagun, 12°19.090'N 069°09.036'W, 08.ix.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58103: 2 specimens; stn CAR.11, Playa Manzanina, 12°14.713'N 069°06.314'W, 09.iv.2014, depth 9 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58104: 2 specimens; stn CAR.11, Playa Manzanina, 12°14.713'N 069°06.314'W, 09.iv.2014, depth 12 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58105: 1 specimen; stn CAR.12, Caracasbaai, 12°04.588'N 068°51.817'W, 10.iv.2014, depth 22 m, scuba diving, in *Svenzea zeai* (Alvarez, van Soest & Rützler, 1998) (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58106: 1 specimen; stn CAR.13, Jan Thiel, 12°04.584'N 068°52.796'W, 10.iv.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58107: 1 ovigerous female, pocl. 1.6 mm, R=6/0; stn CAR.14, Vaersenbaai, 12°09.678'N 68°00.237'W, 11.iv.2014, depth 24 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58108: 1 specimen; stn CAR.14, Vaersenbaai, 12°09.678'N 68°00.237'W, 11.iv.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58109: 1 specimen; stn CAR.16, Slangenbaai, 12°08.359'N 068°59.840'W, 14.iv.2014, depth 26 m, scuba diving, in *Agelas conifera* (Schmidt, 1870) (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58110: 1 specimen; stn CAR.16, Slangenbaai, 12°08.359'N 068°59.840'W, 14.iv.2014, depth 12 m, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58111: 1 specimen; stn CAR.17, Coral Estate/Habitat Curaçao, 12°11.877'N 69°04.751'W, 16.iv.2014, depth 11 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58112: 1 specimen; stn CAR.17, Coral Estate/Habitat Curaçao, 12°11.877'N 69°04.751'W, 16.iv.2014, depth 5 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58113: 1 specimen; Boei 1, 18.iv.2014, depth unknown, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58114: 1 specimen; Radio City, 21.iv.2014, depth unknown, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58115: 1 specimen; stn CAR.24, Diver's leap, 12°04.439'N 68°52.714'W, 22.iv.2014, depth unknown, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58116: 1 specimen; stn CAR.26, Grote Knip, 12°21.087'N 69°09.095'W, 23.iv.2014, depth 20 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58117: 1 ovigerous female, 1 male; stn CAR.27, Tugboat, 12°04.152'N 68°51.708'W, 24.iv.2014, depth 18 m, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. **Bonaire:** ZMA.CRUS.D.103182: juvenile, pocl. 1.3 mm; 5 damaged juveniles; Hato, 10.xi.1976, depth 40 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-101176-I, S-101176-II). ZMA.CRUS.D.103183: 3 juveniles, damaged, R=6/0, pocl. 1.8 mm; R=6/0, pocl. 2.0 mm; R=6/0, pocl. 2.1 mm; Hato, 09.xi.1976, depth 40 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-091176-I). ZMA.CRUS.D.103184: 4 juveniles, R=5/0, pocl. 1.4 mm; R=5/0, pocl. 1.4 mm; R=5/0, pocl. 1.5 mm; R=5/0, pocl. 1.4 mm; Hato, 12.xi.1976; depth 40 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-121176-I).

Remarks. The specimens collected fit the redescription of Anker & De Grave (2010).

Ecology. Associated with sponges: *Neopetrosia rosariensis* (Zea & Rützler, 1983); *Aplysina fistularis* (Pallas, 1766), and *Callyspongia* sp., (Anker & De Grave 2010; Poupin 2018). The species is herein recorded for the first time from the sponges: *A. conifera*, *A. crassa*, *A. archeri*, *A. lacunosa*, *N. digitalis*, *S. vesparium* and *S. zeai*.



FIGURE 6. *Holthuisaeus bermudensis* (Armstrong, 1940), stn CAO.17, Curaçao, Cas Abou, 12°13'40.30"N 69°05'30.40"W, 3.ix.2013, depth 15m, in *Aplysina archeri* (Higgin, 1875). A, habitus, lateral view; B, idem, dorsal view. (Photographs by C.H.J.M. Fransen).

Distribution. Widely distributed in the tropical and subtropical western Atlantic from Bermuda southwards to Espírito Santo, Brazil. Recorded from depths between 0 and 88 m (Anker & De Grave 2010; Poupin 2018). This is the first record of the species from Curaçao and Bonaire.

***Leander paulensis* Ortmann, 1897**

Palaemon paulensis—Schmitt 1924a: 72 (Curaçao); Schmitt 1935: 160 (Curaçao).

Ecology. Commonly found in association with algae and marine phanerogams near estuaries and mangroves (Carvalho *et al.* 2014).

Distribution. Known from shallow water localities in the tropical western Atlantic from Florida southwards to São Paulo, Brazil, in depths between 0 and 16 m (Carvalho *et al.* 2014; Poupin 2018).

Leander tenuicornis (Say, 1818)

Palaemon tenuicornis—Rathbun 1920: 7 (Curaçao); Schmitt 1924: 72 (Curaçao).

Leander tenuicornis—Holthuis 1952: 155 (Curaçao); Poupin 2018: 107 (Sint Maarten).

Material examined. Curacao: RMNH.CRUS.D.2270: 1 non-ovigerous female pocl. 3.4 mm; 28.ix.1905, collected by J. Boeke. RMNH.CRUS.D.12929: 1 male pocl. 2.4 mm; Santa Cruzbaai, 13.xii.1956, collected by L.B. Holthuis (fcn. 1021). RMNH.CRUS.D.2262: 1 ovigerous female, pocl. 6.0 mm; 26.v.1905, collected by Prof. Boeke. RMNH.CRUS.D.28532: 2 males, pocl. 4.3 mm; 1 non-ovigerous female, pocl. 5.6 mm; Piscaderabaai, 14.ii.1957, 0–1 m, seagrass, *Rhizophora* sp., at night collected by L.B. Holthuis (fcn. 1104). RMNH.CRUS.D.28533: 1 non-ovigerous female, pocl. 2.2 mm; Piscaderabaai, 14.xii.1963, sand, *Rhizophora* sp., garbage and *Halimeda* sp. collected by P. Wagenaar Hummelinck (fcn. 1460A). RMNH.CRUS.D.28534: 2 non-ovigerous females, pocl. 4.5, 5.0 mm; 4 males, pocl. 3.7, 3.8, 4.0, 4.3 mm; Piscaderabaai, 12.xi.1956, depth 0–1 m, collected by L.B. Holthuis (fcn. 1002). ZMA.CRUS.D.240305: 1 male, pocl. 5.0 mm; Spaansche water, 25.v.1930, collected by Holthuis. **Sint Maarten:** RMNH.CRUS.D.37605: 1 non-ovigerous female, pocl. 3.1 mm; Oysterpond, 13/27.xii.1987, depth 1 m, collection P.A. v.d. Heuvel.

Ecology. Associated with algae and sea grass beds (De Grave & Anker 2017). Also associated with pelagic *Sargassum* sp. (Bennice & Brooks 2016).

Distribution. Pantropical in tropical and subtropical shallow water habitats. Recorded in depths between 1 and 71 m (Poupin 2018). Previous records from Curacao by Rathbun (1920 as *Palaemon tenuicornis*), Schmitt (1924, as *Palaemon tenuicornis*), and Holthuis (1952).

Genus *Neopontonides* Holthuis, 1951b

Neopontonides beaufortensis (Borradaile, 1920)

Neopontonides beaufortensis—Criales 1980: 74 (Curaçao).

Ecology. Associated with octocorals of the genus *Leptogorgia virgulata* (Lamarck, 1815), and *Eunicea tourneforti* Milne Edwards & Haime, 1857 (Williams 1984).

Distribution. Known from scattered localities in the tropical western Atlantic from North Carolina to Antigua and St. Lucia and Los Roques, Venezuela, and Curaçao; occurring in depths between 0 and 10 m (Chace 1972; Williams 1984; De Grave & Anker 2017; Poupin 2018).

Neopontonides chacei Heard, 1986

(Fig. 7, video 5)

Material examined. Curaçao: RMNH.CRUS.D.51659: 1 ovigerous female, pocl. 1.6 mm; stn CUR.02, south coast, Atlantis diving/Drielstraat, 12°05'42.1"N 068°54'43.0"W, 10.vi.2005, depth 7.2 m, scuba diving, on *Plexaurella dichotoma* (Esper, 1791) (fcn. F410), collected by N. Snijders (fcn. g117). RMNH.CRUS.D.58118: 4 specimens; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 16.vi.2005, depth 7 m, scuba diving, on *Plexaura* sp., collected by N. Snijders (fcn. g124). RMNH.CRUS.D.58119: 1 non-ovigerous female, pocl. 1.3 mm; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 16.vi.2005, depth 7 m, scuba diving, on *Plexaura* sp., collected by N. Snijders (fcn. g121). RMNH.CRUS.D.51652: 1 specimen; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 30.iv.2005, depth 13.2 m, scuba diving, on *Pseudoplexaura flagellosa*



FIGURE 7. *Neopontonides chacei* Heard, 1986, stn CAO.22, Curaçao, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 6.xi.2013, depth 10 m, on *Plexaura* sp. (Photograph by C.H.J.M. Fransen.)

(Houttuyn, 1772) (fcn. F056B), collected by B.T. Reijnen (fcn. g036). RMNH.CRUS.D.51656: 1 specimen; stn CUR.07, south coast, Vaersenbaai, 12°09'38.3"N 069°08'17.2"W, 03.v.2005, depth 9.2 m, scuba diving, on *Eunicea clavigera* Bayer, 1961 (fcn. F114), collected by N. Snijders (fcn. g045). RMNH.CRUS.D.58120: 1 male, pocl. 1.1 mm; 1 non-ovigerous female, pocl. 1.4 mm; stn CUR.11, west point, Playa Kalki, 12°22'29.8"N 069°09'27.7"W, 10.v.2005, depth 6.2 m, scuba diving, on *Plexaura* sp., collected by N. Snijders (fcn. g062). RMNH.CRUS.D.51653: 1 specimen; stn CUR.11, west point, Playa Kalki, 12°22'29.8"N 069°09'27.7"W, 10.v.2005, depth 37.4 m, scuba diving, on *Eunicea flexuosa* (Lamouroux, 1821) (fcn. F190), collected by N. Snijders (fcn. g063). RMNH.CRUS.D.51654: 1 ovigerous female, pocl. 2.0 mm; stn CUR.16, south coast, Fuikbaai, 12°03'01.6"N 068°50'05.2"W, 19.v.2005, depth 20 m, scuba diving, collected by B.T. Reijnen (fcn. g078). RMNH.CRUS.D.51655: 2 males, pocl. 1.2, 1.5 mm; stn CUR.17, south coast, Caracasbaai, 12°03'01.6"N 068°52'01.2"W, 03.vi.2005, depth 12.3 m, scuba diving, on *E. flexuosa* (fcn. F366), collected by N. Snijders (fcn. g098). RMNH.CRUS.D.58121: 1 juvenile, pocl. 1.0 mm; stn CUR.24, south coast, Grote Knip, 12°21'05.1"N 069°09'06.4"W, 08.vi.2005, depth 13 m, scuba diving, on *Pseudoplexaura porosa* forma a (fcn. F378), collected by N. Snijders (fcn. g106). RMNH.CRUS.D.58122: 1 ovigerous female, pocl. 1.5 mm; stn CUR.25, south coast, Kleine Knip, 12°20'28.8"N 069°09'08.3"W, 08.vi.2005, depth 21.2 m, scuba diving, on *Pseudoplexaura porosa* (Houttuyn, 1772) (fcn. F386), collected by N. Snijders (fcn. g109). RMNH.CRUS.D.51658: 2 specimens; stn CUR.25, south coast, Kleine Knip, 12°20'28.8"N 069°09'08.3"W, 08.vi.2005, depth 10.8 m, scuba diving, on *Antillogorgia americana* (Gmelin, 1791) (fcn. F388), collected by N. Snijders (fcn. g111a). RMNH.CRUS.D.51660: 2 specimens; stn CUR.28, south coast, Sponge Forest, 12°17'44.1"N 069°09'26.0"W, 14.vi.2005, depth 18.1 m, scuba diving, on *P. porosa* (fcn. F416), collected by N. Snijders (fcn. g119b–c). RMNH.CRUS.D.58123: 1 specimen; stn CUR.31, east point, Awa di Oostpunt, 12°02'25.9"N 068°45'03.3"W, 18.vi.2005, depth 21.2 m, scuba diving, on *P. porosa* (fcn. F436), collected by N. Snijders (fcn. g125). RMNH.CRUS.D.51657: 1 damaged specimen, pocl. 0.8 mm; stn CUR.31, east point, Awa di Oostpunt, 12°02'25.9"N 068°45'03.3"W, 18.vi.2005, depth 17.6 m, scuba diving, on *Antillogorgia bipinnata*

(Verrill, 1864) (fcn. F438), collected by N. Snijders (fcn. g128). RMNH.CRUS.D.58124: several specimens; south coast, Waterfabriek, 12°06'35.4"N 068°57'15.0"W, 26.v.2005, depth 8.8 m, scuba diving, on *Pseudoplexaura* sp., collected by N. Snijders (fcn. g089). RMNH.CRUS.D.58125: 1 specimen; stn COA.22, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 6.xi.2013, depth 10 m, scuba diving, on *Plexaura* sp. (collected), collected by C.H.J.M. Fransen (photo COA.22 238–241). OUMNH.ZC.2019-06-14: 18 specimens, including ovigerous female pocl. 0.9–1.6 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, 14.ii.2015, depth 7 m, from *Antillogorgia* sp., leg. P. Wirtz & K. Wittman (fcn. 1). OUMNH.ZC.2019-06-15: 1 ovigerous female pocl. 1.6 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, 18.ii.2015, depth 44 m, from *Elisella* sp., leg. P. Wirtz & K. Wittman (sample 14). **Bonaire**: RMNH.CRUS.D.58126: 1 specimen; stn BON.06, Oil Slick Leap, 12°12.029'N 068°18.512'W, 25.x.2019, depth 12 m, scuba diving, on *Plexaurella* spec., collected by C.H.J.M. Fransen (video 5). Stn BON.06, Oil Slick Leap, 12°12.029'N 068°18.512'W, 25.x.2019, depth 12 m, scuba diving, on *Eunicea* spec., C.H.J.M. Fransen (video 5), not collected. RMNH.CRUS.D.57908: 3 specimens; stn BON.37, Andrea I, 12°11.285'N 068°17.795'W, 06.xi.2019, depth 8 m, scuba diving, on gorgonarian, collected by C.H.J.M. Fransen. RMNH.CRUS.D.58127: 47 specimens; Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 06.xi.2019, depth unknown, scuba diving, on brown gorgonian, collected by Peter Wirtz (fcn. 9) (photo).

Ecology. Associated with gorgonarians of the genera *Antillogorgia*, *Leptogorgia* and *Plexaurella* (De Grave & Anker 2017). *P. porosa*, *P. flagellosa* (Houttuyn, 1772), *E. flexuosa*, *E. clavigera* Bayer, 1961, and *Elisella* spec. constitute new host records.

Distribution. Distributed in the tropical northwestern Atlantic from Florida southwards to Belize and the Caribbean coast of Panama in depths between 1 and 10 m (De Grave & Anker 2017). The species is herein recorded for the first time from Curaçao and Bonaire.

Genus *Palaemon* Weber, 1795

Palaemon northropi (Rankin, 1898)

Palaemon affinis—Schmitt 1924: 72 (Curaçao); Schmitt 1935: 160 (Curaçao). Not *P. affinis* H. Milne Edwards, 1837.
Palaemon (Paleander) northropi—Holthuis 1952: 192 (Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.27912: 3 non-ovigerous females, pocl. 3.0, 3.7, 4.4 mm; 1 male, pocl. 4.1 mm; Enoch, 02.ii.1949, littoral, mud, *Rhizophora* sp., collected by P. Wagenaar Hummelinck (fcn. 1028A). **Sint Maarten.** RMNH.CRUS.D.28683: many (>100) specimens; W of Philipsburg, 17.ii.1957, depth 0–1 m, freshwater pond, collected by L.B. Holthuis.

Ecology. Occurs in a wide range of habitats (De Grave & Anker 2017).

Distribution. Common and widely distributed in the western Atlantic from Bermuda to Uruguay in the intertidal to about 5 m depth (De Grave & Anker 2017; Poupin 2018). Previous records from Curaçao by Schmitt (1924, 1935, as *Palaemon affinis*), and Holthuis (1952). The species is here recorded for the first time from Sint Maarten.

Genus *Palaemonella* Dana, 1852b

Palaemonella americana (Kingsley, 1878)

(Figs. 8–9, video 3)

Periclimenes americanus—Rathbun 1920: 8 (Aruba, Sint Eustatius); Schmitt 1936: 370 (Bonaire); Holthuis 1951b: 60 (Aruba, Sint Eustatius); Abele & Kim 1986: 15 (Aruba)
Cuapetes americanus—Horká *et al.* 2016: supplementary table S1 (Curaçao); Poupin 2018: 106 (Sint Maarten).
Cuapetes americanus A.—Frolová *et al.* 2022: Figs 3, 4.
Palaemonella americana—Frolová *et al.* in press.

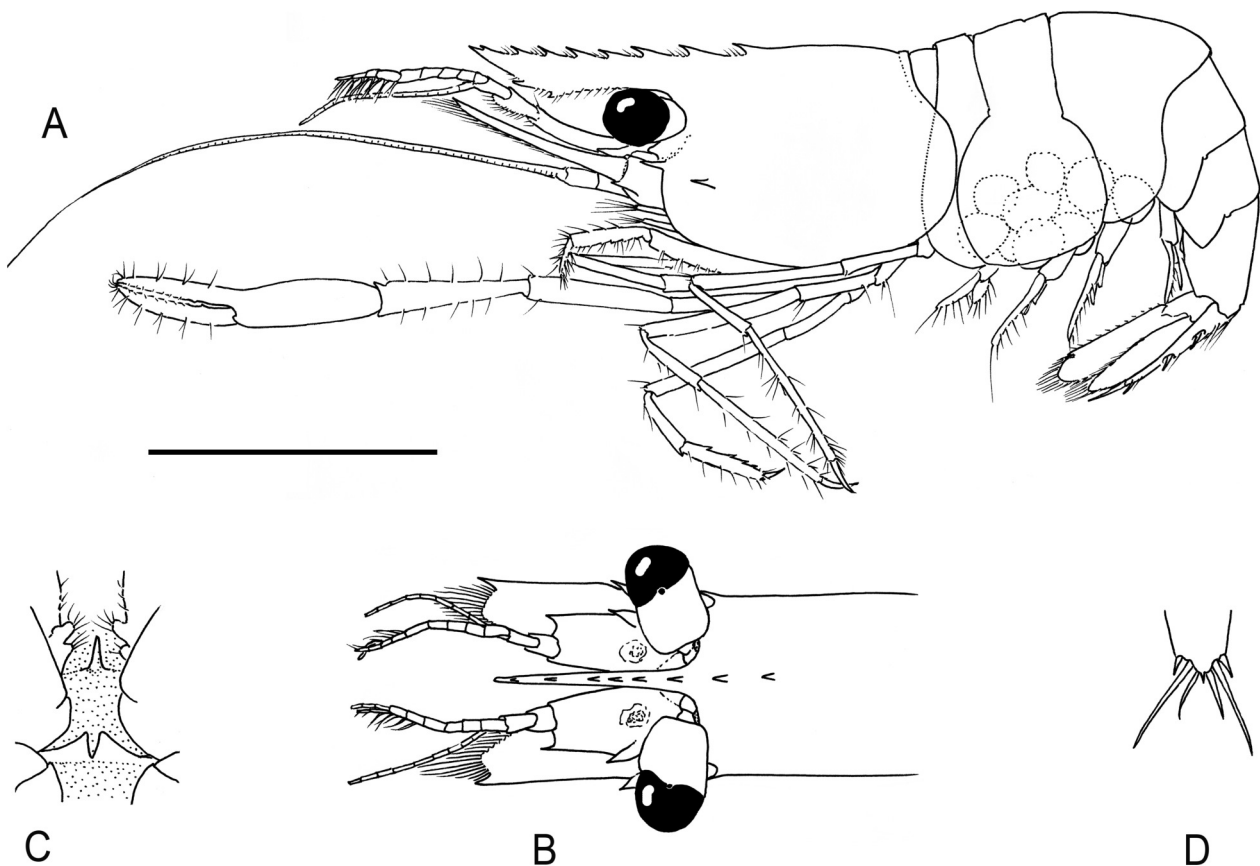


FIGURE 8. *Palaemonella americana* (Kingsley, 1878), RMNH.CRUS.D.57315, male, pocl. 1.1 mm. A, habitus, lateral; B, anterior appendages, dorsal view; C, sternal armature, schematic drawing; D, telson, tip. Scale bar: A, B=2.0 mm; D=1.0 mm.

Material examined. Curaçao: RMNH.CRUS.D.23828: 1 male, pocl. 3.3 mm, $R=2+7/2$; Piscaderabaai, SE part, 18.vii.1963, collected by P. Wagenaar Hummelinck (fcn. 1468). RMNH.CRUS.D.28343: 2 ovigerous females, pocl. 2.2, 2.8 mm, $R=2+5/2$; 3 non-ovigerous females, pocl. 1.3–2.2 mm, $R=2+5-7/2-3$; 4 males, pocl. 2.3 mm, $R=2+6-7/2$; Piscaderabaai, 17.xii.1963, littoral collecting, mangrove, rocks and *Rhizophora* sp., collected by P. Wagenaar Hummelinck (fcn. 1466). RMNH.CRUS.D.28346: 2 males, pocl. 2.5, 2.8 mm, $R=2+5/2$, and rostrum damaged; Piscaderabaai, 02.i.1964, depth 0–1 m, collected by P. Wagenaar Hummelinck (fcn. 1462). RMNH.CRUS.D.28347: 1 ovigerous female, pocl. 3.2 mm, $R=2+6/2$; 2 males, pocl. 2.2, 3.3 mm, $R=2+6-7/2$; Piscaderabaai, near Enoch, 02.ii.1949, mud, *Rhizophora* sp., collected by P. Wagenaar Hummelinck (fcn. 1028A). RMNH.CRUS.D.28348: 9 ovigerous females, pocl. 1.9–2.5 mm, $R=2+5-7/2$; 1 non-ovigerous female, pocl. 1.9 mm $R=2+7/2$; 13 males, pocl. 1.3–2.5 mm, $R=2+6/2$; 1 juvenile, pocl. 0.8 mm, $R=1+5/1$; 2 damaged specimens; Piscaderabaai, 14.xii.1963, sand, *Rhizophora* sp., garbage and *Halimeda* sp., collected by P. Wagenaar Hummelinck (fcn. 1460A). RMNH.CRUS.D.28349: 2 ovigerous females, pocl. 3.8 mm, $R=1+6/2$, 3.1 mm, $R=2+6/2$; 3 males, pocl. 2.1 mm $R=2+7/2$, 2.0 mm $R=2+4/1$ (abberant due to damage), 1.6 mm $R=2+6/2$; 1 juvenile, pocl. 1.1 mm $R=1+6/2$; Piscaderabaai, 29.x.1963, sandy mud, *Rhizophora* sp., *Ulva* sp., collected by P. Wagenaar Hummelinck (fcn. 1495). RMNH.CRUS.D.28350: 1 ovigerous female, pocl. 1.7 mm $R=2+6/2$; 4 non-ovigerous females, pocl. 1.4–1.6 mm $R=2+5-6/2$; 3 males, pocl. 1.2–1.3 mm $R=2+6/2$ other rostra broken; 15 juveniles, pocl. 0.8–1.0 mm $R=0-1+4-6/0-1$; Piscaderabaai, 5.i.1964, depth 1–2 m, sand, gravel, collected by P. Wagenaar Hummelinck (fcn. 1457). RMNH.CRUS.D.28353: 3 ovigerous females, pocl. 2.4 mm $R=2+6/2$, 2.2 mm $R=2+7/2$, 2.6 mm $R=2+6/2$; 3 non-ovigerous females, pocl. 2.2 mm $R=2+6/2$, 1.8 mm $R=2+6/2$, 1.7 mm $R=2+6/2$; 3 males (pocl. 2.2 mm $R=2+6/2$, 2.0 mm (2x) $R=1+6/2$; 1 damaged specimen, abdomen missing, pocl. 2.5 mm $R=2+5/2$; Piscaderabaai, 14.ii.1957, depth 0–1 m, seagrass and *Rhizophora*, collected at night by L.B. Holthuis (fcn. 1104). RMNH.CRUS.D.28355: 6 ovigerous females, pocl. 3.3–3.8 mm $R=2+6-8/2-3$; 10 males, pocl. 2.1–4.3 mm $R=2+7/2$; Piscaderabaai, 25.iii.1957, depth 0–1 m, mangrove, collected by L.B. Holthuis (fcn. 1196). RMNH.CRUS.D.28357: 10 ovigerous females, pocl. 1.9–3.2 mm $R=2+6/2-$

3; 3 non-ovigerous females, pochl. 1.5–2.0 mm rostra damaged; 7 males, pochl. 2.6–4.2 mm R=2+6–7/2; Piscaderabaai, 12.xi.1956, depth 0–1 m, collected by L.B. Holthuis (fcn. 1002). RMNH.CRUS.D.30614: 2 ovigerous females, pochl. 3.1 mm R=2+5/2, 3.5 mm R=2+6/2; Piscaderabaai, 20.xii.1972, depth 0 m, mangrove, between *Crassostrea* sp. and tunicates, collected by J.C. den Hartog. RMNH.CRUS.D.37654: 5 juveniles, pochl. 1.6 mm (3x) R=1+5/1(2x), 2+5/2, pochl. 1.0 mm R=5/0; Piscaderabaai, Boca, East side, 29.xi.1963, depth 3.5 m, collected by P. Wagenaar Hummelinck (fcn. 1453a). RMNH.CRUS.D.37656: 1 specimen, pochl. 1.6 mm R=2+6/2; Piscaderabaai W side of mouth, 14.xii.1963, between *Rhizophora* sp., collected by P. Wagenaar Hummelinck (fcn. 1460). RMNH.CRUS.D.51554: 1 ovigerous female, pochl. 3.3 mm R=2+6/2; 1 male, pochl. 2.0 mm R=2+6/3; Piscaderabaai, NW bay, 26.vii.1973, *Rhizophora* sp., collected by P. Wagenaar Hummelinck. RMNH.CRUS.D.58072: 1 juvenile, pochl. 1.0 mm; stn COA.14, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 05.xi.2013, depth 25 m, scuba diving, in *N. digitalis*, collected by C.H.J.M. Fransen. RMNH.CRUS.D.57051: 1 specimen; stn COA.21, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 05.ix.2013, depth 10 m, scuba diving, in rose sponge, *Desmapsamma anchorata* (Carter, 1882) (photo COA.21 033, 035), collected by C.H.J.M. Fransen. Stn CAO.23, Playa Hundu, 12°16'05.80"N 69°07'42.20"W, 07.xi.2013, not collected, (photographs by C.H.J.M. Fransen CAO.23 176–180). RMNH.CRUS.D.58073: 1 specimen; stn CAR.22, Playa Largu, 12°14.118'N 69°05.907'W, 21.iv.2014, depth unknown, scuba diving, in *A. lacunosa*, collected by C. Rauch. RMNH.CRUS.D.58074: 1 male, pochl. 1.3 mm, R=2+6/2; stn CAR.14, Vaersenbaai, 12°09.678'N 68°52.796'W, 11.iv.2014, depth 24 m, scuba diving, in *D. anchorata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58075: 1 male, pochl. 1.5 mm; stn CAR.16, Slangenbaai, 12°08.359'N 68°59.840'W, 15.iv.2014, depth 8 m, scuba diving, in *Callyspongia (Cladochalina) plicifera* (Lamarck, 1814) (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58076: 1 ovigerous female, pochl. 1.8 mm, R=2+5/2; stn CAR.16, Slangenbaai, 12°08.359'N 68°59.840'W, 15.iv.2014, depth unknown, scuba diving, in *A. lacunosa*, collected by C. Rauch. RMNH.CRUS.D.58077: 1 non-ovigerous female, pochl. 2.0 mm, R=2+6/2; stn CAR.22, Playa largu, 12°14.118'N 69°05.907'W, 21.iv.2014, depth 13 m, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58078: 1 ovigerous female, pochl. 1.7 mm, R=2+5/2; stn CAR.24, Diversleap, 12°04.439'N 68°52.714'W, 22.iv.2014, depth 18 m, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58079: 1 male, pochl. 1.9 mm; stn CAR.26, Grote Knip, 12°21.087'N 69°09.095'W, 23.vi.2014, depth 10 m, scuba diving, in *C. (C.) plicifera* (id. R.W.M. van Soest), collected by C. Rauch. Stn CF13B, Tugboat, 11.vi.2017, depth 15 m, C.H.J.M. Fransen (video 3), not collected. RMNH.CRUS.D.57313: 1 ovigerous female, pochl. 1.9 mm; Playa Kalki, 14.vi.2017, depth 20 m, scuba diving, on *Erythropodium caribaeorum* (Duchassaing & Michelotti, 1860), collected by C.H.J.M. Fransen (fcn. CF14B-1) (video 3). RMNH.CRUS.D.57314: 1 ovigerous female, pochl. 1.8 mm; Blue Bay, 16.vi.2017, depth 28 m, scuba diving, on *E. caribaeorum*, collected by C.H.J.M. Fransen (fcn. CF16A-1) (video 3). Stn CF16C, Hilton reef, 16.vi.2017, depth 20 m, scuba diving, C.H.J.M. Fransen (video 3), not collected. RMNH.CRUS.D.57315: 1 male, pochl. 1.1 mm; Habitat, 17.vi.2017, depth 20 m, scuba diving, on *E. caribaeorum*, collected by C.H.J.M. Fransen (fcn. CF17A-2) (video 3). RMNH.CRUS.D.57316: 1 non-ovigerous female, pochl. 2.1 mm; Playa Jeremy, 20.vi.2017, depth 20 m, scuba diving, on *E. caribaeorum*, collected by C.H.J.M. Fransen (fcn. CF20B-2). **Bonaire**: RMNH.CRUS.D.28344: 1 male, pochl. 2.0 mm, R=2+6/2; Boa di Dam, 500 m SW of Cai, entrance of Lac, 25.viii.1967, depth 1 m, coral reef, *Acropora* sp., collected by P. Wagenaar Hummelinck (fcn. 1562). RMNH.CRUS.D.28356: 2 ovigerous females, pochl. 2.2, 2.5 mm, R=2+6/2; 1 male, pochl. 2.3 mm, rostrum damaged; Lac, 06.iii.1957, depth 0–1 m, sand, algae, collected by L.B. Holthuis (fcn. 1138). ZMA.CRUS.D.240781: 1 ovigerous female, pochl. 2.6 mm, R=2+7/2; laguna, date unknown, depth unknown, collected by P. Wagenaar Hummelinck (fcn. #71, 115/839). Stn BON.03, 1000 Steps, 12°12.654'N 068°19.276'W, 23.x.2019, depth 25 m, scuba diving, on *E. caribaeorum*, C.H.J.M. Fransen (video 3), not collected. Stn BON.21, Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 31.x.2019, depth 15 m, scuba diving, among corals, C.H.J.M. Fransen (video 3), not collected. RMNH.CRUS.D.58080: 1 ovigerous female; stn BON.43, Tori's Reef, 12°04.247'N, 068°16.835'W, 08.xi.2019, depth 0.2 m, hand collecting, on piles of pier Dive Friends Watervillas, collected by L.M van der Loos. **Aruba**: RMNH.CRUS.D.2263: 1 ovigerous female, pochl. 3.3 mm, R=2+6/2; 3.viii.1905, collected by Prof. Boeke. RMNH.CRUS.D.28354: 1 ovigerous female, pochl. 2.5 mm, R=2+6/2; 1 non-ovigerous female, pochl. 2.7 mm, R=2+6/2; 1 male, pochl. 2.6 mm, R=2+6/2; 1 damaged specimen; Savoneta, SW coast, 21.iii.1957, depth 0–1 m, seagrass, collected by L.B. Holthuis. ZMA.CRUS.D.240788: 1 ovigerous female, damaged, P2 missing, pochl. 3.1 mm, R=1+7/2; SE of Aruba, 03.viii.1905, 1 fms, small dredge, collected by J. Boeke. **Sint Eustatius**: RMNH.CRUS.D.2282: 1 ovigerous female, pochl. 2.5 mm, R=2+6/2; F.D. Dick bay, 17.iv.1905, collected by Prof. Boeke. **Sint Maarten**: RMNH.CRUS.D.28352: 2 males,

pocl. 2.8, 2.9 mm, R=2+6–7/2; Great Bay, Philipsburg, 23.ii.1957, depth 0–1 m, seagrass, collected by L.B. Holthuis (fcn. 1129). RMNH.CRUS.D.51551: 1 ovigerous female, pocl. 3.1 mm, R=2+6/2; 1 juvenile, pocl. 1.1 mm, R=2+6/2; Oysterpond, 30.v.1982, depth 0.2–0.3 m, collected by P.A. van den Heuvel. RMNH.CRUS.D.51553: 1 male, pocl. 1.9 mm, R=2+5/2; Oysterpond, 13.xii.1987, depth 1 m, collected by P.A. van den Heuvel. RMNH.CRUS.D.51555: 1 ovigerous female, pocl. 2.6 mm, R=2+5/2; 1 male, pocl. 1.9 mm, rostrum broken; Oysterpond, 30.vii.1983, depth 0.3 m, collected by P.A. van den Heuvel. RMNH.CRUS.D.51557: 1 ovigerous female, pocl. 3.3 mm, R=2+5/2; Oysterpond, E side, 23.vi.1982, collected by P.A. van den Heuvel.



FIGURE 9. *Palaemonella americana* (Kingsley, 1878), stn CAO.23, Curaçao, Playa Hundu, 12°16'05.80"N 69°07'42.20"W, 7.xi.2013. (Photograph by C.H.J.M. Fransen.)

Remarks. The specimens fit the description by Holthuis (1951b). Rostrum (Fig. 8A) long and straight, just overreaching antennular peduncle, with 7–10 (usually 8) dorsal teeth of which 2 postorbital, and 2 ventral teeth in distal part. Scaphocerite with strong distolateral tooth overreaching distal margin of lamina (Fig. 8B). Fourth thoracic sternite with distinct median finger-like process (fig 8C). Mandibular palp absent. Second pereiopods strong, equal in size and shape; fingers of large specimens with 3–4 teeth, those of smaller specimens with 1 or 2 teeth in proximal part of cutting edges; carpi shorter than palm, about as long as merus. Ambulatory dactyli simple, not biunguiculate. Fifth abdominal pleura angular. Telson with pairs of dorsal spines at third and two third of length; distal margin V-shaped with median acute triangular process (Fig. 8D).

Ecology. Associated with turtle grass, dead and living coral, sponges, sea anemones, pilings, stumps, and wrecks. Juvenile specimens were often encountered between the polyps of the octocoral *E. caribaeorum*.

Distribution. Widely distributed in the tropical and subtropical western Atlantic from North Carolina to southeastern Brazil (Moraes *et al.* 2021; Frolová *et al.* in press). Recorded in depths between 1 and 73 m. Some of the older records might be referring to *Palaemonella rhizophorae* (Lebour, 1949).

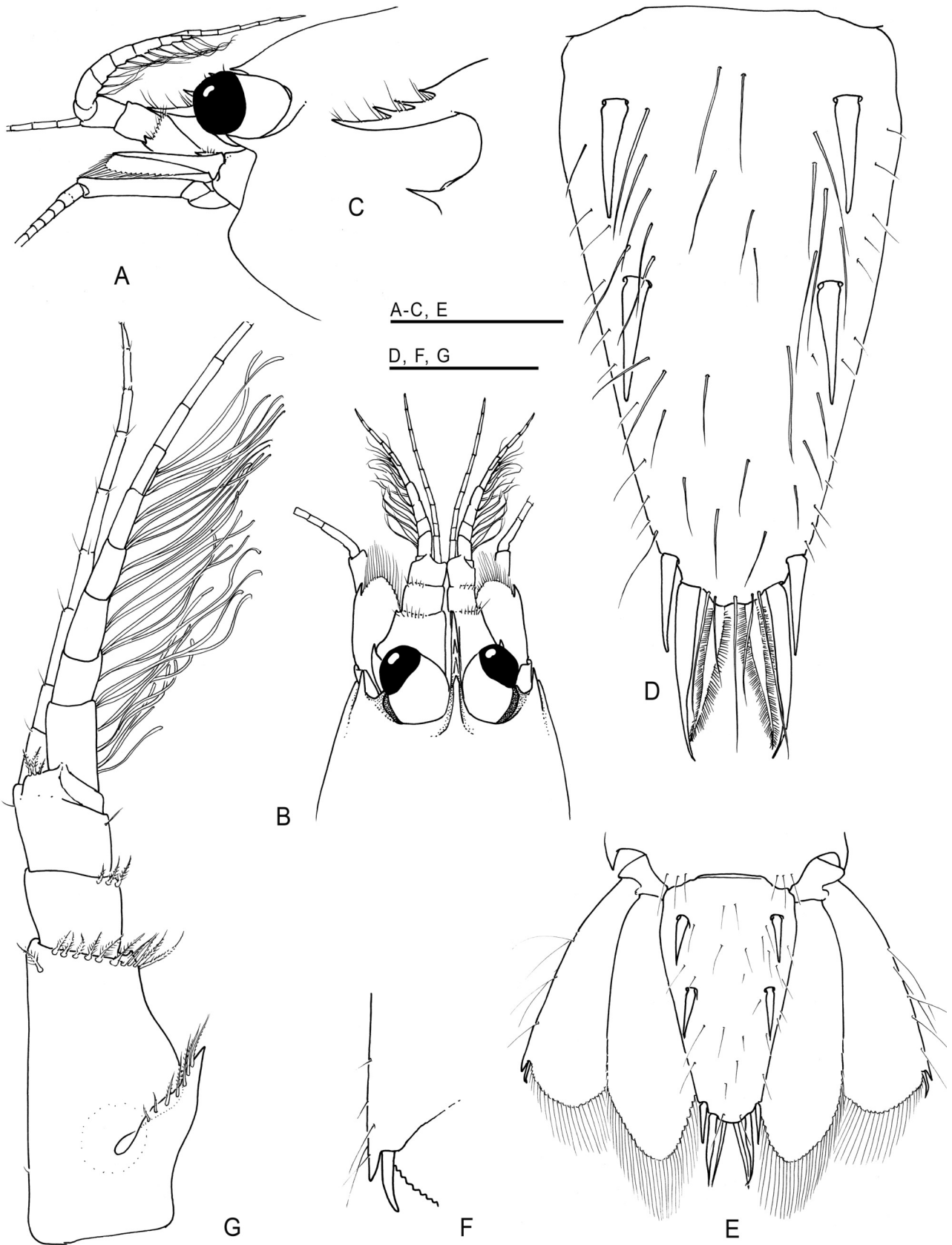


FIGURE 10. *Periclimenaeus ascidiarum* Holthuis, 1951b, RMNH.CRUS.D.57887, ovigerous female, pochl. 2.3 mm. A, anterior appendages, lateral view; B, idem, dorsal view; rostrum; C, rostrum; D, telson, dorsal view; E, tailfan; F, uropodal exopod, distolateral part; G, right antennula, dorsal view. Scale bars: A–C, E=1.0 mm; D, F, G=0.5 mm.

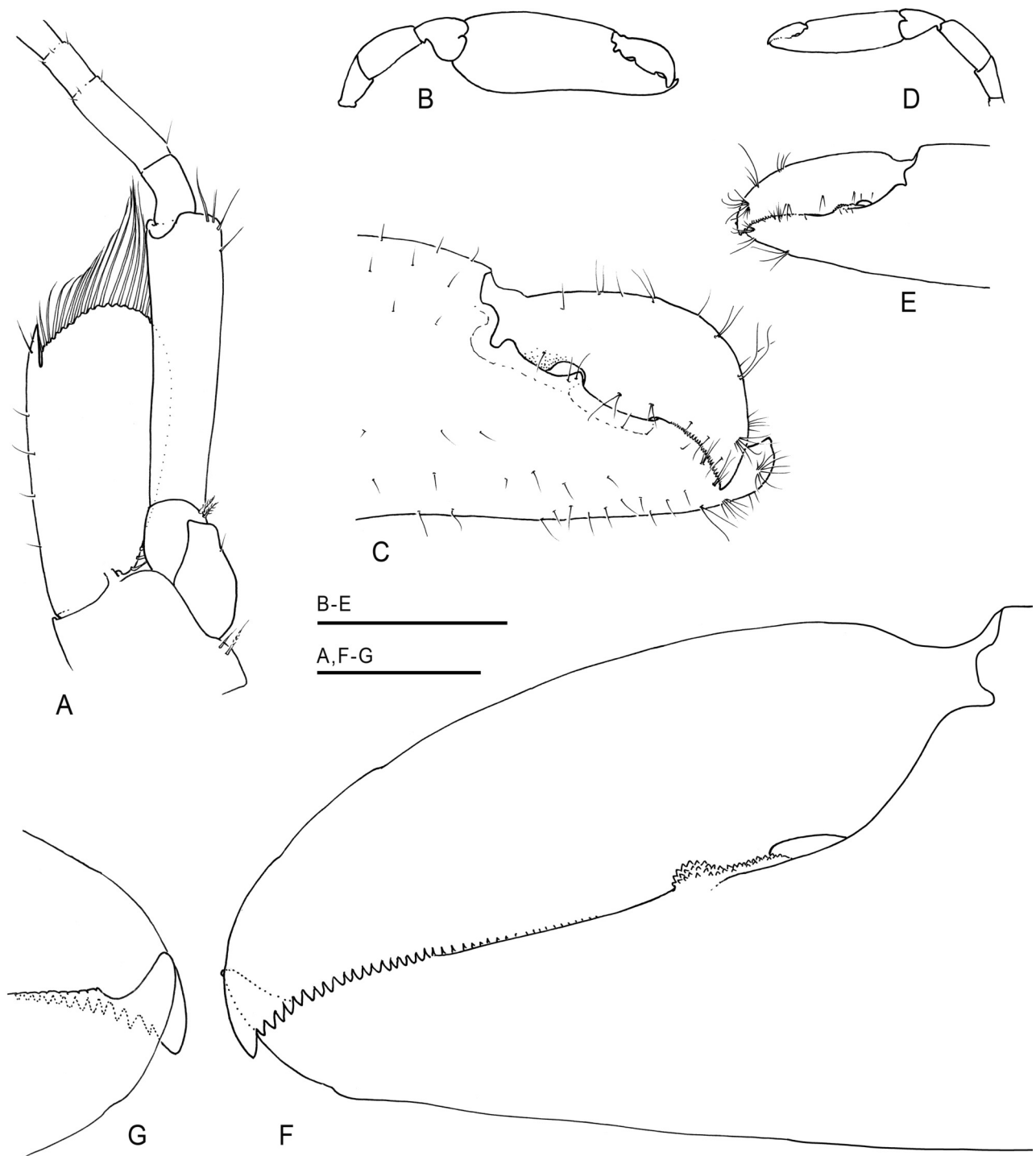


FIGURE 11. *Periclimenaeus ascidiarum* Holthuis, 1951b, RMNH.CRUS.D.57887, ovigerous female, pochl. 2.3 mm. A, left antenna, ventral view; B, left major second pereiopod, mesial view; C, idem, chela; D, right minor second pereiopod, mesial view; E, idem, chela; F, idem, distal part fingers, setae omitted; G, idem, lateral view. Scale bars: A=0.5 mm, B, D=4.0 mm, C, E=1.0 mm; F, G=0.25 mm.

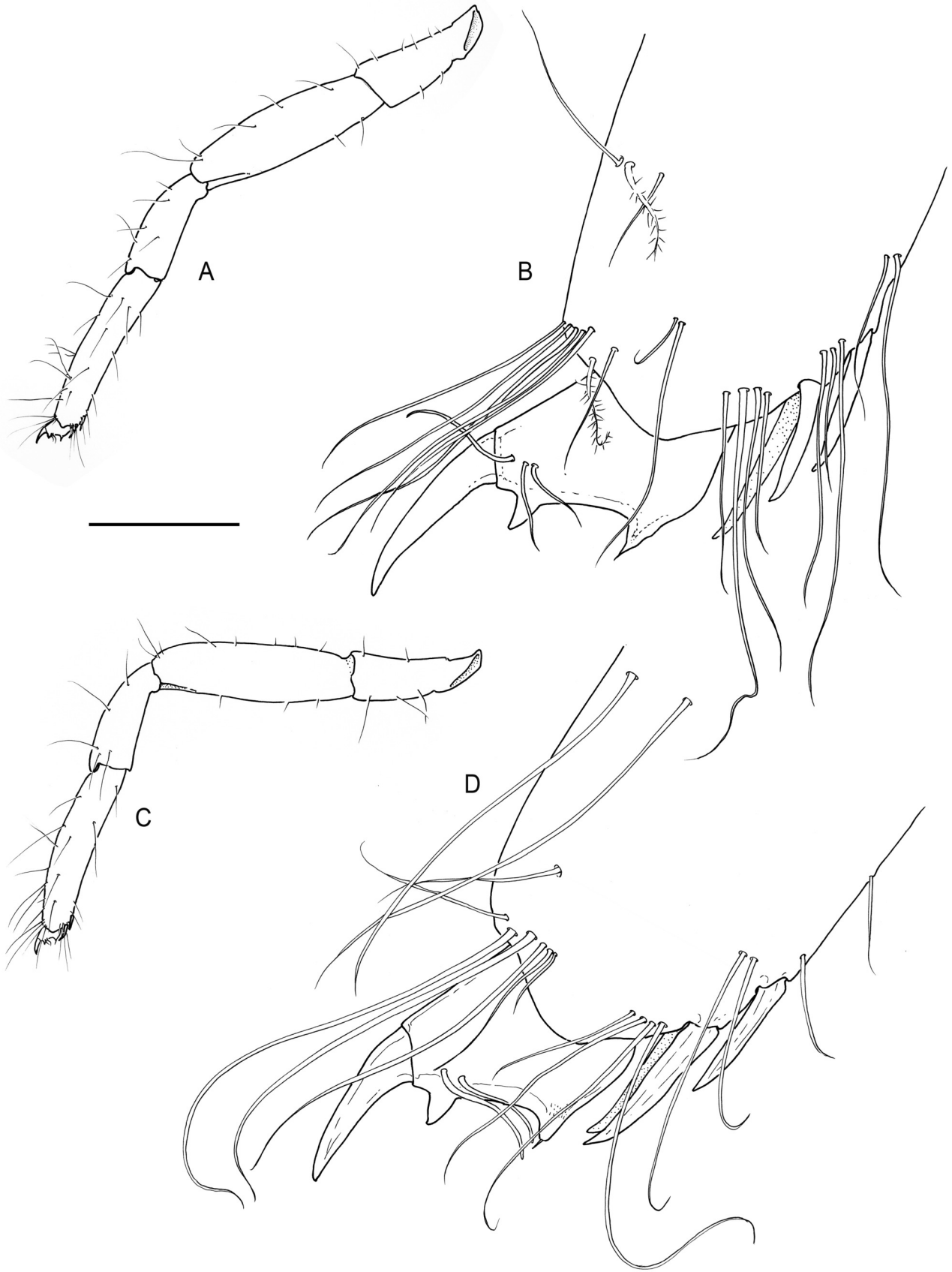


FIGURE 12. *Periclimenaeus ascidiarum* Holthuis, 1951b, RMNH.CRUS.D.57887, ovigerous female, pochl. 2.3 mm. A, right, third pereiopod, mesial view; B, idem, distal part propodus and dactylus; C, right fourth pereiopod, mesial view; D, idem, distal part propodus and dactylus. Scale A, C=1.25 mm, B, D=0.125 mm.

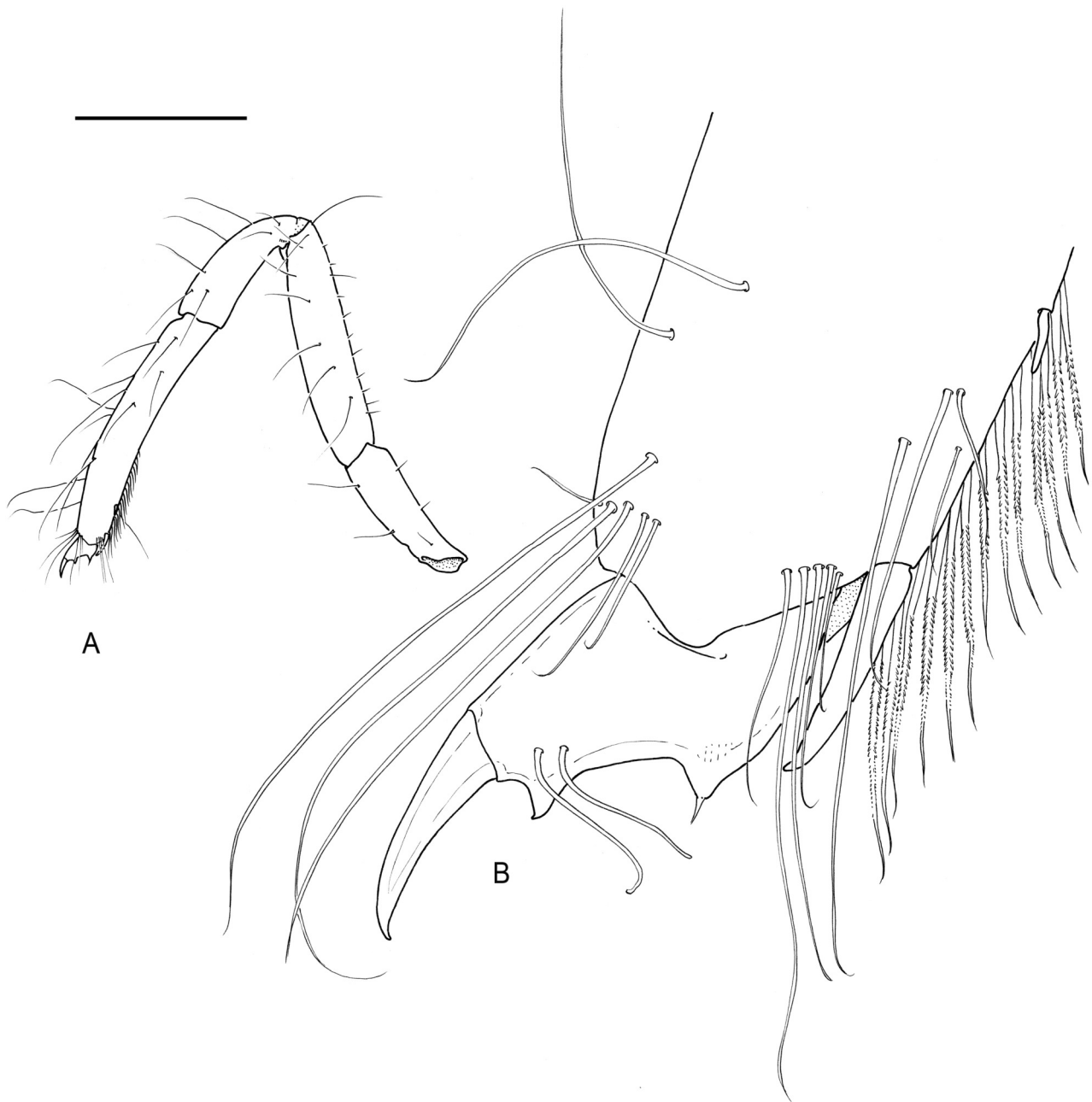


FIGURE 13. *Periclimanaeus ascidiarum* Holthuis, 1951b, RMNH.CRUS.D.57887, ovigerous female, pocl. 2.3 mm. A, right fifth pereopod, mesial view; D, idem, distal part propodus and dactylus. Scale A=1.25 mm; B=0.125 mm.

Genus *Periclimanaeus* Borradaile, 1915

Periclimanaeus ascidiarum Holthuis, 1951b

(Figs. 10–15, video 6)

Material examined. **Bonaire:** Stn BON.10, Salt Pier, 12°05.006'N 068°16.912'W, 26.x.2019, depth 7 m, in compound ascidian, *Diplosoma* sp., not collected, photo C.H.J.M. Fransen. RMNH.CRUS.D.57887: 1 ovigerous female, pocl. 2.3 mm; stn BON.18, Red Slave, 12°01.605'N, 068°15.079'W, 28.x.2019, depth 8 m, in greyish compound ascidian under stone, *Diplosoma* sp., collected by C.H.J.M. Fransen (fcn. BON.18-5) (video 6). RMNH. CRUS.D.58128: 1 male, pocl. 1.2 mm; 1 female, pocl. 1.3 mm, all R=3/0; stn BON.27, Red Slave, 12°01.592'N 068°15.063'W, 03.xi.2019, depth 1 m, snorkeling, in greyish compound ascidian under stone, *Diplosoma* sp.,

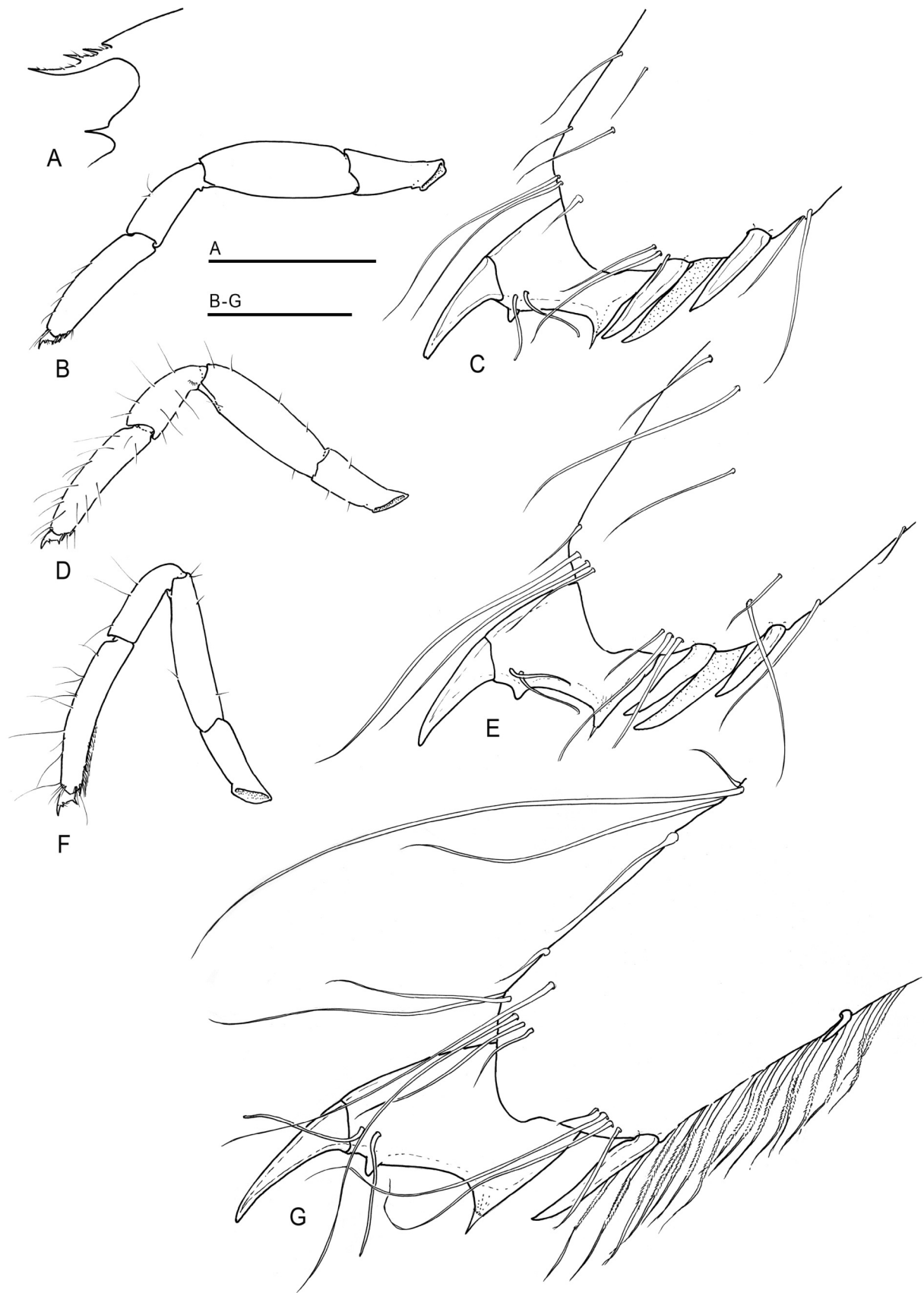


FIGURE 14. *Periclimenaeus ascidiarum* Holthuis, 1951b, RMNH.CRUS.D.57909, ovigerous female, pochl. 1.7 mm. A, rostrum; B, right third pereiopod, mesial view; C, idem, dactylus and distal part propodus; D, right fourth pereiopod; E, idem, dactylus and distal part propodus; F, right fifth pereiopod; G, idem, dactylus and distal part propodus. Scale: A=1.0 mm; B, D, F=1.25 mm; C, E, G=0.125 mm.



FIGURE 15. *Periclimenaeus ascidiarum* Holthuis, 1951b. A, B, stn BON.10, Bonaire, Salt Pier, 12°05,006'N 068°16,912'W, 26.x.2019, depth 7 m, in compound ascidian, *Diplosoma* sp.; C, RMNH.CRUS.D.57887, ovigerous female, stn BON.18, Red Slave, 12°01.605'N, 068°15.079'W, 28.x.2019, depth 8 m, from greyish compound ascidian, *Diplosoma* sp. under stone. A, habitus removed from host; B, idem, near host; C, ovigerous female, dorsal view, major second cheliped missing. (Photographs by C.H.J.M. Fransen.)

collected by W. de Gier. RMNH.CRUS.D.57909: 1 ovigerous female, pochl. 1.7 mm, R=3/0; stn BON.37, Andrea I, 12°11.285'N 068°17.795'W, 06.xi.2019, depth unknown, scuba diving, in greyish compound ascidian under stone, *Diplosoma* sp., collected by C.H.J.M. Fransen (fcn. BON.34-4). **Comparative material.** RMNH.CRUS.D.51396, 1 ovigerous female, pochl. 1.4 mm; USA, SE Florida, N coast of Miami, 1976, collected by R. Guest.

Remarks. The morphological characters of the present specimens agree very well with the original description of Holthuis (1951b) and diagnosis in Ferreira *et al.* (2020). Rostrum with three dorsal teeth, without ventral teeth, distally upturned, overreaching cornea and basal segment of antennular peduncle (figs. 10A–C, 14A). Carapace without supraorbital tooth or tubercle; antennal tooth robust. Inferior orbital angle strongly produced (Fig. 10B). Pterygostomial angle produced (Fig. 10A). Scaphocerite short, reaching distal margin of penultimate segment of antennular peduncle; distolateral tooth distinct but not overreaching distal margin of lamina (Fig. 10B). Carapocerite distinctly overreaching distal margin of scaphocerite (Fig. 10B, 11A). Second pereopods unequal in size and shape, without tubercles (figs. 11B, D). Major second chela (Fig. 11B, C) distal cutting edge of dactylus finely denticulate;

distal cutting edge of fixed finger entire (Fig. 11C); fixed finger slightly overreaching dactylus. Minor cheliped fingers with denticulated tooth in proximal part, distal part of cutting edge finely denticulate, more extensive in dactylus than in fixed finger (Fig. 11E–G). Ambulatory pereopods similar with distoventral part of propodus (figs. 12A–D, 13A, B, 14B–G) with one subdistal ventral and pair of distoventral spines; dactyli biunguiculate with posterior acute process on flexor margin of corpus (figs. 12A–D, 13A, B, 14B–G); fifth pereopods with distolateral half with rows of serrulate setae (Figs. 13A, 14F). First abdominal segment without median anterior dorsal lobe. Sixth abdominal segment with posterolateral margin with small tooth (Fig. 10E). Distolateral tooth of exopod of uropod distinct with mobile spine medially; mobile spine about twice as long as distolateral tooth (Fig. 10F). Both pairs of dorsal spines of telson located in proximal half, anterior pair submedian, posterior pair submarginal; lateral pair of distal spines in line with other distal spines, not subdistal or submarginal (Fig. 10D, E).

Colour (Fig. 12). Colour pattern similar to that figured by Pachelles *et al.* (2018: fig. 2).

Ecology. Known as an endosymbiont, living in the cloacal cavity of unidentified compound ascidians (Holthuis, 1951b) and a compound ascidian of the genus *Diplosoma* (Ferreira *et al.* 2020).

Distribution. Known from Florida and Colombia (Holthuis 1951b), Dominica (Chace 1972), Cuba (Martínez-Iglesias 1986), Caribbean coast of Panama (Pachelles *et al.* 2018), Los Roques (Rodríguez 1986) to Brazil (Vieira *et al.* 2012, Ferreira *et al.* 2020) in depths of 1–73 m. This is the first record of the species for Bonaire.

***Periclimenaeus aff. atlanticus* (Rathbun, 1901)**

(Figs. 16–17)

Material examined. Curaçao: ZMA.CRUS.D.103185: 1 juvenile, P2 minor missing, R=3/0, pocl. 0.6 mm; St. Michiel, 14.v.1976, depth 3 m, in *S. vesparium*, collected by P. Hoetjes (fcn. S-140576-I). ZMA.CRUS.D.103220: 2 specimens, pocl. 1.1 mm, R=3/0; pocl. 1.4 mm, R=4/0, material damaged, dried out; near Blauwbaai, 11.ii.1976, depth 20 m, from *Agelas dispar* Duchassaing & Michelotti, 1864, collected by P. Hoetjes (fcn. A-110276-I).

Remarks. The present specimens are very small (pocl. 0.6 mm) even smaller than the two female type specimens (total length 5.0 and 5.5 mm) described by Rathbun (1901) and redescribed by Holthuis (1951b). Rostra of present specimens with three or four dorsal teeth of which distalmost small, whereas type-specimens of *P. atlanticus* with four equally developed teeth dorsally; rostrum distally slightly upturned, not overreaching cornea nor basal segment of antennular peduncle (Fig. 16A, B) whereas just overreaching basal segment of antennular peduncle in type specimens of *P. atlanticus*. Carapace without supraorbital tooth or tubercle; inferior orbital angle slightly developed (Fig. 16B). Scaphocerite relatively long, distinctly overreaching antennular peduncle (Fig. 16B), whereas not overreaching penultimate segment of antennular peduncle in *P. atlanticus*; distolateral tooth of scaphocerite moderately developed, reaching distal margin of lamina, whereas more strongly developed in types of *P. atlanticus*. Carapocerite short (Fig. 16B), reaching midlength of scaphocerite whereas overreaching distal lamina of scaphocerite in types of *P. atlanticus*. Antennal tooth robust. Infraorbital margin angular, not produced. Pterygostomial margin rounded, not produced (Fig. 16A). Second pereopods equal in size, unequal in shape. Major chela with few acute tubercles along median margin of ischium and merus; carpus cup shaped; palm swollen; fixed finger with distinct fossa, medially flanked by triangular knob, distal cutting edge entire, tip strongly hooked; movable finger with well developed plunger, distal cutting edge denticulate, tip strongly hooked (Fig. 17A). Both minor cheliped fingers with crenulated tooth in proximal part of cutting edge; distal part of cutting edge finely denticulate, more extensive in dactylus than in fixed finger (Fig. 17B). According to Holthuis (1951b) these shallow denticles are not present on the cutting edge of the fixed finger in the type material of *P. atlanticus*. Third pereopods with distoventral part of propodus (Fig. 17C, D) with one subdistal ventral and one distoventral spine, both minutely tuberculate on flexor margin; dactylus slender with flexor margin of corpus with small obliquely forward directed accessory tooth and acute, slightly forward directed, posterior tooth. This posterior tooth is mentioned by Rathbun (1901) but not shown in the drawing (Fig. 28c) whereas it is not mentioned in the description by Holthuis but visible in his plate 24, figure o. Fifth pereopod (Fig. 17E, F) similar to third, propodus with only few distolateral serrulate setae. First abdominal somite without anterior median dorsal lobe. Sixth abdominal segment with posterolateral margin with small tooth (Fig. 16C). Distolateral margin of exopod of uropod without tooth, with small mobile spine just medially of distolateral angle (Fig. 16C). Dorsal pairs of spines on telson of moderate length; anteriormost pair at 0.25 of telson length, posteriormost pair at 0.55 of telson length (Fig. 16C). This differs from *P. atlanticus* where

the anterior pair is placed at about 0.4 and and the posterior pair at 0.75 of the telson length. Lateral pair of terminal spines placed almost in line with other terminal spines, not distinctly subdistal or submarginal (Fig. 16D).

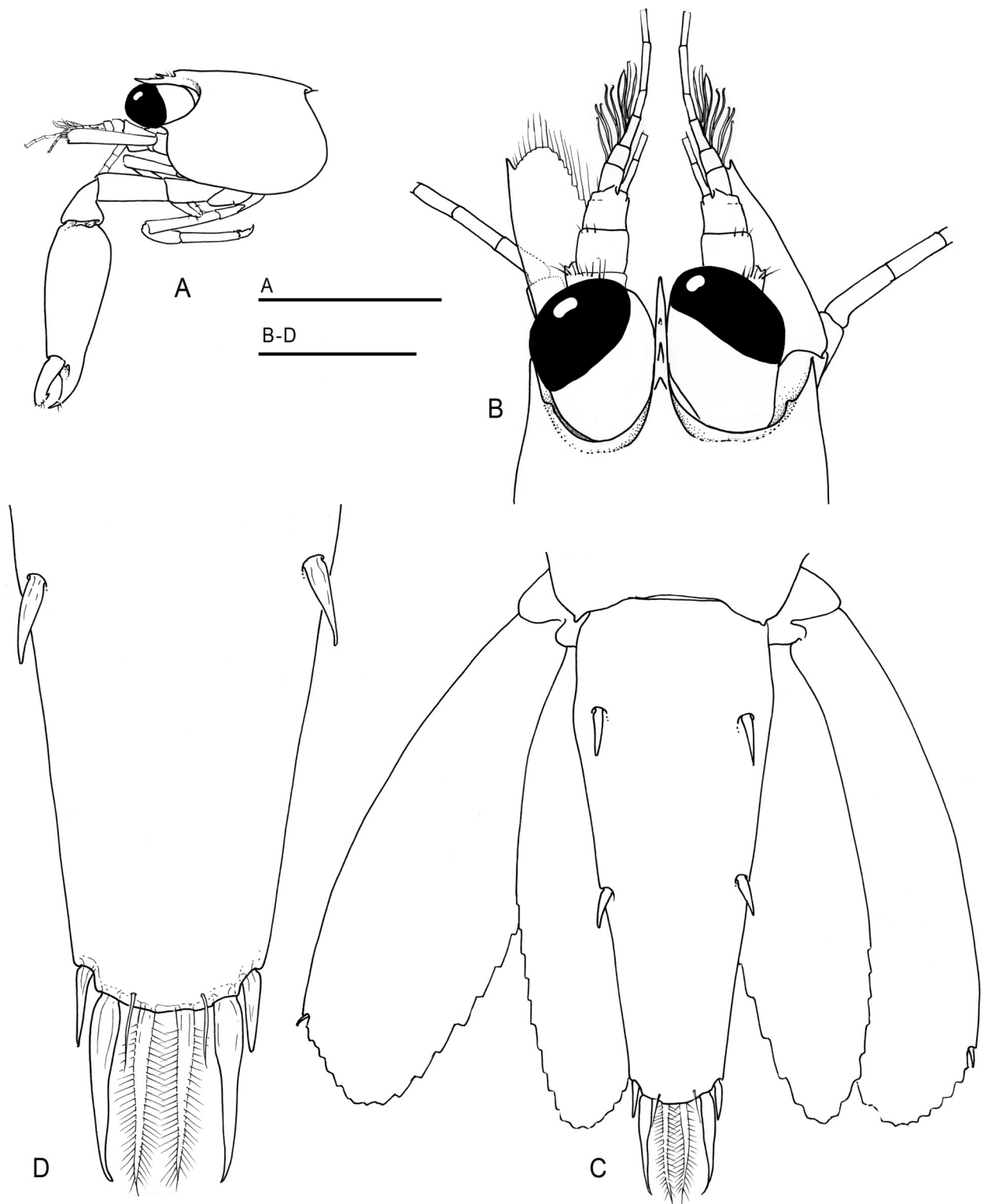


FIGURE 16. *Periclimenaeus* aff. *atlanticus* Holthuis, 1951b, ZMA.D.103185, juvenile, pochl. 0.6 mm. A, carapace and anterior appendages, lateral; B, anterior appendages, dorsal; C, tailfan; D, distal margin telson. Scale bars: A=1.0 mm; B=0.5 mm; C=0.25 mm; D=0.125 mm.

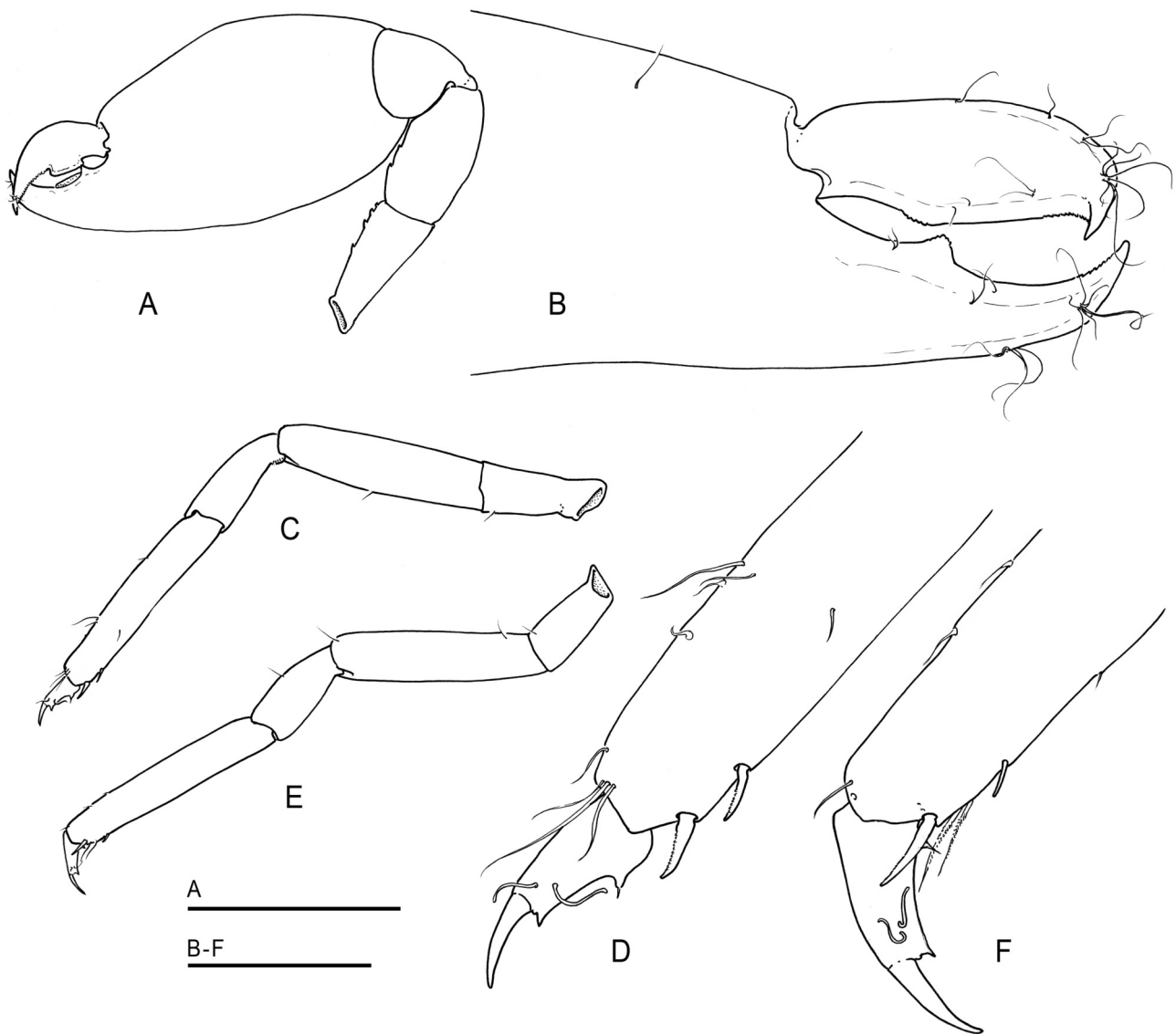


FIGURE 17. *Periclimanaeus* aff. *atlanticus* Holthuis, 1951b. A, ZMA.CRUS.D.103220, pocl. 1.4 mm; B–F, ZMA.D.103185, juvenile, pocl. 0.6 mm. A, right major second pereiopod, mesial view; B, left minor second pereiopod, chela, mesial view; C, right third pereiopod; D, idem, dactylus and distal part propodus; E, right fifth pereiopod; F, idem, dactylus and distal part propodus. Scale bars: A=1.0 mm; B=0.25 mm; C, E=0.5 mm; D, F=0.125 mm.

The specimens at hand are in a bad condition and very small. Although there are similarities with *P. atlanticus*, there are also some clear differences. It is therefore not possible to identify them here with full certainty.

Ecology. Previous records of the species did not mention a potential host (Holthuis, 1951b). The present specimens were found in two poriferan hosts: *S. vesparium*, and *A. dispar*.

Distribution. Records of *P. atlanticus* are scarce: St. Thomas, Virgin Islands (Rathbun 1901); Isla de Cozumel and Bahía de la Ascención, Quintana Roo, Mexico (Chace 1972); Indian River, East Florida (Reed *et al.* 1982); in depths between 6 and 42 m. This is the first record of the species from Curaçao, if conspecific.

Periclimanaeus bredini Chace, 1972

(Fig. 18)

Material examined. Curaçao: RMNH.CRUS.D.58129: 1 damaged specimen, 1 female, pocl.1.35 mm; stn CAR.29, Fuikbaai, 12°02.855'N 68°49.838'W, 25.iv.2014, depth 26 m, scuba diving, *Aplysina* sp., collected by C. Rauch.

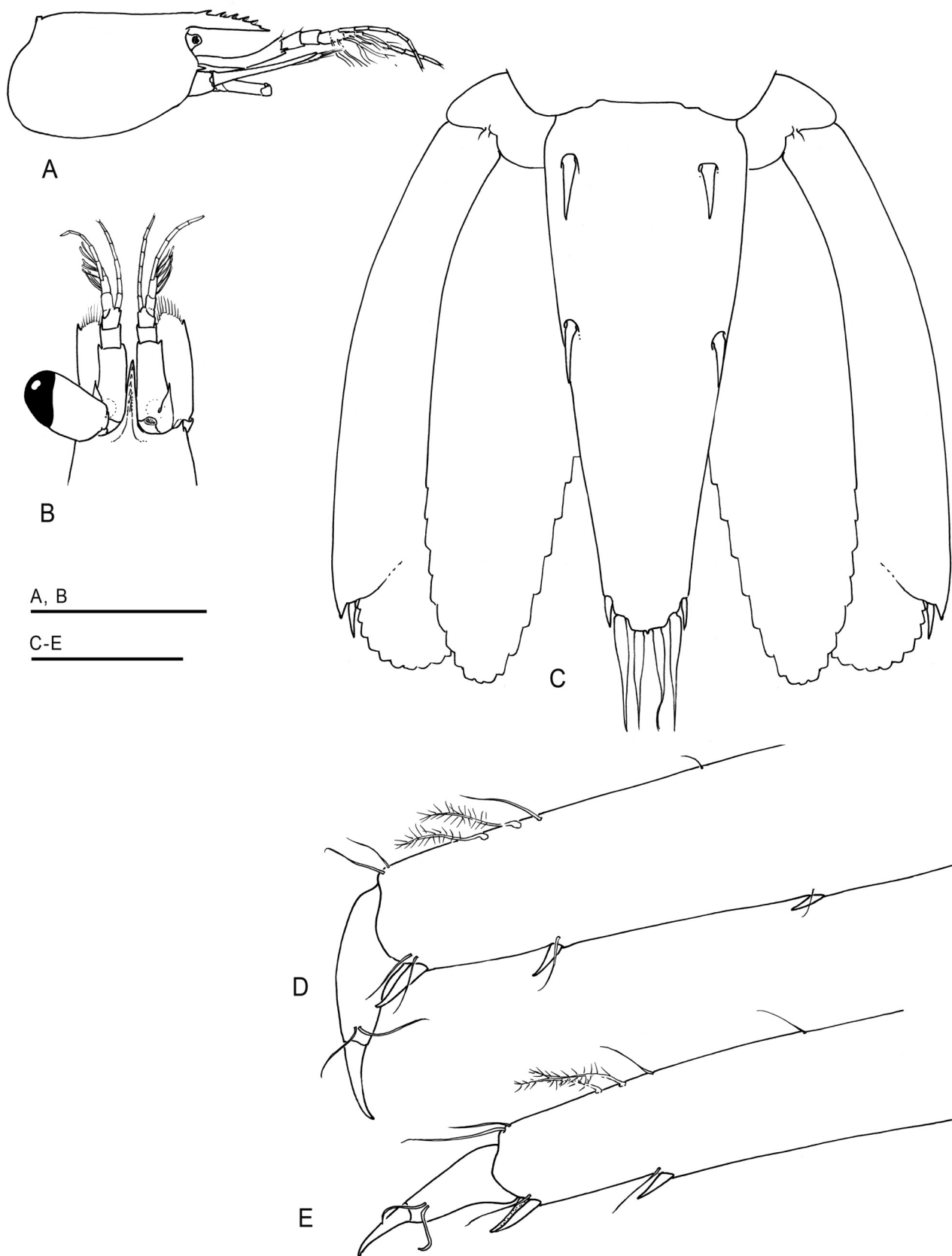


FIGURE 18. *Periclimenaeus bredini* Chace, 1972. RMNH.CRUS.D.58130, female, pochl. 1.0 mm. A, anterior appendages, lateral view; B, idem, dorsal view; C, tailfan; D, third left pereiopod, dactylus and distal part propodus, lateral view; E, fourth left pereiopod, dactylus and distal part propodus, lateral view. Scale bars: A, B=1.0 mm; C=0.25 mm; D, E=0.125 mm.

RMNH.CRUS.D.58130: 1 female, pocl. 1.0 mm, R=6/0; stn COA.21, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 05.ix.2013, depth 10 m, scuba diving, in rose sponge, *D. anchorata* (photo COA.21 033, 034), collected by C.H.J.M. Fransen.

Remarks. The morphological characters of the present two small specimens agree well with the original description by Chace (1972). Rostrum (Fig. 18A, B) straight with six dorsal teeth (7 in the type-specimen), without ventral teeth, almost reaching distal margin of basal segment of antennular peduncle. Carapace without supraorbital tubercle of tooth; antennal tooth small but distinct, placed at level of inferior orbital angle; inferior orbital angle rounded, not produced; pterygostomial angle not produced (Fig. 18A). Scaphocerite long, reaching to distal margin of antennular peduncle; distolateral tooth distinct, not overreaching distal margin of lamina; carapocerite short, reaching midlength of scaphocerite (Fig. 18B). Second pereopods unequal in size and shape; ischium and merus with tubercles on ventral margins and inconspicuous scattered tubercles covering palm; distal part of fingers entire, without fine denticulation. Third pereopod (Fig. 18D) distinctly more robust than fourth (Fig. 18E) and fifth, with few spines on ventral margin of propodus. Dactyli of ambulatory pereopods (Fig. 18D, E) not biunguiculate, without proximal process. The ovigerous female holotype, which is much larger (pocl. 2.9 mm) than our female specimen (pocl. 1.0 mm), has the dactylus of the third and fourth pereopod with an accessory tooth. It is supposed that this feature might develop in larger specimens. First abdominal segment without anterior median dorsal lobe. Sixth abdominal segment with posterolateral margin rounded, without tooth (Fig. 18C). Dorsal telson spines length about 0.1 times telson length; anterior pair situated at 0.1 of telson length, posterior pair at about 0.4 of telson length; lateral pair of distal spines smaller than dorsal spines, located somewhat subdistally, intermediate and medial spines about twice as long as dorsal telson spines; distal margin with small median triangular tooth (Fig. 18C). Distolateral tooth of exopod of uropod distinct with mobile spine medially; mobile spine about twice as long as distolateral tooth (Fig. 18C).

The shrimps are translucent with scattered minute white chromatophores as figured by Pachelle *et al.* (2018: fig. 3).

Ecology. Known to live in association with sponges of the genera *Aplysina* (see Villamizar & Laughlin 1991). Now for the first time recorded from *Desmapsamma anchorata* (Carter, 1882).

Distribution. The species has been previously reported from several localities in the western Atlantic, from Florida (Dardeau 1984), Caribbean coast of Mexico (Chace 1972), Veracruz, Yucatán (Hernández-Aguilera *et al.* 1996), Cuba (Martínez-Iglesias *et al.* 1993), Venezuela, Los Roques Archipelago (Rodríguez, 1980; Villamizar & Laughlin 1991), and the Caribbean coast of Panama (Pachelle *et al.*, 2018) in depth of 1–40 m. The species is herein recorded for the first time from Curaçao.

***Periclimenaeus caraibicus* Holthuis, 1951**

(Figs. 19–20, video 7)

Material examined. Curaçao: RMNH.CRUS.D.58131: 1 female, pocl. 1.1 mm, R=5/1, 1 ovigerous female, pocl. 1.9 mm, R=7/1; stn COA.10, Waterfabriek II, 12°06'37.00"N 68°57'16.30"W, 31.x.2013, depth 30 m, in *N. digitalis*, collected by C.H.J.M. Fransen (photo B.T. Reijnen 001–006). RMNH.CRUS.D.58132: 1 male, pocl. 0.9 mm, R=5/0; 1 female, pocl. 0.9 mm, R=5/1; 1 female, pocl. 1.0 mm, R=5/1; stn COA.21, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 05.ix.2013, depth 10 m, scuba diving, in rose sponge, *D. anchorata* (photo COA.21 033, 034), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58133: 2 specimens, pocl. 1.1 mm, R=5/1; 1 male, pocl. 1.1 mm, R=5/1; 1 female, pocl. 1.1 mm, R=6/1; stn COA.22, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 06.xi.2013, depth 35 m, scuba diving, in *N. digitalis*, collected by C.H.J.M. Fransen. RMNH.CRUS.D.58134: 6 specimens; stn CAR.04, Blue Bay, 12°08.063'N 68°59.138'W, 02.iv.2014, depth 21 m, scuba diving, in *Phorbis amaranthus* Duchassaing & Michelotti, 1864 (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58135: 1 ovigerous female, pocl. 1.5 mm, R=5/1; stn CAR.05, Playa Kalki, 12°22.536'N 69°09.464'W, 1.iv.2014, depth 14 m, scuba diving, in *Niphates erecta* Duchassaing & Michelotti, 1864 (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58136: 1 specimen, pocl. 1.1 mm, R=5/1; stn CAR.05, Playa Kalki, 12°22.536'N 69°09.464'W, 01.iv.2014, depth unknown, scuba diving, on blue branched sponge, collected by C. Rauch. RMNH.CRUS.D.58137: 2 specimens, pocl. 1.1, 0.8 mm; stn CAR.12, Caracasbaai, 12°04.588'N 68°51.817'W, 10.iv.2014, depth 20 m, scuba diving, in *D. anchorata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58138: 10 specimens; stn CAR.14, Vaersenbaai, 12°09.678'N 68°00.237'W, 11.iv.2014, depth 24 m, scuba diving, in *D. anchorata* (id. R.W.M. van

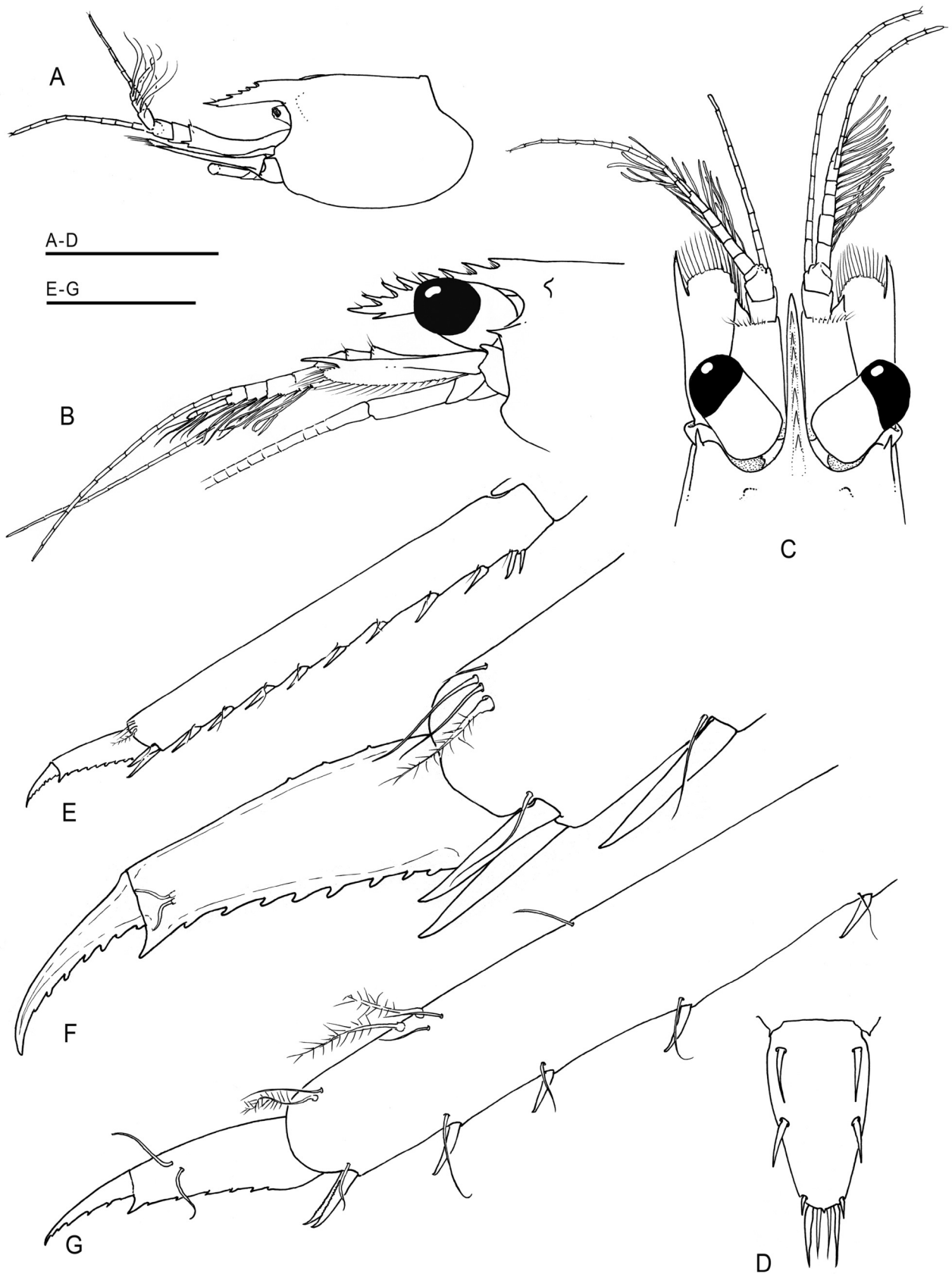


FIGURE 19. *Periclimenaeus caraibicus* Holthuis, 1951b. A, G, RMNH.CRUS.D.58132, female, pocl. 0.9 mm. B–F, RMNH. CRUS.D.58131, ovigerous female, pocl. 1.9 mm. A, B, anterior appendages, lateral view; C, idem, dorsal view; D, telson; E, left third pereiopod, dactylus and propodus; F, G, idem, dactylus and distal part propodus. Scale bars: A–D=1.0 mm; E=0.5 mm; F, G=0.125 mm.



FIGURE 20. *Periclimenaeus caraibicus* Holthuis, 1951b, dorsal view, stn COA.10, Curaçao, Waterfabriek II, 12°06'37.00"N 68°57'16.30"W, 31.x.2013, depth 30 m, in *Niphates digitalis* (Lamarck, 1814). (Photograph by B.T. Reijnen.)

Soest), collected by C. Rauch. RMNH.CRUS.D.58139: 1 specimen; stn CAR.17, Coral Estate/Habitat Curaçao, 12°11.877'N 69°04.751'W, 16.iv.2014, depth 18 m, scuba diving, in *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58140: 1 ovigerous female, pochl. 1.6 mm, R=6/1; Boei 1, 18.iv.2014, depth 8 m, in *D. anchorata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58141: 1 specimen; Radio City, 21.iv.2014, depth unknown, scuba diving, in *N. erecta*, collected by C. Rauch. RMNH.CRUS.D.58142: 1 specimen; stn CAR.26, Grote Knip, 12°21.087'N 69°09.095'W, 23.iv.2014, depth 10 m, scuba diving, in *C. (C.) plicifera*, collected by C. Rauch. RMNH.CRUS.D.58143: 1 ovigerous female; stn CAR.29, Fuikbaai, 12°02.855'N 68°49.838'W, 25.iv.2014, depth unknown, scuba diving, in pink branching sponge, collected by C. Rauch. RMNH.CRUS.D.58144: 1 male, pochl. 1.1 mm, R=4/1; stn CF12B-2, Substation, depth 15 m, in *Niphates digitalis* (Lamarck, 1814), collected by C.H.J.M. Fransen. **Bonaire:** RMNH.CRUS.D.57866: 1 ovigerous female, pochl. 1.6 mm, R=4/1; stn BON.02, Pink Beach (Kabayé), 12°03.849'N 68°16.896'W, 23.x.2019, depth 2 m, scuba diving; in red encrusting sponge, collected by C.H.J.M. Fransen (video 7).

Remarks. The morphological characters of the present specimens agree well with the original description of Holthuis (1951b). Most specimens with rostrum typically with 5 dorsal teeth and one subdistal ventral tooth; smaller specimens with 4 dorsal rostral teeth (Fig. 19A), without subdistal ventral tooth; rostrum reaching distal margin of penultimate segment of antennular peduncle. Large ovigerous specimen with 6 dorsal rostral teeth (Fig. 19B, C). Distinct acute postorbital tubercle (Fig. 19B) present in large specimens; in smaller specimens indistinct or absent (Fig. 19A); antennal tooth distinct but modest, at level of inferior orbital angle; inferior orbital angle broadly rounded, slightly produced; pterygostomial angle slightly produced in larger specimens. Scaphocerite overreaching antennular peduncle by distolateral tooth; distolateral tooth very strong, distinctly overreaching distal margin of lamina (Fig. 19C); carpocerite reaching to 3/4th of scaphocerite length (Fig. 19B). First pereopods long and slender. Second pereopods unequal in size and shape; ischium and merus with tubercles on ventral margins, with scattered tubercles covering palm; distal part of fingers entire, without fine denticulation. Propodus of third pereopod with series of about 10 strong ventral spines in larger specimens (Fig. 19E), spines slenderer in smaller specimens (Fig.

19G); propodus of fourth and fifth pereopods with less spines, usually not more than 5. Dactyli of ambulatory pereopods long and slender, biunguiculate, with both unguis and concave flexor margin of corpus serrate (Fig. 19F, G); in a large specimen, several small denticles (Fig. 19F) present on dorsal margin of corpus. First abdominal segment without anterior median dorsal lobe. Sixth abdominal somite with posterolateral margin with tooth (Fig. 19D). Telson with long anterior dorsal pair of spines situated near proximal border, submarginal; posterior pair of dorsal spines slightly shorter, situated halfway telson, submarginal; lateral pair of distal spines much shorter than dorsal spines; distal margin of telson with small acute median tooth (Fig. 19D). Distolateral tooth of exopod of uropod short with mobile spine medially; mobile spine much longer than distolateral tooth.

The coloration (Fig. 20) is translucent with some minute scattered red and white chromatophores. Typically a continual white band is present from the corneas over the dorsal side of the eystalks, joining medially under the basis of the rostrum.

Ecology. The species has been recorded in association with sponges: *Amphimedon compressa*, *?Pseudaxinella reticulata*, *Tedania* cf. *signis* (see De Grave & Anker 2017). Now for the first time recorded from *N. digitalis*, *N. erecta*, *D. anchorata*, *P. amaranthus*, and *C. (C.) plicifera*.

Distribution. It is known from scattered locations in the tropical western Atlantic: Caribbean coast of Panama (Duffy 1992; De Grave & Anker 2017); Tobago (Holthuis 1951b); Barbuda, Dominica, Antigua Island, Santa Lucia Island, Bahia de la Ascensión (Mexico) (Chace 1972); Cuba (Martinez-Iglesias *et al.* 1996); Rocas Atoll, Brazil (Cardoso & Young 2007, Vieira *et al.* 2012); in shallow waters of 1–3 m depth. Now recorded for the first time from Curaçao and Bonaire.

***Periclimenaeus cloacola* spec. nov.**

(Figs. 21–29, video 8)

Material examined. **Curaçao:** RMNH.CRUS.D.58145: 1 ovigerous female, pochl. 1.8 mm, R=2/0, damaged, all pereopods missing; Piscaderabaai, 05.i.1964, 1.5–2 m depth, collected by P. Wagenaar Hummelinck (fcn. 1457). RMNH.CRUS.D.58146: 1 female, R=2/0, pochl. 1.6 mm; stn COA.14, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 05.xi.2013, depth 5 m, scuba diving, in compound ascidian under stone, *Diplosoma* aff. *listerianum* (H. Milne Edwards, 1841) (photo COA.14 108–111), collected by B.T. Reijnen (photo COA.14 116–124). **Bonaire:** RMNH.CRUS.D.57868: 1 specimen, probably a male (first and second pleopods missing), pochl. 1.5 mm, R=2/0; 1 ovigerous female, pochl. 2.1 mm, R=2/0; stn BON.05, Corporal Meiss, 12°07.888'N 068°16.996'W, 24.x.2019, depth 2 m, in greyish compound ascidian under stone, *Diplosoma* sp., collected by C.H.J.M. Fransen (fcn. BON.05-1) (photo). RMNH.CRUS.D.58147: 1 ovigerous female, pochl. 2.0 mm, R=1/0; stn BON.06, Oil Slick Leap, 12°12.029'N 068°18.512'W, 25.x.2019, depth 8 m, in greyish compound ascidian under stone, *D.* aff. *listerianum*, collected by C.H.J.M. Fransen (fcn. BON.06-1) (video 8). RMNH.CRUS.D.57883: 1 ovigerous female, pochl. 2.9 mm, R=2/0; stn BON.21, Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 31.x.2019, depth 1 m, scuba diving, in greyish compound ascidian under stone, *D.* aff. *listerianum*, collected by C.H.J.M. Fransen (fcn. BON.21-1) (video 8).

Description. Small shrimp with subcylindrical body (Fig. 21A). Rostrum short, dorsal carina well marked, directed downwards with 1–2 dorsal teeth placed distinctly in advance of posterior margin of orbit, with short setae interspersed proximally; apex of rostrum slender and curved upwards, reaching distal margin of basal segment of antennular peduncle; ventral margin convex, unarmed, devoid of setae; lateral carina obsolete (Fig. 21A–E). Carapace smooth, glabrous, without epigastric, supraorbital or hepatic spine, antennal tooth strong, marginal, at level of produced inferior orbital angle; inferior orbital angle moderately produced (Fig. 21C); orbital ridge present; pterygostomial angle broadly rounded, distinctly produced (Fig. 21A, B).

Epistome and labrum normal.

Sternites small; second thoracic sternite unarmed; third thoracic sternite with median rounded shallow plate; fourth to eighth thoracic sternites unarmed.

Abdomen smooth, first abdominal segment without median anterior dorsal lobe, third segment not produced posteriorly; pleura of first five pleonites broadly rounded, sixth pleonite as long as fifth, somewhat more than half as long as telson, with posteroventral angle feebly produced, angular, posterolateral angle rounded (figs. 21A, 22A).

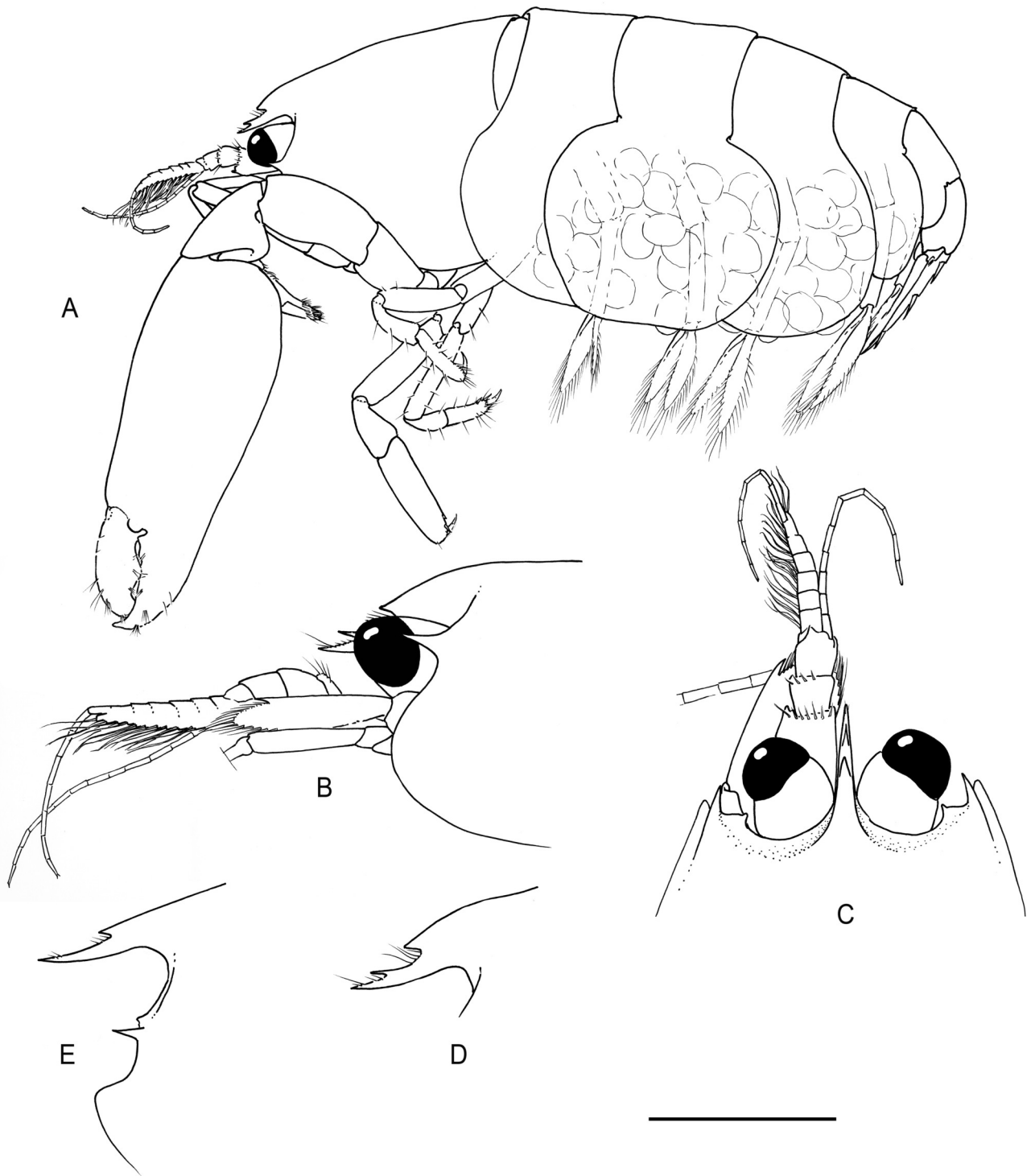


FIGURE 21. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pochl. 2.9 mm. A, habitus, lateral view; B, anterior appendages, lateral view; B, idem, dorsal view; D, rostrum. RMNH.CRUS.D.58147 (fcn. BON.06-1), ovigerous female; E, rostrum. Scale: A=2.0 mm; B–E=1.0 mm.

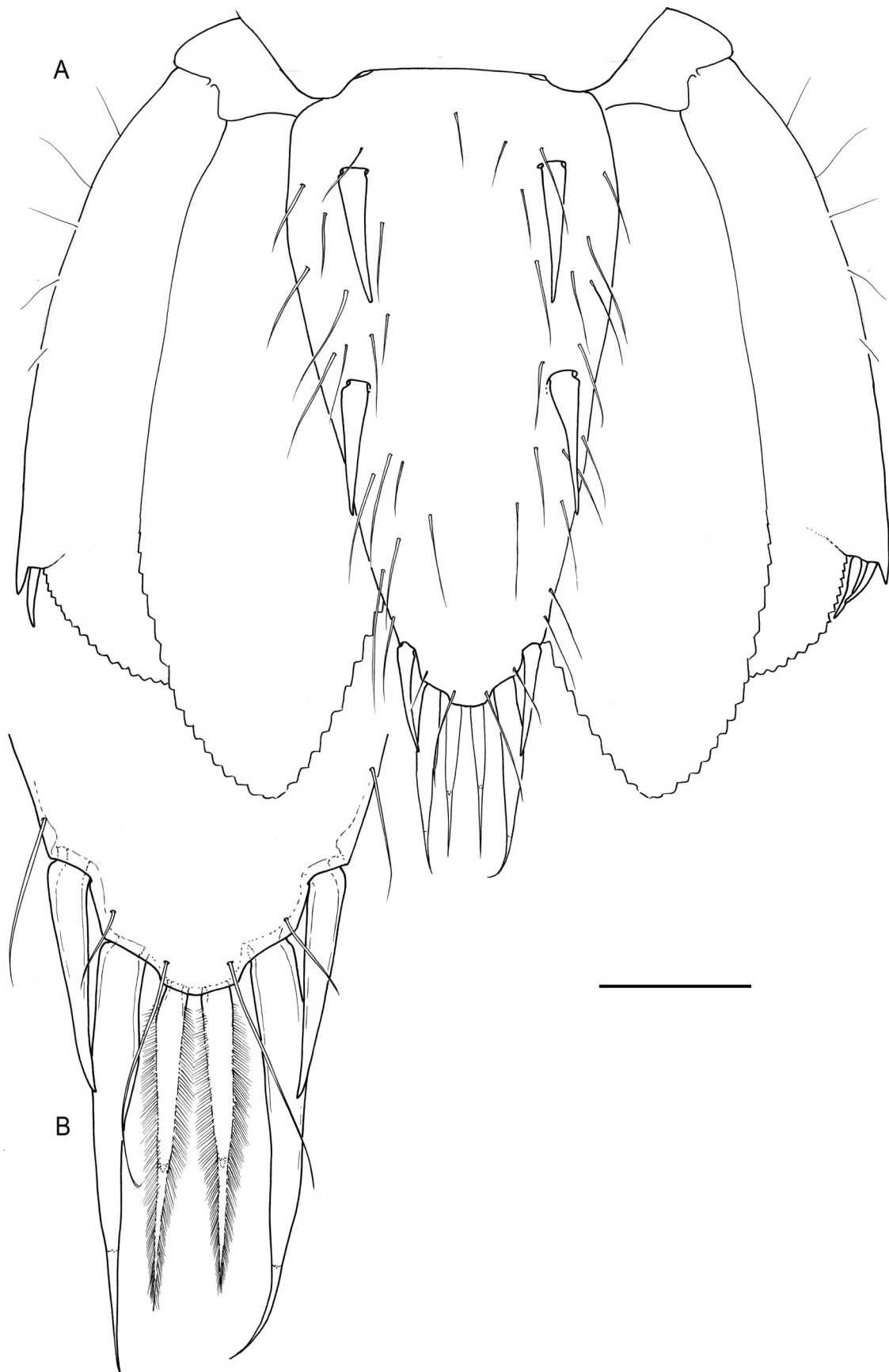


FIGURE 22. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pocl. 2.9 mm. A, tailfan; B, tip of telson. Scale: A=0.5 mm; B=0.25 mm.

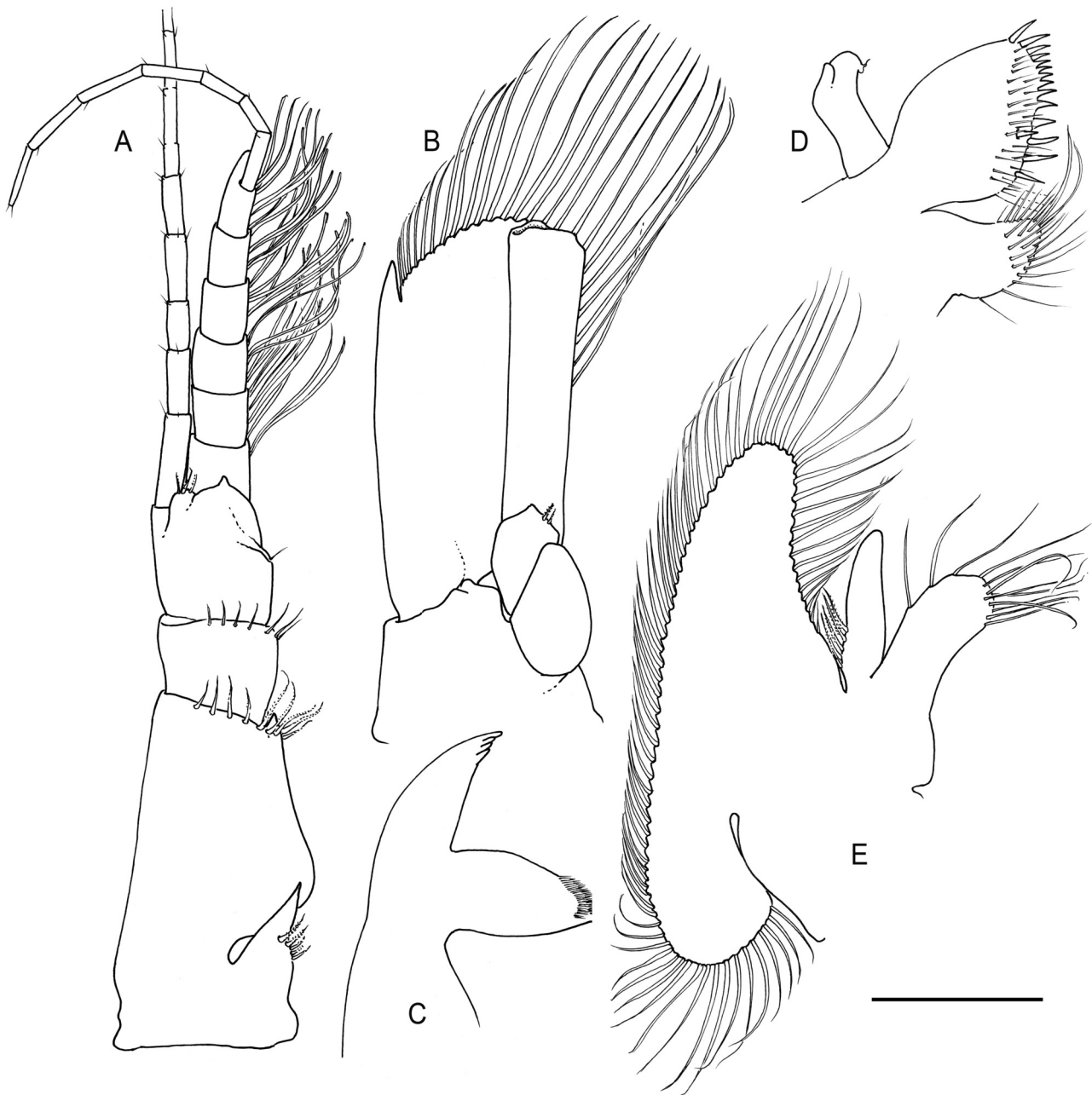


FIGURE 23. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pochl. 2.9 mm. A, right antenna, dorsal view; B, right antenna, ventral view; C, right mandible; D, right maxillula; E, right maxilla. Scale=0.5 mm.

Telson twice as long as maximal width, about 3.3 times as broad as posterior width, lateral margins converging; dorsal spiniform setae stout, large, 0.2 of telson length, anterior pair placed at 0.15 of telson length, of considerable distance from lateral margin of telson, posterior pair placed at 0.5 of telson length, submarginal; three pair of terminal spiniform setae; lateral pair short, slightly shorter than dorsal spiniform setae, placed subdistally, marginal; intermediate pair longest, slightly more than twice as long as lateral pair, submedian pair slightly shorter than intermediate pair, plumose (Fig. 22A, B).

Eyes with cornea hemispherical, slightly shorter than the stalk, without Nebenaugae; stalk slightly swollen proximally (Fig. 21B, C).

Antennula with peduncle almost as long as scaphocerite, stylocerite broad, short and pointed, almost reaching middle of basal segment, lateral margin of basal segment slightly concave, forming blunt angle with rounded tip at about level of tip of stylocerite, anterior margin not developed, small distolateral tooth present; intermediate

segment short, about as long as broad, unarmed; distal segment slightly longer than intermediate segment; outer upper antennular flagellum with rami fused for about six joints, free part of shorter ramus unsegmented, fused part and shorter ramus both with many aesthetascs, longer ramus short, about 7-segmented; inner lower flagellum about as long as outer antennular flagellum, filiform (Fig. 23A).

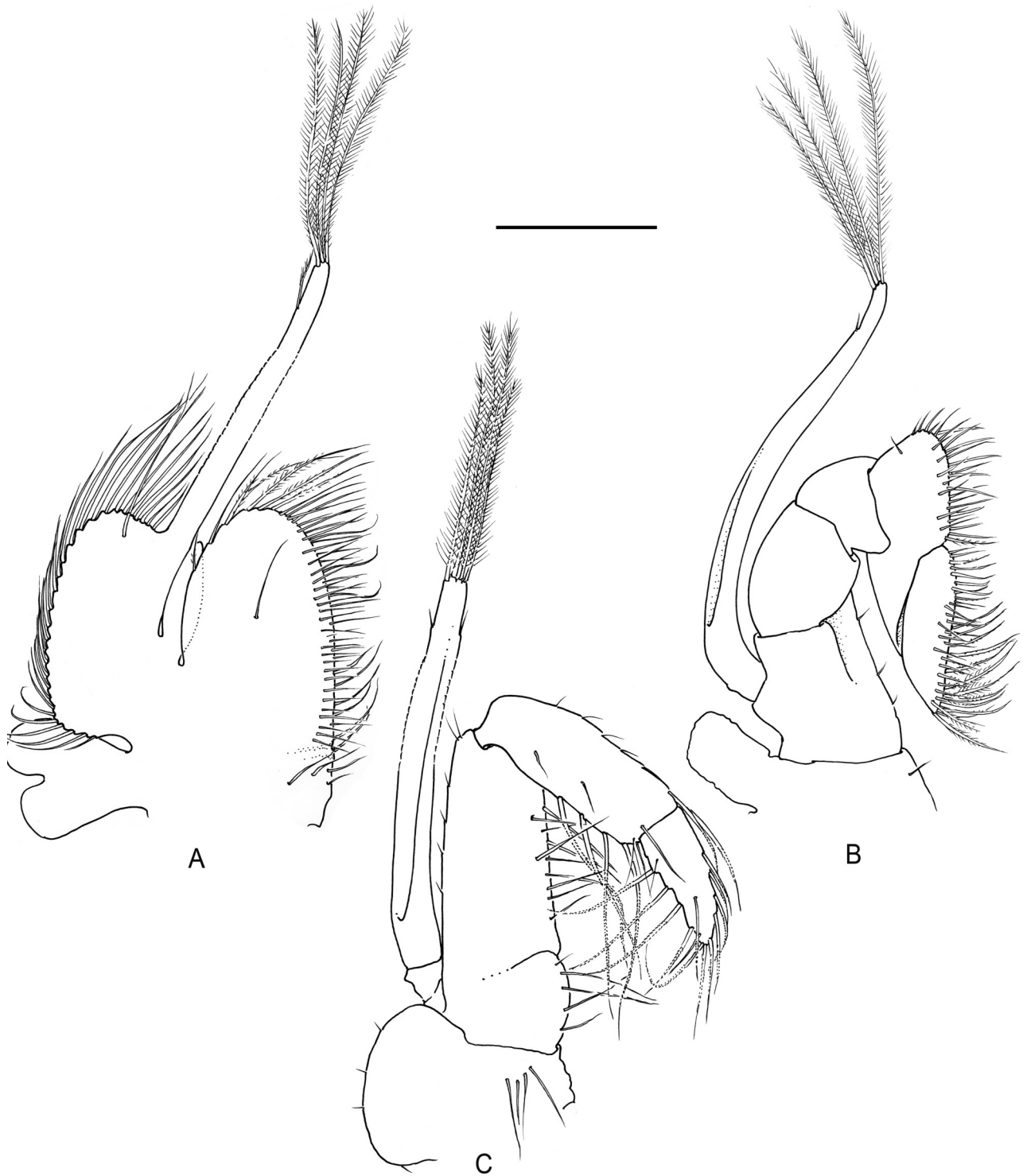


FIGURE 24. *Periclimanaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pochl. 2.9 mm. A, right first maxilliped; B, right second maxilliped; C, right third maxilliped. Scale=0.5 mm.

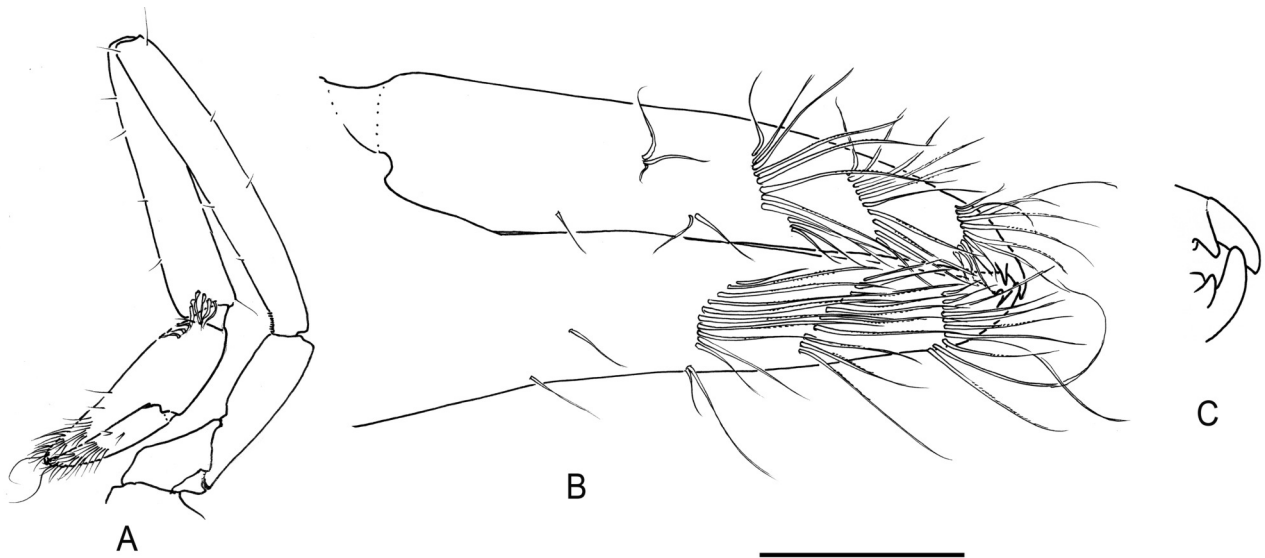


FIGURE 25. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pochl. 2.9 mm. A, right first pereiopod; B, idem, fingers of chela; C, idem, tip of fingers. Scale: A=1.25 mm; B=0.25 mm; C=0.125 mm.

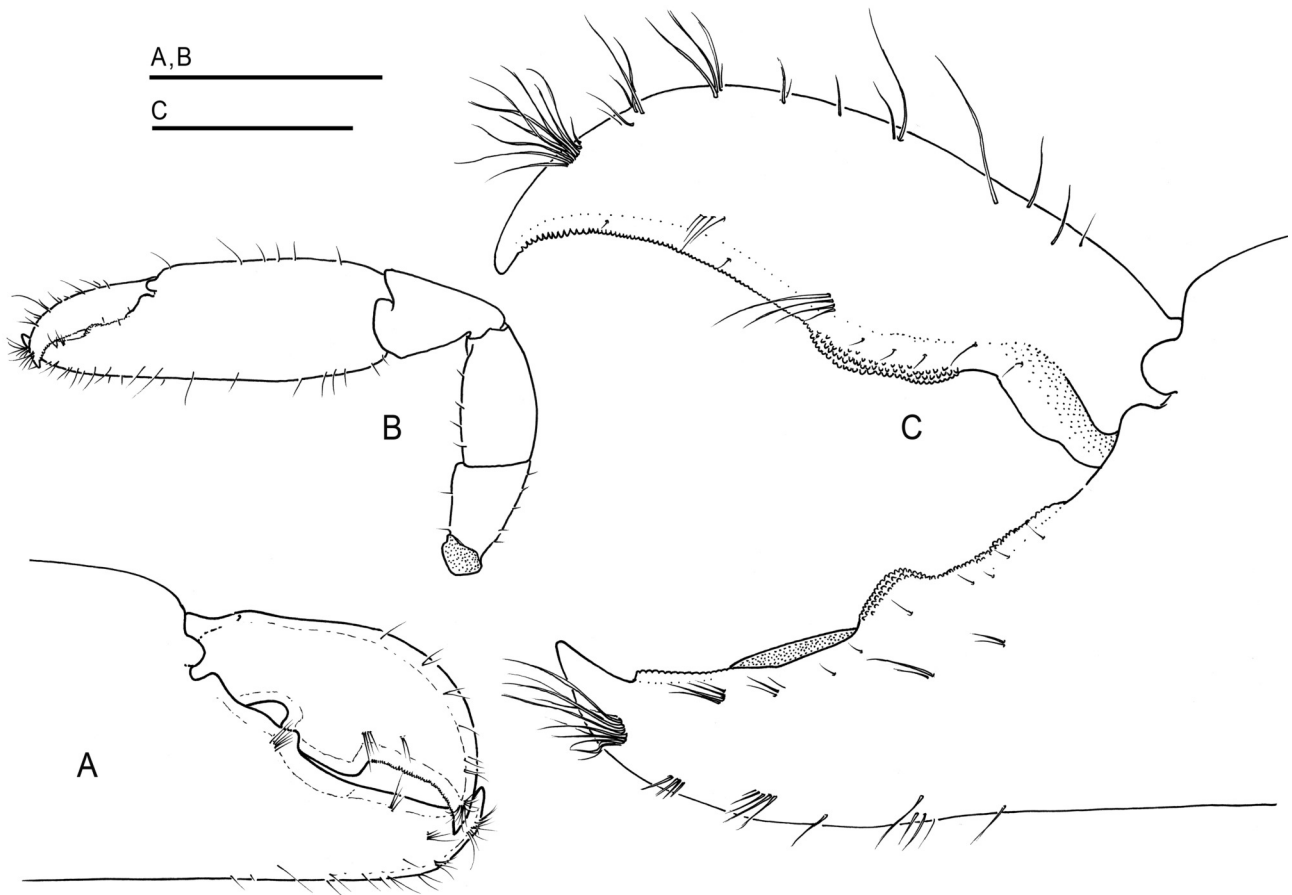


FIGURE 26. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pochl. 2.9 mm. A, left second major pereiopod, chela, mesial view; B, right second minor pereiopod, mesial view; C, idem, fingers of chela. Scale: A=1.0 mm; B=2.0 mm; C=0.5 mm.

Antennal basicerite unarmed; carpocerite reaching distal margin of scaphocerite lamella, about four times longer than distal width; scaphocerite small, just overreaching antennular peduncle, about twice as long as broad, outer margin is slightly convex, distolateral tooth distinct, not overreaching lamella, lamella rounded distally, narrowing posteriorly (Fig. 18B).

Mandible incisor process with four teeth; molar process with one strong rather acute tooth and brush of setae (Fig. 23C).

Maxillula with palp distally bilobed, upper lobe rounded, short; inferior rounded with one distal recurved spinule with globose base; upper lacinia of endite broad with series of cuspidate and simple setae on slightly convex mesial margin; lower lacinia of endite more slender, curved, with slender pappose setae (Fig. 23D).

Maxilla with scaphognathite ovoid, anterior lobe about as broad as posterior lobe, margins covered by dense plumose setae; palp simple, reaching to 2/3rd of length of scaphognathite anterior lobe; distal endite entire, with about 12 long slender simple distomarginal setae; basal endite not developed, slightly convex (Fig. 23E).

First maxilliped with simple elongated palp reaching anterior margin caridean lobe; exopodal flagellum long and slender with four long plumose setae distally and one shorter plumose seta subdistally; caridean lobe longer than broad, margin covered by dense plumose setae; epipod distinctly bilobed; endite ovoid, without clear division between distal and proximal endites, with simple and plumose setae along distal and median margins (Fig. 24A).

Second maxilliped with dactylar segment elongated, ovoid, furnished with many simple, and plumose setae; propodal segment with superior margin produced with long simple and plumose setae; carpal segment cu shaped, without setae; merus slightly longer than broad, without setae; ischio-basis excavate medially, with few short simple setae along median margin; exopod elongated, with four long plumose setae distally and one short seta subdistally; median margin of coxa not produced, furnished with one simple seta; epipod rectangular (Fig. 24B).

Third maxilliped short, reaching with ultimate segment to basis of carpocerite; ultimate segment about 0.6 times as long as the penultimate segment, slightly tapering distally, distal end rounded, covered with abundant plumose setae; penultimate segment about 0.8 times as long as ischio-meral segment, about 2.8 times as long as wide, ventral margin with rows of long plumose setae; ischio-meral segment partly fused with basal segment, with simple and plumose setae along straight median margin; basal segment slightly convex medially with row of simple setae; exopod elongate, about 1.5 times longer than ischio-meral segment, with four long plumose setae distally and two short setae subdistally; coxa not produced medially, unarmed, lateral plate rounded; without arthrobranch (Fig. 24C).

First pair of pereopods reaching with merus to distal margin of scaphocerite; coxa and basis unarmed; ischium twice as long as basis, about 3.2 times as long as broad, unarmed; merus twice as long as ischium; carpus slightly shorter than merus; carpo-propodal cleaning apparatus well developed; chela 0.8 times carpus length fingers; finger 0.6 times chela length, with entire cutting edges, with several rows of plumose setae on median margin, tips of fingers bifid (Fig. 25A–C).

Second pair of pereopods dissimilar in shape and size. Left major second pereopod robust (Fig. 21A); ischium 0.6 times as long as merus; merus slightly curved with ventral margin concave; carpus cup shaped; chela robust, 2.5 times longer than wide; palm slightly swollen proximally, without tubercles; fingers about 0.25 of chela length, fixed finger slightly longer than movable finger, with tip strongly hooked, with distal half of cutting edge entire, with proximal fossa to receive dactylus plunger flanked by proximal blunt triangular knob medially; movable finger compressed, rounded, almost circular, dorsally carinate with acute hooked tip, with cutting edge minutely denticulate in distal part and plunger proximally (Fig. 26A).

Right minor second pereopod with merus ventrally not concave; carpus more oblong than in major second pereopod; palm slightly more compressed than in major chela, without tubercles; fingers of equal length, 0.36 of chela length; fixed finger with tip strongly hooked, with distal part of cutting edge with row of small blunt teeth followed by oblong excavation to receive broad tooth of dactylus, flanked by broad triangular minutely granulated tooth, with proximal third of cutting edge minutely granulate as well; movable finger slightly compressed, with tip strongly hooked, distal half of cutting edge minutely denticulate, with broad minutely granulated tooth at proximal third (Fig. 26B, C).

Third pereopod overreaching tip of rostrum by dactylus and propodus, compressed, distinctly more robust than fourth and fifth propodi; basis unarmed; ischium twice as long as distal width, oblong; merus about twice as long as ischium, about three times longer than maximum width, slightly swollen proximally; carpus half length of merus, twice as long as wide; propodus strongly compressed, 1.7 times longer than carpus, three times longer than

proximal width, slightly tapering distally, with pair of distoventral cuspidate setae and one subdistal cuspidate setae on ventral margin; dactylus short, 0.16 of propodus length, with unguis curved, slightly shorter than corpus length, flexor margin of corpus without distal accessory tooth, with strong acute posterior tooth perpendicular to corpus margin (Fig. 27A, B).

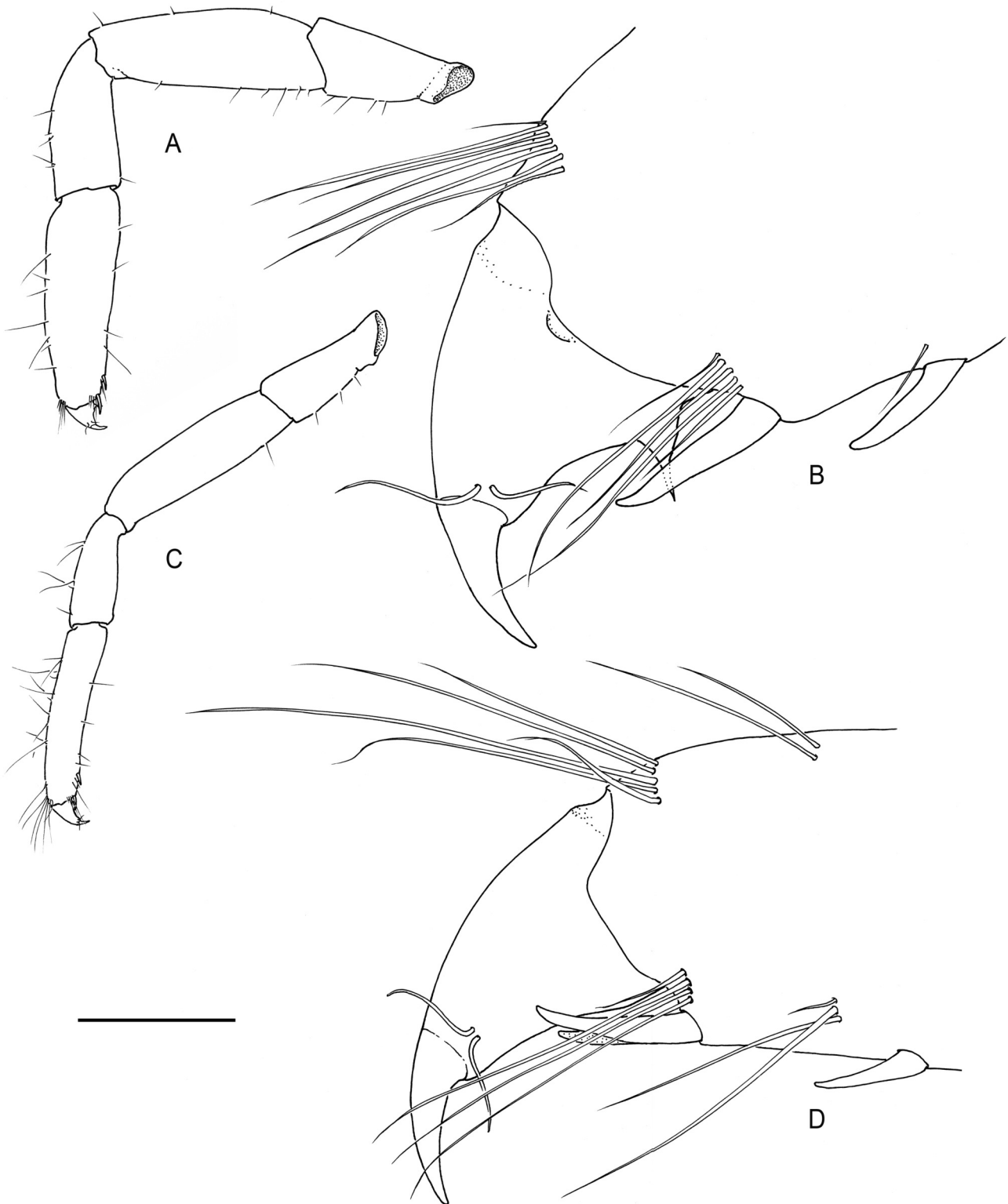


FIGURE 27. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pochl. 2.9 mm. A, right third pereiopod, mesial view; B, idem, dactylus and distal part propodus; C, right fourth pereiopod, mesial view; D, idem, dactylus and distal part propodus. Schale: A, C=1.25 mm; B, D=0.125 mm.

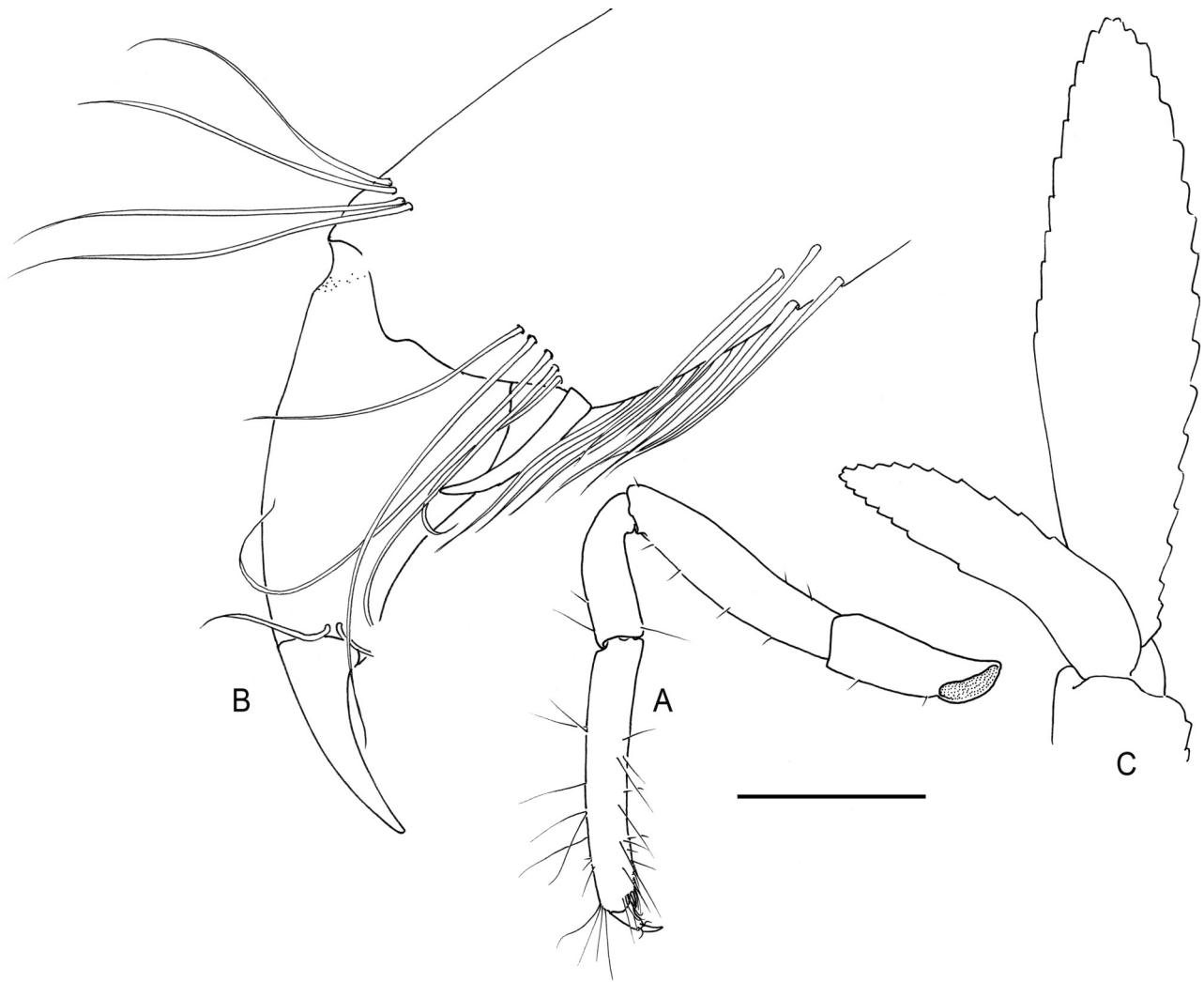


FIGURE 28. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57883, ovigerous female, pochl. 2.9 mm. A, right fifth pereiopod, mesial view; B, idem, dactylus and distal part propodus; C, left first pleopod. Scale: A=1.25 mm; B=0.125 mm; C=0.5 mm.

Fourth pereiopod similar to third, more slender; dactylus without posterior tooth on flexor margin of corpus (Fig. 27C, D).

Fifth pereiopod similar to fourth; propodus distoventral pair of cuspidate setae, without subdistal ventral cuspidate seta, with rows of serrulate setae ventrolaterally in distal fifth (Fig. 28A, B).

Pleopods normal in shape (Fig. 28C).

Uropods broadly ovate; endopod overreaching telson; exopod about as long as telson, with lateral margin convex, ending in distinct tooth flanked by one (seldom two) mobile spine, slightly bent inward, about twice length of distolateral tooth; diaeresis slightly curved (Fig. 22A).

Eggs about 0.4 to 0.5 mm in diameter, rather numerous, over a hundred.

Colour (Fig. 29). Body and appendages speckled with small white and brownish chromatophores. Pereiopods with a more dense cover of chromatophores at joints. Carpi and propodi of ambulatory pereiopods without chromatophores, except for second chelipeds in female.

Ecology. Living as endosymbiont in the cloacal cavities of the didemnid ascidian *Diplosoma* aff. *listerianum* (Milne Edwards, 1841).

Etymology. The specific epithet *cloacola* derives from the Latin word *cloaca*, meaning ‘sewer’, and the Latin suffix *-cola*, meaning ‘dweller’ or ‘inhabitant’, and refers to the habitat of the species, found living in the cloacal cavity of compound ascidians.



FIGURE 29. *Periclimenaeus cloacola* spec. nov., RMNH.CRUS.D.57868, stn BON.05, Corporal Meiss, 12°07.888'N 068°16.996'W, 24.x.2019, depth 2 m, in greyish compound ascidian under stone, *Diplosoma* sp. A, ovigerous female, dorsal view, major second pereopod missing; B, male, dorsal view. (Photographs by C.H.J.M. Fransen.)

Distribution. Known only from the type material from Curaçao and Bonaire.

Systematic position. The new species is morphologically most similar to *Periclimenaeus ascidiarum*. The two can be separated by the following characters: 1) in the new species the rostrum has two (seldom one) dorsal teeth whereas three in *P. ascidiarum*; 2) the rostrum does not exceed the basal segment of the antennular peduncle whereas it overreached the basal segment in *P. ascidiarum*; 3) the inferior orbital angle is moderately produced whereas strongly produced in *P. ascidiarum*; 4) the carpocerite reaches the distal lamina of the scaphocerite whereas it distinctly overreaches the distal lamina of the scaphocerite in *P. ascidiarum*; 5) the fingers of the first pereiopods bear several rows of many serrulate setae medially whereas these are much less abundant in *P. ascidiarum*; 6) proximal tooth of fixed finger of minor second pereiopod broad whereas small in *P. ascidiarum*; 7) ambulatory pereiopods without subdistal accessory tooth on corpus of dactylus whereas a distinct tooth is present in *P. ascidiarum*; 8) acute posterior tooth on corpus of dactylus only present in third pereiopod, absent in fourth and fifth whereas present on all ambulatory pereiopods in *P. ascidiarum*; 9) fifth pereiopod with distolateral fifth covered with rows of serrulate setae whereas covered by these rows of setae in distolateral half in *P. ascidiarum*; 10) posterolateral margin of sixth abdominal somite rounded whereas with a small tooth in *P. ascidiarum*.

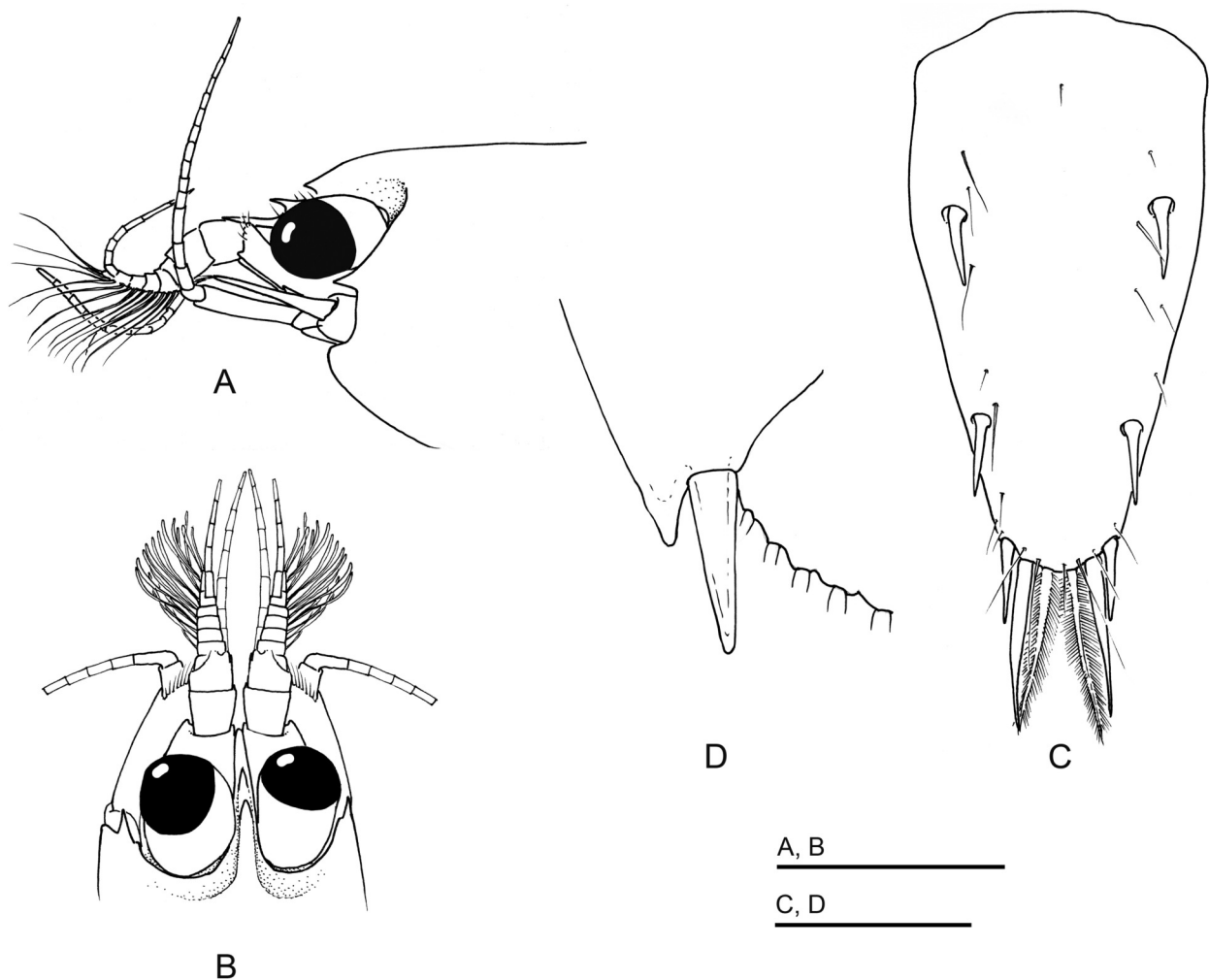


FIGURE 30. *Periclimenaeus maxillulidens* Holthuis, 1951b. RMNH.CRUS.D.58148, female, pochl. 1.5 mm. A, anterior appendages, lateral view; B, idem, dorsal view; C, telson, dorsal view; D, uropodal exopod, distolateral part. Scale bars: A, B=1.0 mm; C=0.5 mm; D=0.125 mm.

***Periclimenaeus maxillulidens* (Schmitt, 1936)**

(Figs. 30–32)

Periclimenes maxillulidens Schmitt, 1936: 371 (Bonaire).

Periclimenaeus maxillulidens—Holthuis 1951b: 87 (Bonaire); Chace 1972: 28 (Bonaire).

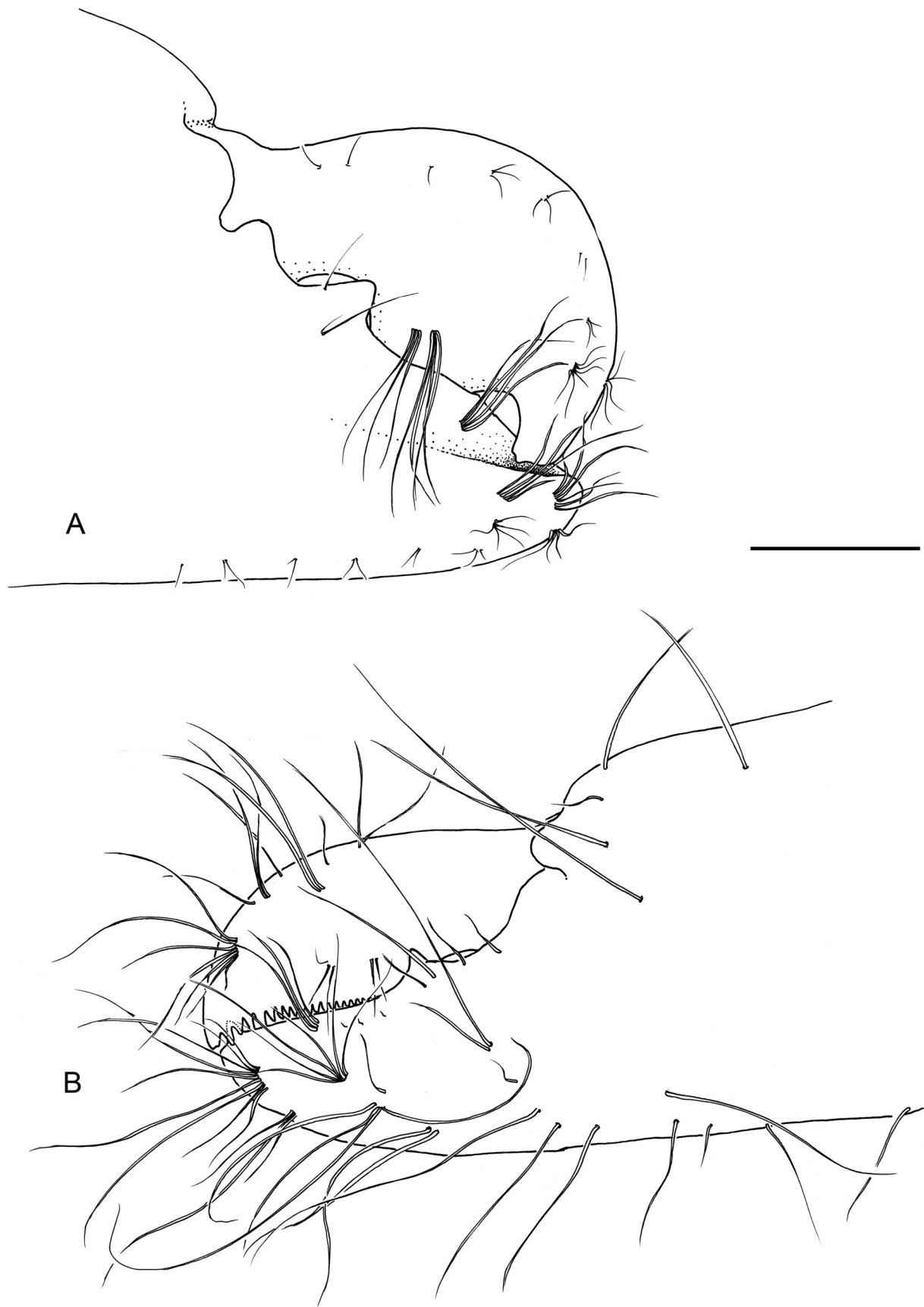


FIGURE 31. *Periclimenaeus maxillulidens* Holthuis, 1951b. RMNH.CRUS.D.58148, female, pocl.1.5 mm. A, left major second pereiopod chela, mesial view; B, right minor second pereiopod chela, mesial view. Scale bar: A=0.5 mm; B=0.25 mm.



FIGURE 32. *Periclimenaeus maxillulidens* Holthuis, 1951b. RMNH.CRUS.D.58148, female, pochl.1.5 mm. A, third left pereiopod, lateral view; B, idem, dactylus. Scale bar: A=0.25 mm; B=0.125 mm.

Material examined. Bonaire: RMNH.CRUS.D.58148: 1 female, pochl. 1.5 mm, R=2/0; stn BON.15, Red Beryl, 12°02.819'N 068°16.073'W, 28.x.2019, depth 2 m, in greyish compound ascidian under stone, *Diplosoma* sp., collected by C.H.J.M. Fransen (photo).

Remarks. The morphological characters of the present two small specimens agree well with the original description by Schmitt (1936) and the descriptions by Holthuis (1951b) and Ferreira *et al.* (2020). Rostrum (Fig. 30A, B) straight with 2 dorsal teeth, without ventral teeth, overreaching distal margin of basal segment of antennular peduncle. Carapace without supraorbital tooth or tubercle; antennal tooth robust, placed at level of inferior orbital angle; inferior orbital angle small, not produced (Fig. 30B); pterygostomial angle produced (Fig. 30A). Scaphocerite short, not overreaching antennular peduncle; distolateral tooth small, not overreaching distal margin of lamina; carpocerite reaching distal margin of scaphocerite (Fig. 30B). First pereiopods short. Second pereiopods unequal in size and shape, without tubercles; distal part of fingers of major second chela (Fig. 31A) entire, without fine denticulation; minor cheliped distal part of cutting edge of dactylus finely denticulate (Fig. 31B). Third pereiopod (Fig. 32A) slightly more robust than fourth; fourth slightly more robust than fifth; propodus of third pereiopod devoid of spines except for tuberculate distoventral pair (Fig. 32B). Dactyli of ambulatory pereiopods (Fig. 32A, B) not biunguiculate, without proximal process, flexor margin of corpus sinuous; dorsoproximal part of unguis with few scale-like structures (Fig. 32B). First abdominal segment without anterior median dorsal lobe. Sixth abdominal somite with posterolateral margin rounded. Telson (Fig. 30C) with anterior dorsal pair of spines at about third of length, posterior pair at about two-thirds of length; dorsal spines as long as lateral pair of distal spines; lateral pair of distal spines in line with other distal spines; distal margin entire, without acute median tooth. Distolateral tooth of exopod of uropod distinct with mobile spine medially; mobile spine about twice as long as distolateral tooth (Fig. 30D).

Ecology. Its host was unknown until Ferreira *et al.* (2020) recorded the species inside an ascidian of the genus *Diplosoma*, which is here confirmed.

Distribution. Known from the tropical western Atlantic. After it was first described from Bonaire (Schmitt 1936; Holthuis 1951b; Chace 1972), it was recorded from Florida (Holthuis 1951b), Yucatan (Santana-Moreno *et al.* 2013), Caribbean coast of Panama (Pachelle *et al.* 2018), and Espírito Santo, Brazil (Ferreira *et al.* 2020), in depths of 1–46 m.

***Periclimenaeus perlatus* (Boone, 1930)**

(Figs. 33–34)

Material examined. Curaçao: RMNH.CRUS.D.58149: 1 female, pocl. 2.1 mm, R=7/0; stn COA.20, Playa Kanoa, 12°10'29.00"N 68°51'54.10"W, 4.xi.2013, depth 4 m, scuba diving, in yellow sponge (photo COA.20, 005), collected by C.H.J.M. Fransen (photo COA.20 006–011, 017, 018). RMNH.CRUS.D.58150: 1 specimen; stn CAR.05, Playa Kalki, 12°22.536'N 69°09.464'W, 01.iv.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58151: 2 specimens; stn CAR.05, Playa Kalki, 12°22.536'N 69°09.464'W, 01.iv.2014, depth unknown, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58152: 2 specimens; stn CAR.05, Playa Kalki, 12°22.536'N 69°09.464'W, 01.iv.2014, depth 14 m, scuba diving, in *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58153: 2 specimens; stn CAR.07, Kleine Knip, 12°20.475'N 69°09.154'W, 05.iv.2014, depth 6 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58154: 1 ovigerous female; stn CAR.10, Playa Lagun, 12°19.090'N 69°09.036'W, 08.iv.2014, depth 10 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58155: 2 specimens; stn CAR.13, Jan Thiel, 12°04.584'N 68°52.796'W, 10.iv.2014, depth 9 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58156: 1 specimen; stn CAR.17, Coral Estate/Habitat Curaçao, 12°11.877'N 69°04.751'W, 16.iv.2014, depth 22 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58157: 1 female, pocl. 1.4 mm, R=6/0; stn CAR.29, Radio City, 21.iv.2014, depth 26 m, scuba diving, in *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch.

Remarks. The morphological characters of the present specimens agree well with the original description by Boone (1930) and the redescription by Holthuis (1951b). Rostrum (Fig. 33A, B) straight, overreaching first two segments of antennular peduncle, with 6 or 7 dorsal teeth increasing in size towards tip, ventral margin without teeth. Carapace without supraorbital tooth or tubercle; antennal tooth robust, at level of inferior orbital angle; inferior orbital angle obliquely rounded, not produced (Fig. 33B); pterygostomial angle rounded, not produced (Fig. 33A). Scaphocerite almost reaching distal margin of antennular peduncle; distolateral tooth small, not overreaching distal margin of lamina; carpocerite just falling short of distal margin of scaphocerite (Fig. 33B). First pereopods very long and slender. Second pereopods unequal in size and shape with tubercles on palm and carpus of major cheliped; distal part of cutting edges of fingers of both left and right chela entire, without fine denticulation. Third pereopod with few ventral spines in distal part of propodus; dactylus short, biunguiculate (Fig. 33E). First abdominal segment with anterior median dorsal lobe (Fig. 33C). Sixth abdominal somite with posterolateral margin rounded (Fig. 33D). Telson with large dorsal spines, anterior pair close to the proximal margin of telson, smaller than posterior pair; posterior pair situated in proximal half of telson; lateral pair of distal spines distinctly subdistal (Fig. 33D). Distolateral tooth of exopod of uropod distinct, with mobile spine medially; mobile spine about twice as long as distolateral tooth (Fig. 33D).

Colour. Species translucent (Fig. 34) with reddish tinge.

Ecology. Lives in association with sponges (Holthuis 1951b; Chace, 1972; De Grave & Anker 2017). Now recorded for the first time from *A. archeri* and *A. lacunosa*.

Distribution. Recorded from few localities in the tropical western Atlantic: from Florida (Holthuis 1951b), Caribbean coast of Panama (Holthuis 1951b), Haïti (Boone 1930), Venezuela (Rodríguez 1986), and Brazil (Coelho *et al.* 2006, Vieira *et al.* 2012), in depths of 0–37 m. This is the first record of the species from Curaçao.

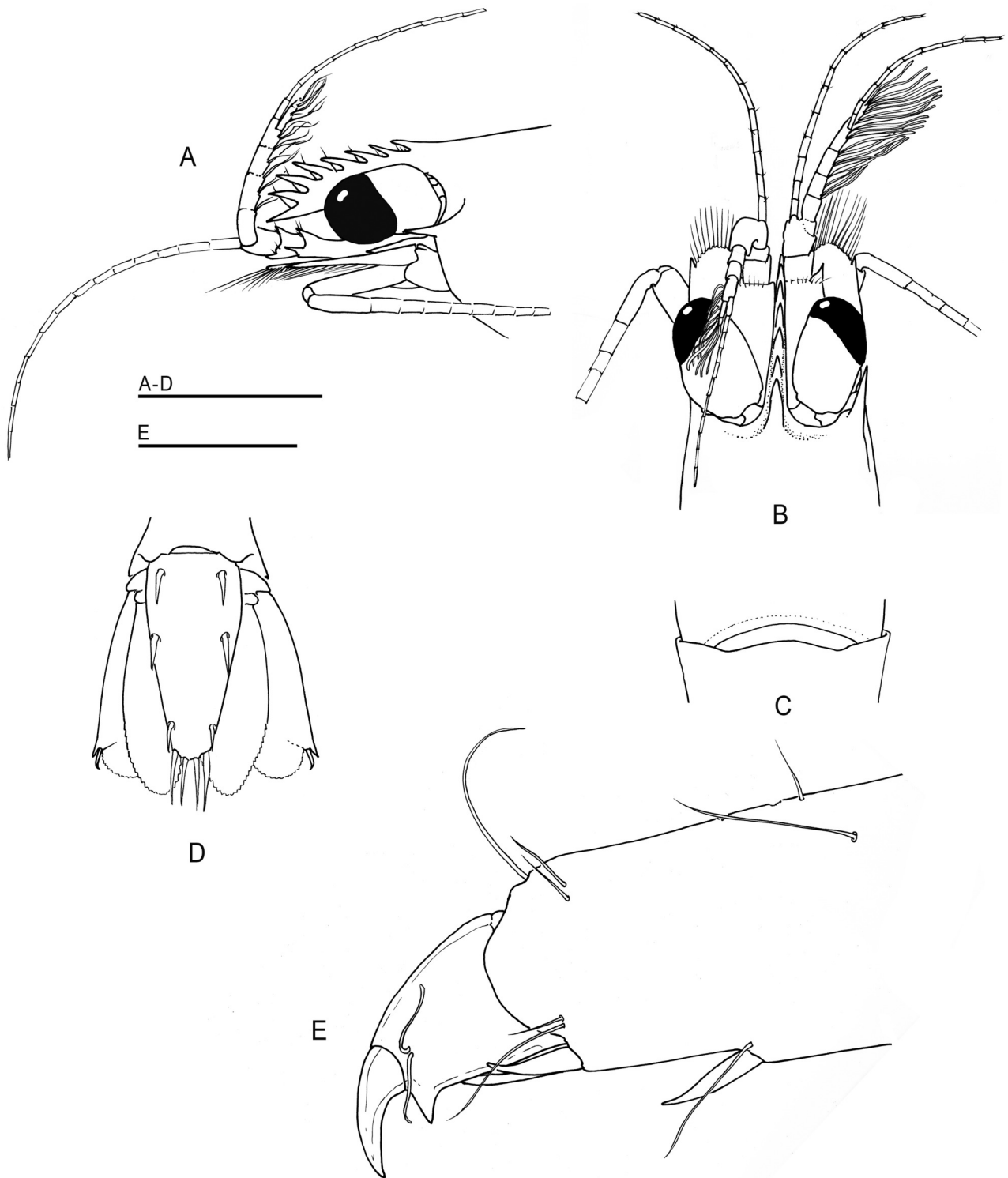


FIGURE 33. *Periclimenaeus perlatus* (Boone, 1930). RMNH.CRUS.D.58149, female, pocl. 2.1 mm. A, anterior appendages, lateral view; B, idem, dorsal view; C, posterior margin carapace and anterior margin first abdominal segment, dorsal view; D, tailfan, dorsal view; E, third right pereiopod dactylus and distal part propodus, mesial view. Scale bars: A–D=1.0 mm; E=0.125 mm.

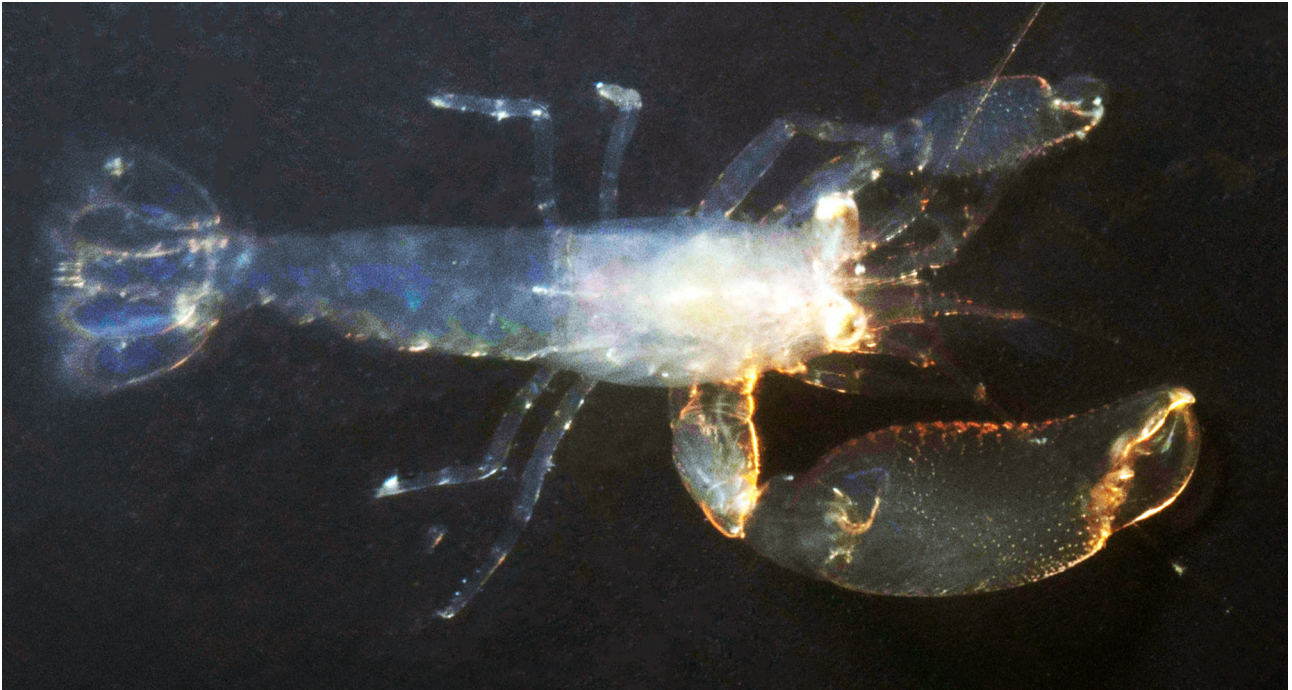


FIGURE 34. *Periclimenaeus perlatus* (Boone, 1930), stn COA.20, Curaçao, Playa Kanoa, 12°10'29.00"N 68°51'54.10"W, 4.xi.2013, depth 4 m, in yellow sponge. (Photograph by C.H.J.M. Fransen.)

Genus *Periclimenes* O.G. Costa, 1844

Periclimenes antipathophilus Spotte, Heard & Bubucis, 1994

(Figs. 35–38, video 9)

Periclimenes antipathophilus—Wicksten *et al.* 2014: 49 (Bonaire).

Material examined. Curaçao: RMNH.CRUS.D.58158: 1 female, pochl. 2.1 mm, R=1+5/0; stn CUR.08, south coast, Slangenbaai, 12°08'22.7"N 068°59'49.6"W, 04.v.2005, depth unknown, scuba diving, host unknown, collected by N. Snijders (fcn. g050). RMNH.CRUS.D.58159: 1 male, pochl. 1.4 mm, R=1+6/1; stn CUR.08: Lesser Antilles, Curaçao, south coast, Slangenbaai, 12°08'22.7"N 068°59'49.6"W, 04.v.2005, depth 14.5 m, scuba diving, on Hexacorallia, collected by N. Snijders (fcn. g052). RMNH.CRUS.D.58160: 1 ovigerous female, pochl. 1.6 mm, R=1+5/1; stn CUR.24, south coast, Grote Knip, 12°21'05.1"N 069°09'06.4"W, 08.vi.2005, depth 14.5 m, scuba diving, host unknown, collected by N. Snijders (fcn. g107). RMNH.CRUS.D.51639: 1 ovigerous female, pochl. 2.3 mm; stn CUR.18, south coast, Santa Martha, 12°16'04.9"N 069°07'43.6"W, 24.v.2005, depth 19.8 m, scuba diving, on *Pseudoplexaura porosa* forma a (fcn. F294), collected by N. Snijders (fcn. g083). RMNH.CRUS.D.51640: 1 male, pochl. 2.1 mm, R=1+6/0; stn CUR.18, south coast, Santa Martha, 12°16'04.9"N 069°07'43.6"W, 24.v.2005, depth 22 m, scuba diving, on *P. porosa* forma *porosa* (fcn. F302), collected by N. Snijders (fcn. g084). RMNH.CRUS.D.51641: 1 damaged specimen, pochl. 1.7 mm, R=1+4/0; stn CUR.18, south coast, Santa Martha, 12°16'04.9"N 069°07'43.6"W, 24.v.2005, depth 20.9 m, scuba diving, on *Antipathes* sp., collected by N. Snijders (g085). RMNH.CRUS.D.51642: 2 ovigerous females, pochl. 2.0 mm, R=1+5/0; pochl. 2.3 mm, R=1+5/1; stn CUR.07, south coast, Vaersenbaai, 12°09'38.3"N 069°08'17.2"W, 03.v.2005, depth 34.2 m, scuba diving, on *Antipathes* sp. (fcn. F112), collected by N. Snijders (fcn. g043). RMNH.CRUS.D.58161: 10 specimens; stn COA.04, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 02.xi.2013, depth 40 m, scuba diving, on bushy *Antipathes* sp., collected by C.H.J.M. Fransen (photo COA.04 008–022). RMNH.CRUS.D.58162: 15 specimens; stn COA.04, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 02.xi.2013, depth 40 m, scuba diving, on bushy *Antipathes* sp., collected by C.H.J.M. Fransen (photo COA.04 001–022). RMNH.CRUS.D.57054: 40 specimens; stn COA.04, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 02.xi.2013, depth 40 m, scuba diving, on bushy *Antipathes* sp., collected by C.H.J.M. Fransen

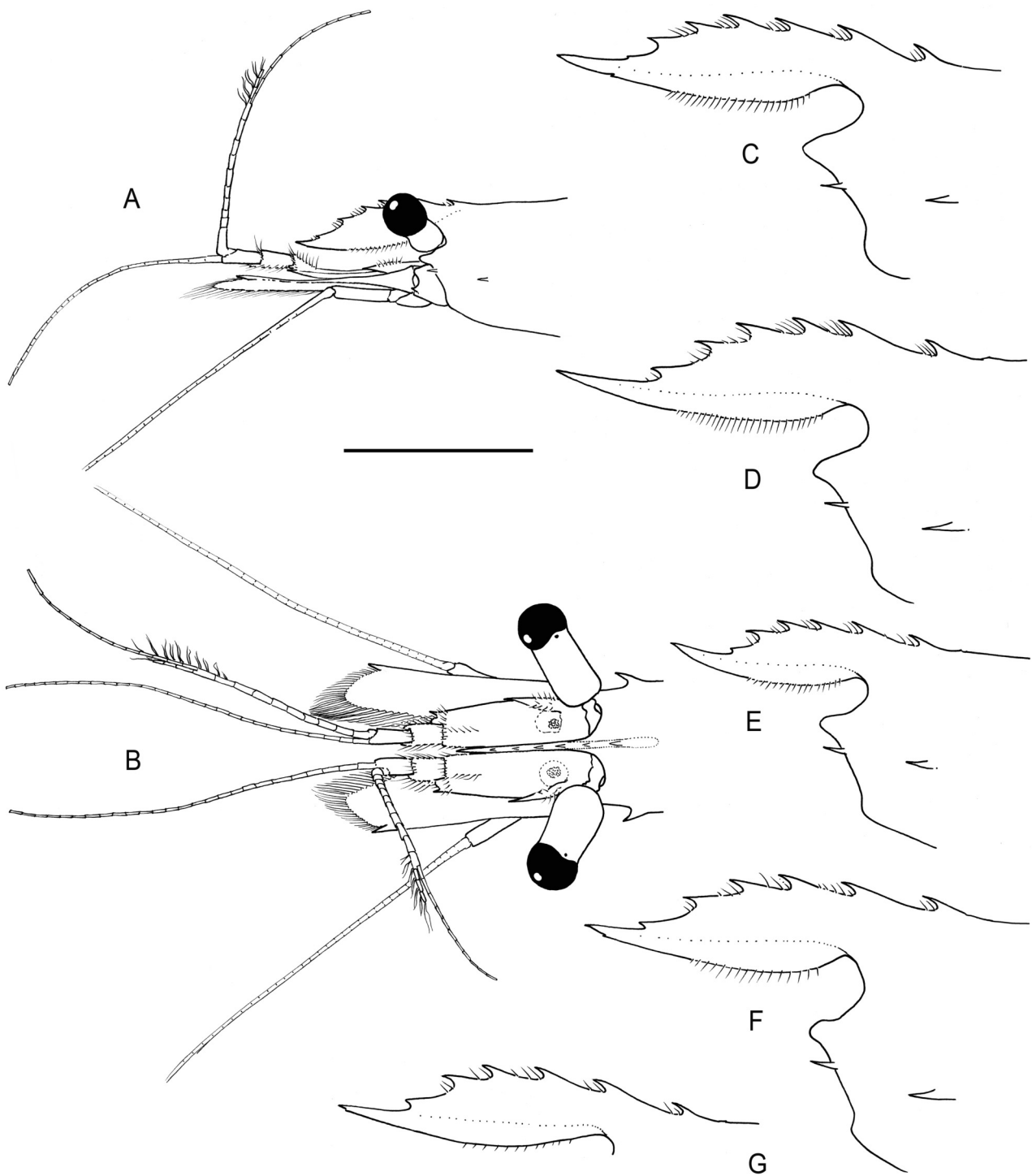


FIGURE 35. *Periclimenes antipathophilus* Spotte, Heard & Bubucis, 1994. A–D, F–H, RMNH.CRUS.D.58167; E, RMNH. CRUS.D.57871. A, anterior appendages, lateral view; B, idem, dorsal view; C, rostrum, male pochl. 2.0 mm; D, idem, ovigerous female, pochl. 2.6 mm; E, idem, ovigerous female, pochl. 2.0 mm; F, idem, ovigerous female, pochl. 2.6 mm; G, idem, male, pochl. 2.4 mm. Scale bar: A–B=2.0 mm; C–G=1.0 mm.

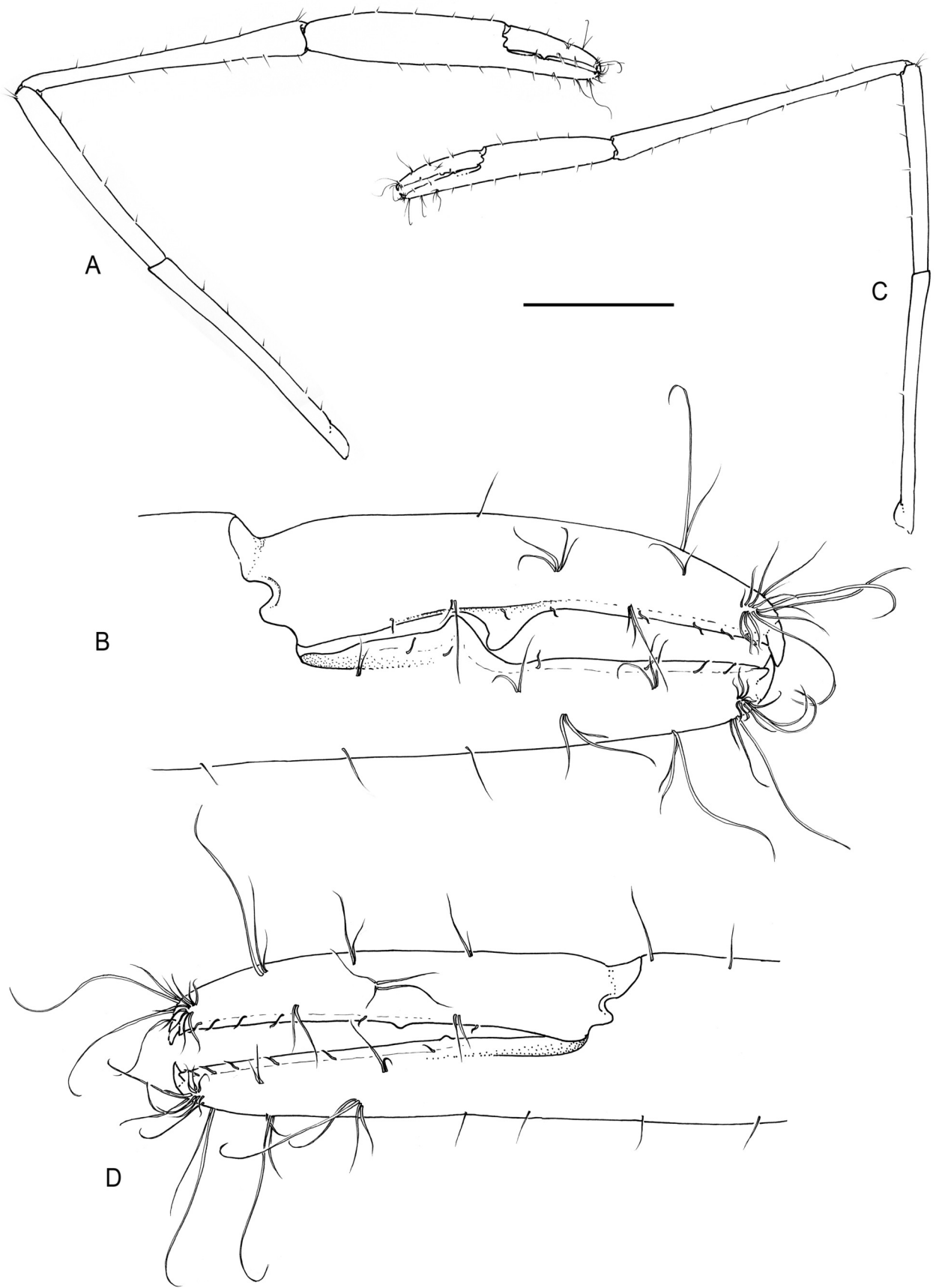


FIGURE 36. *Periclimenes antipathophilus* Spotte, Heard & Bubucis, 1994, RMNH.CRUS.D.58167. A, right second major pereiopod; B, idem, chelae, mesial view; C, left second minor pereiopod; D, idem, chela, mesial view. Scale bar: A, C=1.25 mm; B, D=0.25 mm.

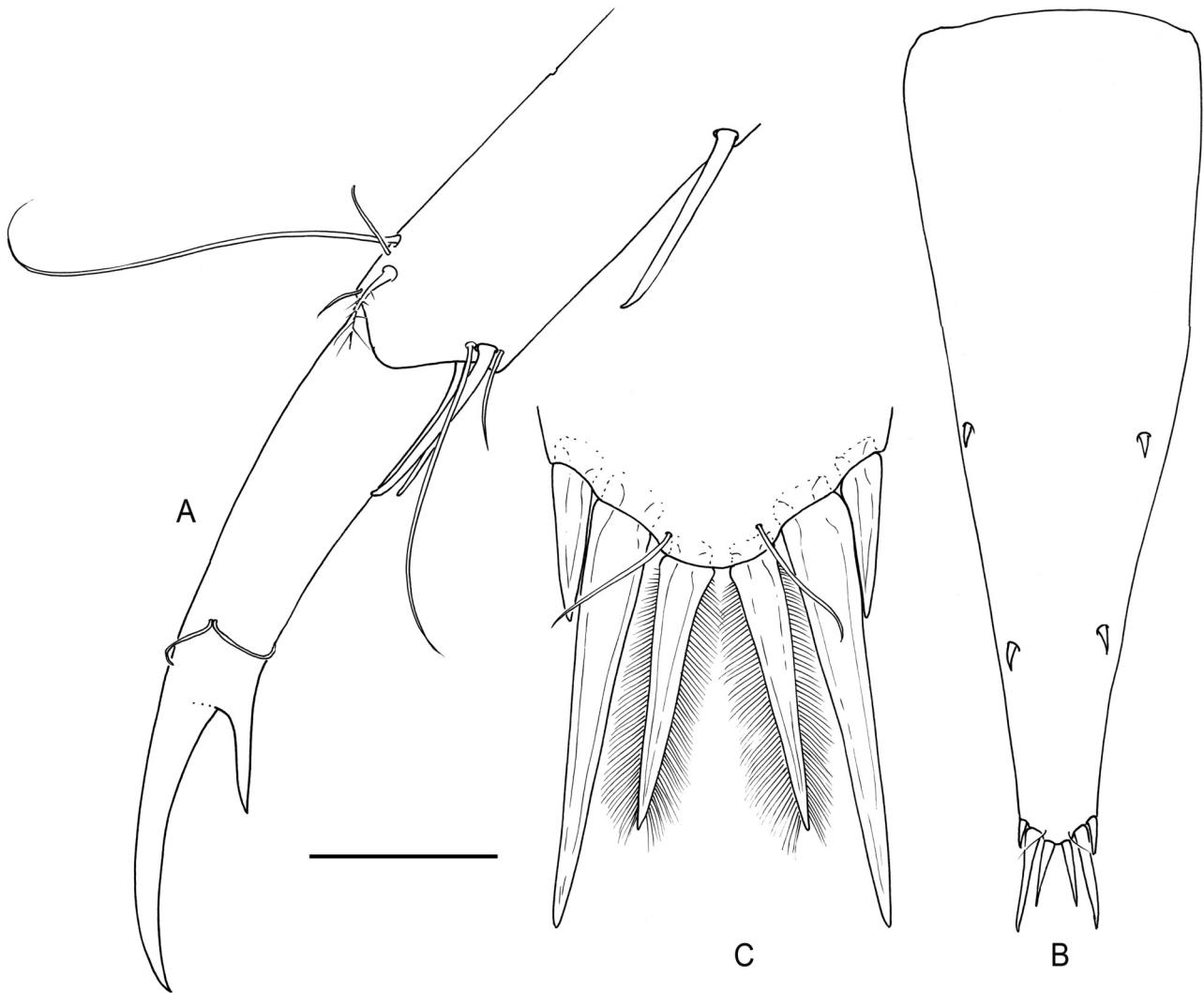


FIGURE 37. *Periclimenes antipathophilus* Spotte, Heard & Bubucis, 1994, RMNH.CRUS.D.58167 (fcn. CF.19A-1). A, left third pereiopod dactylus; B, telson; C, idem, tip. Scale bar: A, C=0.125 mm; B=0.5 mm.

(photo COA.04 001–022). RMNH.CRUS.D.58163: 2 specimens; stn COA.23, Playa Hundu, 12°16'05.80"N 69°07'42.20"W, 02.xi.2013, depth 40 m, scuba diving, on bushy *Antipathes* sp., collected by C.H.J.M. Fransen (photo COA.04 001–022). RMNH.CRUS.D.58164: 1 non ovigerous female, pochl. 1.3 mm, Slangenbaai, 10.vi.2017, depth 10 m, scuba diving, on *Antipathes* sp., collected by C.H.J.M. Fransen (fcn. CF10A-1) (video 9). RMNH.CRUS.D.58165: 8 specimens; stn CF13B-1, Tugboat, 13.vi.2017, depth 25 m, scuba diving, on *Antipathes* sp. and *Plumapathes pennacea* (Pallas, 1766), collected by C.H.J.M. Fransen (video 9). RMNH.CRUS.D.58166: 1 non ovigerous female pochl. 1.9 mm, Playa Kalki, 14.vi.2017, depth 25 m, scuba diving, on *Antipathes* sp., collected by C.H.J.M. Fransen (fcn. CF14A-2). RMNH.CRUS.D.58167: 3 ovigerous females, pochl. 2.4–2.6 mm; 3 males, pochl. 1.6–2.4 mm; Tugboat, 19.vi.2017, depth 20 m, scuba diving, on *Antipathes* sp., collected by C.H.J.M. Fransen (fcn. CF19A-1) (video 9). OUMNH.ZC.2019-06-16: 11 specimens, pochl. 1.6–2.6 mm, Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 7 m, 14.ii.2015, from *Antipathes caribbeana* Opresko, 1996, leg. P. Wirtz & K. Wittman (fcn. 3). OUMNH.ZC.2019-06-17: 48 specimens including ovigerous females, pochl. 0.6–1.5 mm, Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 24 m; 15.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittman (fcn. 4). OUMNH.ZC.2019-06-18; 32 specimens including ovigerous females, pochl. 0.7–1.4 mm, Vaersenbaai (= Kokomo Beach), 12°9'37.8"N 69°0'20.52"W, depth 39 m, 23.ii.2015, from *Stichopathes gracilis* (Gray, 1857), leg. P. Wirtz & K. Wittman (fcn. 25). OUMNH.ZC.2019-06-19: 12 specimens including ovigerous females, pochl. 0.9–1.6 mm, Vaersenbaai (= Kokomo Beach), 12°9'37.8"N 69°0'20.52"W, depth 40 m, 26.ii.2015, from *Antipathes umbratica*



FIGURE 38. *Periclimenes antipathophilus* Spotte, Heard & Bubucis, 1994. A, stn CAO.04, Curaçao, Blauwbaai, 12°08'05,70"N 68°59'03,50"W, 2.xi.2013, depth 40 m, on bushy *Antipathes* sp.; B, stn BON.09, Bonaire, Karpata, 12°13.171'N 068°21.123'W, 26.x.2019, depth 33 m, on *Plumapathes pennacea* (Pallas, 1766); C, stn BON.08, Bonaire, Karpata, 12°13.171'N 068°21.123'W, 26.x.2019, depth 27m, on *Antillogorgia bipinnata* (Verrill, 1864). (Photographs by C.H.J.M. Fransen.)

Opresko, 1996, leg. P. Wirtz & K. Wittman (fcn. 32). **Bonaire:** stn BON.03, 1000 Steps, 12°12.654'N 068°19.276'W, depth 25 m, 23.x.2019, scuba diving, on *Stichopathes luetkeni* Brook, 1889, C.H.J.M. Fransen (video 9), not collected. Stn BON.06, Oil Slick Leap, 12°12.029'N 068°18,512'W, 25.x.2019, depth 20 m, scuba diving, on *S. luetkeni* Brook, 1889, and on *Antipathes* sp., C.H.J.M. Fransen (video 9), not collected. RMNH.CRUS.D.57871: 1

specimen; stn BON.07, Sweet Dreams, 12°02.137'N 068°15.722'W, 25.x.2019, depth 28 m, scuba diving, on *Eunicea* sp., collected by C.H.J.M. Fransen (fcn. BON.07-1) (video 9). Stn BON.09, Karpata, 12°13.171'N 068°21.123'W, 26.x.2019, depth 27 m, on *Antillogorgia bipinnata* (Verrill, 1864), C.H.J.M. Fransen (photo), not collected. Stn BON.09, Karpata, 12°13.171'N 068°21.123'W, 26.x.2019, depth 33 m, scuba diving, on *P. pennacea*, C.H.J.M. Fransen (photo), not collected. Stn BON.15, Red Beryl, 12°02.819'N 068°16.073'W, 28.x.2019, depth 20 m, on *Antipathes* sp., C.H.J.M. Fransen (video 9), not collected. Stn BON.16, Tailor Made, 12°13.407'N 068°24.223'W, 29.x.2019, depth 20 m, scuba diving, on *Antipathes lenta* Pourtalès, 1871, and on *P. pennacea*, C.H.J.M. Fransen (video 9), not collected. Stn BON.19, Halma Hooker (wreck), 12°06.271'N 068°17.291'W, 30.x.2019, depth 20 m, scuba diving, on *A. lenta*, C.H.J.M. Fransen (video 9), not collected. Stn BON.29, Front Porch, 12°09.904'N 068°17.194'W, 04.xi.2019, depth 20 m, scuba diving, on *A. lenta*, C.H.J.M. Fransen (video 9), not collected. Stn BON.31, Tolo (Ol' Blue), 12°12.923'N 068°20.218'W, 05.xi.2019, depth 20 m, scuba diving, on *S. luetcheni*, C.H.J.M. Fransen (video 9), not collected. Stn BON.32, Playa Frans, 12°14.781'N 068°24.825'W, 05.xi.2019, depth 20 m, scuba diving, on *P. pennacea*, C.H.J.M. Fransen (video 9), not collected. RMNH.CRUS.D.58168: 1 ovigerous female, Bachelor's Beach (Fondu Di Kalki), 12°07.522'N 068°17.233'W, 01.xi.2019, depth 21–26 m, scuba diving, on brown whip coral, collected by Peter Wirtz (fcn. 1). RMNH.CRUS.D.58169: 1 female, pocl. 1.8 mm; Bachelor's Beach (Fondu Di Kalki), 12°07.522'N 068°17.233'W, 05.xi.2019, depth 26 m, scuba diving, on dark brown whip coral, collected by Peter Wirtz (fcn. 8).

Remarks. The morphological characters of the present specimens agree well with the original description by Spotte *et al.* (1994). Rostrum (Fig. 35A–G) upturned, reaching to about distal margin of basal segment of antennular peduncle; dorsal lamina well developed with 3–7 dorsal teeth (increasing with size), 1 postorbital; ventral tooth if present small and subdistal; ventral margin convex. Basal segment of antennular peduncle with one distolateral tooth (Fig. 35B); anterior margin produced. Maxilla with endite bilobed. Third maxilliped ichiomerus with distomedial mobile spine. Second pereopods equal (small specimens) to dissimilar (large specimens); when dissimilar, dactylus of major cheliped (Fig. 36A, B) with single triangular tooth in proximal part of cutting edge, dorsal margin without longitudinal carina; fixed finger with broad tooth just proximal of tooth on dactylus; distal cutting edges of fingers entire; minor cheliped (Fig. 36C, D) similar without teeth on cutting edges. Third pereopod propodus with about 3 ventral spines in distal half and one distoventral pair of spines. Dactylus (Fig. 37A) long and slender, biunguiculate; unguis about twice length of accessory tooth. Telson (Fig. 37B) with dorsal spines short, at about 0.50 and 0.75 of telson length; distal margin (Fig. 37C) rounded, without acute triangular process medially.

Colour. Colouration (Fig. 38) as described and figured by Spotte *et al.* (1994: 217, figs. 1–2).

Ecology. Known to live in association with Antipatharia (Spotte *et al.* 1994; Wicksten *et al.* 2014; De Grave & Anker 2017; Poupin 2018). Now recorded for the first time from Alcyonaria: *A. bipinnata* and *P. porosa*.

Distribution. Known from scattered locations in the tropical western Atlantic: Turks and Caicos Islands, Honduras (Bay Islands) (Spotte *et al.* 1994; Debelius 1999); northeastern Gulf of Mexico (Wicksten *et al.* 2014); Islas del Rosario, Columbia (Corredor *et al.* 1979); Martinique (Poupin 2018), and the Caribbean coast of Panama (De Grave & Anker 2017), in depths between, 15 and 45 m. Previously recorded from Bonaire by Wicksten *et al.* (2014), herein recorded for the first time from Curaçao.

***Periclimenes bowmani* Chace, 1972**

(figs. 39–41)

Periclimenes crinoidalis—Horká *et al.* 2016: supplementary table 1 (Curaçao), not *Periclimenes crinoidalis* Chace, 1969.

Material examined. Curaçao: RMNH.CRUS.D.57056: 1 ovigerous female, pocl. 2.5 mm, R=8/4; 1 male, pocl. 1.8 mm, R=7/3; stn COA.04, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 02.xi.2013, depth 10 m, on *Davidaster rubiginosus* (Portalès, 1869) (photo COA.04 054), collected by B.T. Reijnen (photo B.T. Reijnen 020–032). RMNH.CRUS.D.58170: 1 specimen, pocl. 1.8 mm, R=8/3; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 27.iv.2005, depth 7.1 m, scuba diving, on *Nemaster grandis* A.H. Clark, 1909, collected by N. Snijders (fcn. g025).

Remarks. The morphological characters of the present specimens agree well with the original description by Chace (1972). Rostrum (Fig. 39A–C) straight, slightly directed downward, reaching midlength of distal segment of antennular peduncle; dorsal lamina not developed, with 8 dorsal teeth at equal distances, proximal tooth postorbital;

ventral lamina slightly concave with 3 small teeth distally. Hepatic tooth (Fig. 39C) slightly below level of antennular tooth, directed obliquely downward. Third abdominal segment (Fig. 39D) not posteriorly produced. Telson (Fig. 39E) with 2 pairs of small dorsal spines at about 0.5 and 0.75 of telson length; lateral distal pair slightly more robust than dorsal spines; posterior margin of telson (Fig. 39F) with small triangular process; this process was not figured nor mentioned by Chace (1972). Basal segment of antennular peduncle (Fig. 39A) with distolateral tooth and additional 2 teeth on anterior margin (3 in holotype (Chace 1972)). Maxilla with endite bilobed. Ischiomerus of third maxilliped without distomedial mobile spine. Second pereopods slightly dissimilar and unequal; fingers unarmed, movable finger without dorsal carina; fixed finger much broader than movable finger, typically with fringe of setae ventrally. Ambulatory pereopods with propodus (Fig. 40A) curved with flexor margin concave, finely crenulate with short mobile spinules. Dactylus of third pereopod (Fig. 40B) with concave flexor margin with series of small denticles, denser and increasing in size towards unguis; dorsal margin of corpus with scale like ornamentation at joint with unguis; unguis slender, about half length of corpus.

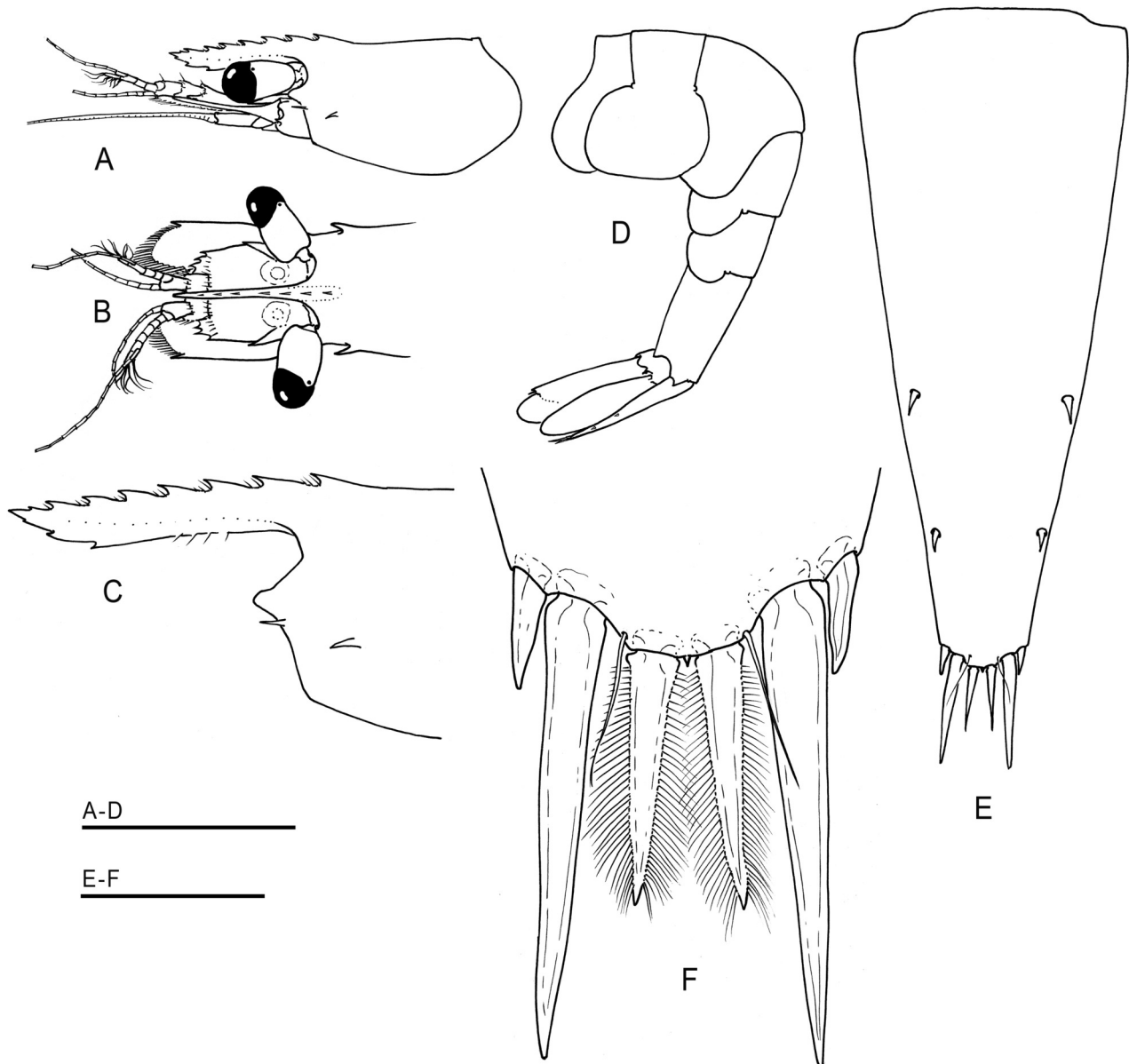


FIGURE 39. *Periclimenes bowmani* Chace, 1972, RMNH.CRUS.D.58170, female, pochl. 1.8 mm. A, carapace and anterior appenages, lateral view; B, idem, dorsal view; C, rostrum lateral view; D, abdomen, lateral view; E, telson; F, idem, tip. Scale bars: A, B, D=2.0 mm; C=1.0 mm; E=0.5 mm; F=0.125 mm.

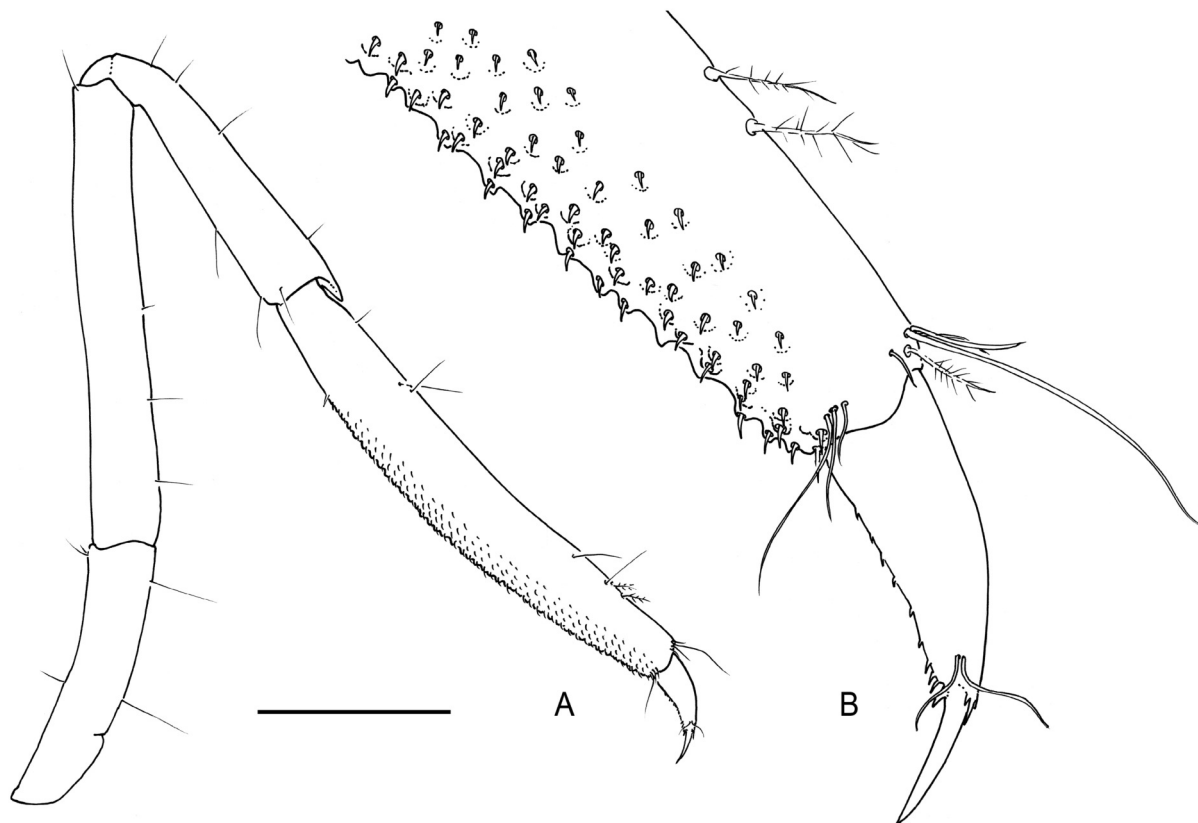


FIGURE 40. *Periclimenes bowmani* Chace, 1972, RMNH.CRUS.D.58170 (fcn. CUR.03), female, pochl. 1.8 mm. A, third right pereopod; B, idem, dactylus and distal part propodus. Scale bar: A=0.5 mm; B=0.125 mm.



FIGURE 41. *Periclimenes bowmani* Chace, 1972, RMNH.CRUS.D.57056, stn COA.04, Curaçao, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 2.xi.2013, depth 10 m, on *Davidaster rubiginosus* (Pourtalès, 1869). (Photograph by B.T. Reijnen.)

Colour (Fig. 41). Largely translucent with orange markings on eyestalks, antennulae and posterior part of abdomen and tailfan.

Ecology. The species has been recorded in association with the crinoids *D. rubiginosus* by Chace (1972) and Criales (1984), and *Tropiometra carinata* (Lamarck, 1816) by Chace (1972). The species is here recorded for the first time from the crinoid *N. grandis*.

Distribution. Known from very few locations in the tropical western Atlantic: Saint Lucia (Chace, 1972); Santa Marta, Colombia (Criales 1984); Islas del Rosario, Columbia (Corredor *et al.*, 1979); and Martinique and Guadeloupe (Poupin, 2018); in depths between 2 and 53 m. Recorded from Curaçao by Horká *et al.* (2016) as *P. crinoidalis*.

***Periclimenes colesi* De Grave & Anker, 2009**

(Fig. 42–50, video 10)

Periclimenes colesi—Horká *et al.*, 2016: supplementary table S1 (Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.57055: 8 specimens; stn COA.01, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 31.x.2013, depth 31 m, scuba diving, in *Callyspongia (Cladochalina) aculeata* with *Parazoanthus parasiticus* (Duchassaing & Michelotti, 1860), collected by C.H.J.M. Fransen (photo COA.01 028–035). RMNH.CRUS.D.58171: 18 specimens, stn COA.03, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 2.xi.2013, depth 10 m, scuba diving, in *C. (C.) aculeata* with *P. parasiticus*, collected by C.H.J.M. Fransen (photo COA.03 092–103). Stn COA.05, Car Wrecks, 12°09'39.60"N 69°00'14.70"W, 3.xi.2013, scuba diving, in *C. (C.) aculeata*, not collected (photo COA.05 037). RMNH.CRUS.D.58173: 5 specimens; stn COA.05, Car Wrecks, 12°09'39.60"N 69°00'14.70"W, 3.xi.2013, depth 20 m, scuba diving, in sponge among *Madracis auretenra* Locke, Weil & Coates, 2007 (= *Madracis mirabilis* sensu Wells, 1973), collected by B.T. Reijnen. RMNH.CRUS.D.58174: 1 specimen; stn COA.10, Waterfabriek II, 12°06'37.00"N 68°57'16.30"W, 31.x.2013, depth 35 m, scuba diving, on brownish sponge with *Parazoanthus* sp. (collected), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58175: 5 specimens; stn COA.19, Kleine Knip, 12°20'28.50"N 69°09'08.10"W, 2.xi.2013, depth 25 m, scuba diving, on *C. (C.) aculeata* with *P. parasiticus* (collected), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58176: 4 specimens; stn COA.22, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 6.xi.2013, depth 35 m, scuba diving, in *Niphates digitalis*, collected by C.H.J.M. Fransen (photo COA.22 189–199). RMNH.CRUS.D.58177: 5 specimens; stn COA.22, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 6.xi.2013, depth 14 m, scuba diving, in *C. (C.) aculeata*, collected by B.T. Reijnen. RMNH.CRUS.D.58178: 11 specimens; stn CAR.04, Blue Bay, 12°08.063'N 68°59.138'W, 2.iv.2014, depth 21 m, scuba diving, on *Desmapsamma anchorata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58179: 1 specimen, stn CAR.05, Playa Kalki, 12°22.536'N 69°09.464'W, 1.iv.2014, depth 24 m, scuba diving, in *Aplysina archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58180: 19 specimens, stn CAR.05, Playa Kalki, 12°22.536'N 69°09.464'W, 1.iv.2014, depth 24 m, scuba diving, on blue branched sponge, collected by C. Rauch. RMNH.CRUS.D.58181: 4 specimens, CAR.06, Superior Producer, 12°06.354'N 68°56.572'W, 25.iv.2014, depth 23 m, scuba diving, on *C. (C.) aculeata*, (id. R.W.M. van Soest) collected by C. Rauch. RMNH.CRUS.D.58182: 1 specimen, CAR.06, Superior Producer, 12°06.354'N 68°56.572'W, 25.iv.2014, depth 20 m, scuba diving, on *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58183: ca. 15 specimens, CAR.06, Superior Producer, 12°06.354'N 68°56.572'W, 25.iv.2014, depth 22 m, scuba diving, on *Niphates erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58184: 1 specimen, CAR.06, Superior Producer, 12°06.354'N 68°56.572'W, 25.iv.2014, depth 17 m, scuba diving, on *C. (C.) plicifera* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58185: 12 specimens, stn CAR.11, Playa Manzanina, 12°14.713'N 69°06.314'W, 9.iv.2014, depth 10 m, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58186: 7 specimens, stn CAR.11, Playa Manzanina, 12°14.713'N 69°06.314'W, 9.iv.2014, depth 13 m, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58187: 2 specimens, stn CAR.12, Caracasbaai, 12°04.588'N 68°51.817'W, 10.iv.2014, depth unknown, scuba diving, on *N. erecta*, (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58188: 3 specimens, stn CAR.12, Caracasbaai, 12°04.588'N 68°51.817'W, 10.iv.2014, depth unknown, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58189: ca. 10 specimens; stn CAR.13, Jan Thiel, 12°04.584'N 68°52.796'W, 10.iv.2014, depth 17 m, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58190: 2 specimens;

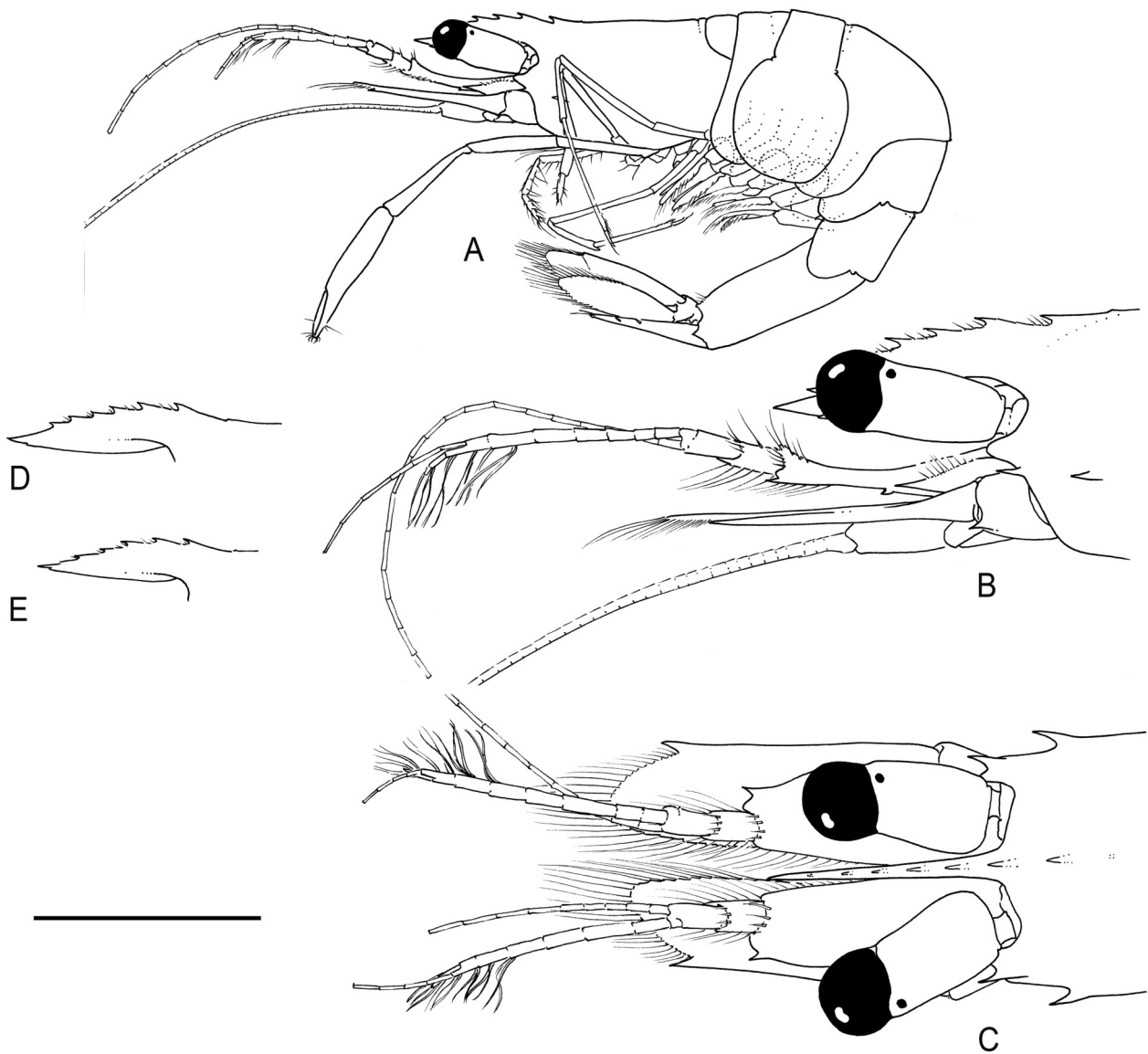


FIGURE 42. *Periclimenes colesi* De Grave & Anker, 2009. RMNH.CRUS.D.57900: A–C, ovigerous female, pochl. 1.8 mm; D, male, pochl. 1.1 mm. RMNH.CRUS.D.57906: E, male, pochl. 1.0 mm. A, habitus, lateral; B, anterior appendages, lateral; C, anterior appendages, dorsal; D–E, rostrum, lateral. Scale bar: A=2.0 mm; B–E=1.0 mm.

stn CAR.13, Jan Thiel, 12°04.584'N 68°52.796'W, 10.iv.2014, depth 24 m, scuba diving, on *Aplysina cauliformis* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58191: 3 specimens; stn CAR.14, Vaersenbaai, 12°09.678'N 68°00.237'W, 11.iv.2014, depth 24 m, scuba diving, on *D. anchorata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58192: 15 specimens, stn CAR.14, Vaersenbaai, 12°09.678'N 68°00.237'W, 11.iv.2014, depth unknown, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58193: 7 specimens, stn CAR.17, Habitat Curacao, 12°11.877'N 69°04.751'W, 16.iv.2014, depth unknown, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58194: 3 specimens, stn CAR.18, Daaibaai, 12°12.710'N 69°05.087'W, 17.iv.2014, depth 10 m, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58195: 4 specimens, stn CAR.18, Daaibaai, 12°12.710'N 69°05.087'W, 17.iv.2014, depth unknown, scuba diving, on *Niphates erecta* Duchassaing & Michelotti, 1864 (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58196: 1 specimen, stn CAR.18, Daaibaai, 12°12.710'N 69°05.087'W, 17.iv.2014, depth unknown, scuba diving, on *A. archeri* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58197: 2 specimens; stn CAR.18, Daaibaai, 12°12.710'N 69°05.087'W, 17.iv.2014, depth 10 m, scuba diving, on *A. cauliformis* (id. R.W.M. van Soest), collected by C.

Rauch. RMNH.CRUS.D.58198: 10 specimens, Boei 1, 18.iv.2014, depth 20 m, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58199: 1 specimen, Boei 1, 18.iv.2014, depth 26 m, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58200: 2 specimens, Redio City, 21.iv.2014, depth unknown, scuba diving, on *N. erecta*, collected by C. Rauch. RMNH.CRUS.D.58201: 1 specimen, Redio City, 21.iv.2014, depth unknown, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58202: 1 specimen, CAR.22, Playa Largu, 12°14.118'N 69°05.907'W, 21.iv.2014, depth 30 m, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58203: 1 specimen, CAR.22, Playa Largu, 12°14.118'N 69°05.907'W, 21.iv.2014, depth 13 m, scuba diving, on *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58204: 4 specimens, CAR.23, Boka pos spano, 12°16.700'N 69°08.591'W, 24.iv.2014, depth 12 m, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58205: 4 specimens: CAR.23, Boka pos spano, 12°16.700'N 69°08.591'W, 24.iv.2014, depth 12 m, scuba diving, on *A. cauliformis* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58206: 1 specimen, CAR.24, Diver's leap, 12°04.439'N 68°52.714'W, 21.iv.2014, depth unknown, scuba diving, on *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58207: 13 specimens, CAR.25, Playa Forti, 12°21.976'N 69°09.220'W, 23.iv.2014, depth 21 m, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58208: 1 ovigerous female, 1 juvenile, CAR.26, Grote Knip, 12°21.087'N 69°09.095'W, 23.iv.2014, depth 22 m, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58209: 1 specimen, CAR.26, Grote Knip, 12°21.087'N 69°09.095'W, 23.iv.2014, depth 22 m, scuba diving, on *N. erecta* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58210: 4 specimens; CAR.26, Grote Knip, 12°21.087'N 69°09.095'W, 23.iv.2014, depth 10 m, scuba diving, on *C. (C.) plicifera* (Lamarck, 1814) (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58211: 1 specimen, CAR.27, Tugboat, 12°04.152'N 68°51.708'W, 24.iv.2014, depth unknown, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58212: 1 specimen, CAR.29, Fuikbaai, 12°02.855'N 68°49.838'W, 25.iv.2014, depth 28 m, on pink branched sponge, collected by C. Rauch. RMNH.CRUS.D.58213: 1 specimen, CAR.29, Fuikbaai, 12°02.855'N 68°49.838'W, 25.iv.2014, depth 24 m, scuba diving, on *C. (C.) aculeata* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58214: 7 specimens; CAR.29, Fuikbaai, 12°02.855'N 68°49.838'W, 25.iv.2014, depth 23 m, scuba diving, on *A. lacunosa* (id. R.W.M. van Soest), collected by C. Rauch. RMNH.CRUS.D.58215: 2 males, pocl. 0.9 and 1.8 mm, CF10B-1, St Michielsbaai, 10.vi.2017, depth 15 m, scuba diving, on yellow tube sponge, *A. fistularis* (id. Jaaziel García-Hernández), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58216: 14 specimens, CF12B-2, Substation, 12.vi.2017, depth 15 m, scuba diving, on *N. digitalis*, collected by C.H.J.M. Fransen. RMNH.CRUS.D.58217: 2 ovigerous females pocl. 1.6 mm and 2.1 mm, 1 non ovigerous female pocl. 1.5 mm, 4 males pocl. 1.1–1.6 mm, 7 specimens, CF14A-4, Playa Kalki, 14.vi.2017, depth 15 m, scuba diving, in *C. (C.) aculeata*, collected by C.H.J.M. Fransen (video 10). Stn CF16C, Hilton Reef, 16.vi.2017, depth unknown, scuba diving, night dive, on *C. (C.) aculeata*, C.H.J.M. Fransen (video 10), not collected. Stn CF17A, Habitat, 17.vi.2017, depth unknown, scuba diving, on *C. (C.) plicifera*, C.H.J.M. Fransen (video 10), not collected. RMNH.CRUS.D.58218: 1 non ovigerous female, pocl. 1.5 mm, CF19B-1, Cas Abou, 19.vi.2017, depth 25 m, scuba diving, on *Clathria (Thalysias) curacaoensis* Arndt, 1927, collected by C.H.J.M. Fransen (video 10). RMNH.CRUS.D.58219: 1 ovigerous female, pocl. 1.7 mm CF19B-2, Cas Abou, 19.vi.2017, depth 20 m, scuba diving, on *Mycetophyllia lamarckiana* Milne Edwards & Haime, 1848, collected by C.H.J.M. Fransen. RMNH.CRUS.D.58220: 1 ovigerous female pocl. 1.7 mm, 1 non ovigerous female pocl. 1.3 mm, 1 male pocl. 1.2 mm, CF20A-1, Playa Lagun, 20.vi.2017, depth 30 m, scuba diving, on *Xestospongia* sp., collected by C.H.J.M. Fransen (video 10). Stn CF20A, Playa Lagun, 20.vi.2017, depth 30 m, scuba diving, on *C. (C.) plicifera*, C.H.J.M. Fransen (video 10). RMNH.CRUS.D.58221: 1 juvenile, pocl. 1.2 mm CF20B-1, Playa Jeremy, 20.vi.2017, depth 30 m, on *Porites astreoides* Lamarck, 1816, collected by Jaaziel García Hernández. OUMNH.ZC.2019-06-20: 41 specimens including ovigerous females, pocl. 1.2–2.2 mm, Sun Reef, 12.1392°N 68.9981°W, depth 20 m, 16.ii.2015, from *Agelas* sp., leg. P. Wirtz & K. Wittman (sample 7). **Bonaire**: stn BON.01 Punt Vierkant (Delfin's Beach Resort), 12°06.908'N 068°17.659'W, 22.x.2019, depth unknown, scuba diving, on *C. (C.) plicifera*, C.H.J.M. Fransen (video 10), not collected. RMNH.CRUS.D.58328: 6 specimens, stn BON.07, Sweet Dreams, 12°02.137'N 068°15.722'W, 25.x.2019, depth 25 m, scuba diving, in *C. (C.) plicifera*, collected by C.H.J.M. Fransen (fcn. BON.07-3) (video 10). Stn BON.15, Red Beryl, 12°02.819'N 068°16.073'W, 28.x.2019, depth 25 m, on *Agelas tubulata* Lehnert & Van Soest, 1996, C.H.J.M. Fransen (photo). RMNH.CRUS.D.58222: 4 specimens, stn BON.18, Red Slave, 12°01.605'N, 068°15.079'W, 28.x.2019, depth 10 m, scuba diving, on *C. (C.) aculeata*, collected by C.H.J.M. Fransen. Stn

BON.23, Playa Funchi, 12°16.957'N 068°24.822'W, 1.xi.2019, depth 10 m, scuba diving, on *C. (C.) aculeata*, C.H.J.M. Fransen (video 10), not collected. Stn BON.29, Front Porch, 12°09.904'N 068°17.194'W, 4.xi.2019, depth unknown, scuba diving, on *C. (C.) aculeata*, C.H.J.M. Fransen (video 10), not collected. Stn BON.30, Invisibles, 12°04.646'N 068°16.800'W, 4.xi.2019, depth 14 m, scuba diving, on *Iotrochota birotulata* (Higgin, 1877) (video 10), and on *C. (C.) aculeata*, C.H.J.M. Fransen, not collected. RMNH.CRUS.D.57900: 1 ovigerous pochl. 1.8 mm, 1 male pochl. 1.1 mm, stn BON.31, Tolo, 12°12.923'N 068°20.218'W, 5.xi.2019, depth 18 m, scuba diving, on *Madracis pharensis* (Heller, 1868), collected by C.H.J.M. Fransen (video 10). RMNH.CRUS.D.58223: 1 specimen, stn BON.33, Invisibles, 12°04.646'N 068°16.800'W, 6.xi.2019, depth 30 m, scuba diving, on *Iotrochota birotulata* (Higgin, 1877), collected by C.H.J.M. Fransen. RMNH.CRUS.D.57906: 1 specimen pochl. 1.0 mm, stn BON.34, Boka Onima, 12°15.187'N 068°18.663'W, 6.xi.2019, depth 20 m, scuba diving, on *M. pharensis*, collected by C.H.J.M. Fransen. Stn BON.45, Klein Bonaire: Carl's Hill, 12°09.886'N 068°19.379'W, 8.xi.2019, depth 32 m, scuba diving, on *I. birotulata*, C.H.J.M. Fransen (video 10), not collected. Stn BON.45, Klein Bonaire: Carl's Hill, 12°09.886'N 068°19.379'W, 8.xi.2019, depth 20 m, scuba diving, *M. pharensis*, C.H.J.M. Fransen (video 10), not collected. **Comparative material:** RMNH.CRUS.D.51755: 9 paratype specimens, pochl. 1.0–1.8 mm, Black Coral Wall dive site, Utila, Bay Islands, Honduras, 16°05.027'N 86°54.944'W, 4.viii.2007, 15 m depth, inside osculum of *C. (C.) aculeata*, leg. S. De Grave & A. Anker.

Description (based on material of RMNH.CRUS.D.57900 on *M. pharensis*). Small sized, rather slender shrimp, with slender pereopods (Fig. 42A). Carapace smooth. Rostrum (Fig. 42A–E) well developed, reaching to end of basal segment of antennular peduncle; lamina moderately deep, lateral carina indistinct, situated near to proximally slightly convex ventral margin with 1 very small subdistal tooth; convex posterior part of ventral margin with single row of plumose setae; dorsal margin convex, elevated, strongly compressed, with 6–7 subequal equally spaced teeth, posteriormost teeth situated at level of posterior margin of orbit or just posterior; few plumose setae just in front of dorsal teeth. Supra-orbital spines absent. Inferior orbital angle well developed, produced, rounded in lateral view. Antennal spine small, marginal, situated below inferior orbital angle. Hepatic spine distinctly larger than antennal spine, situated well behind level of posterior orbital margin and slightly below level of antennal spine. Anterolateral angle of carapace (Fig. 42B) bluntly rounded, not produced.

Pleon (Fig. 42A) smooth. Third pleonite not produced posterodorsally. Pleura all broadly rounded. Sixth pleonite twice as long as fifth, posteroventral angle feebly produced, rounded, posterolateral angle acute.

Telson (Fig. 43A, B) 0.7 times as long as sixth pleonite and 2.7 times longer than anterior width; lateral margins converge posteriorly; two pairs of small sized submarginal dorsal cuspidate setae present at 0.50 and 0.73 of telson length; posterior margin rounded, without median acute process, 0.33 of anterior width, with three pairs of spiniform setae; lateral spiniform setae short, as long as dorsal cuspidate setae; intermediate spiniform setae well developed, about 0.16 of telson length, 1.8 times length of submedian spiniform setae.

Eyes (Fig. 42B, C) well developed; cornea globular, with distinct accessory pigment spot dorsolaterally; eyestalks almost twice as long as proximal width, slightly swollen proximally.

Antennular peduncle (Fig. 42B, C) exceeding tip of rostrum by distal two segments; proximal segment long, slender, 3.2 times longer than wide; lateral margin straight, anterolateral margin produced, with distolateral tooth and row of setae; medial ventral margin with tooth; stylocerite slender, acute, reaching to middle of segment; statocyst containing granular statolith; intermediate and distal segments short, together equal to 0.42 of proximal segment length; upper outer flagellum biramous, with first 6–7 segments fused; aesthetascs present on distal 4 segments of fused part and short free ramus; shorter free ramus two-segmented, longer rami with 6 segments; lower inner flagellum slender, slightly longer than upper flagellum.

Antennal basicerite (Fig. 42B) with lateral tooth; ischiocerite and merocerite normal; carpoperite slender, reaching 0.4 of length of scaphocerite; scaphocerite long, rather slender, with lamella slightly overreaching distal margin of antennular peduncle; lateral border straight, ending in acute large distolateral tooth; lamella extending beyond distolateral tooth, feebly angulated distomedially, about 3 times longer than broad, with greatest width at about half of its length.

Epistome and labrum normal.

Second thoracic sternite unarmed. Third thoracic sternites with median rounded shallow process. Fourth thoracic sternite without medial process, with shallow lateral carinae posteromedial of first pereopods.

Fifth thoracic sternite with lateral plates posteromedial of second pereopods.

Sixth to eighth thoracic sternites unarmed.

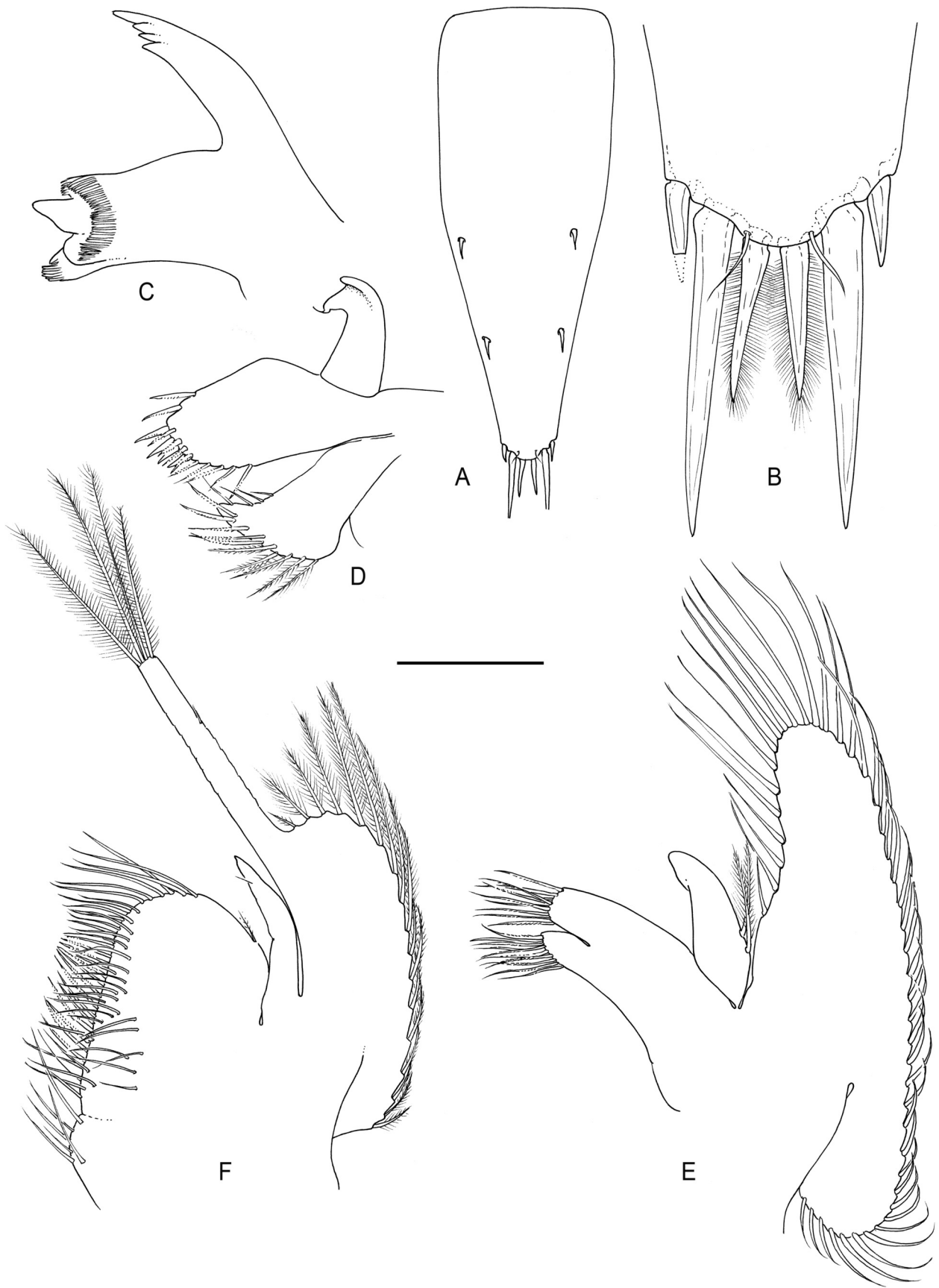


FIGURE 43. *Periclimenes colesi* De Grave & Anker, 2009, RMNH.CRUS.D.57900, ovigerous female, pochl. 1.8 mm. A, telson, dorsal; B, idem, tip, dorsal; C, left mandible; D, left maxillula; E, left maxilla; F, left first maxilliped. Scale bar: A=0.5 mm; B=0.125 mm; C–F=0.25 mm.

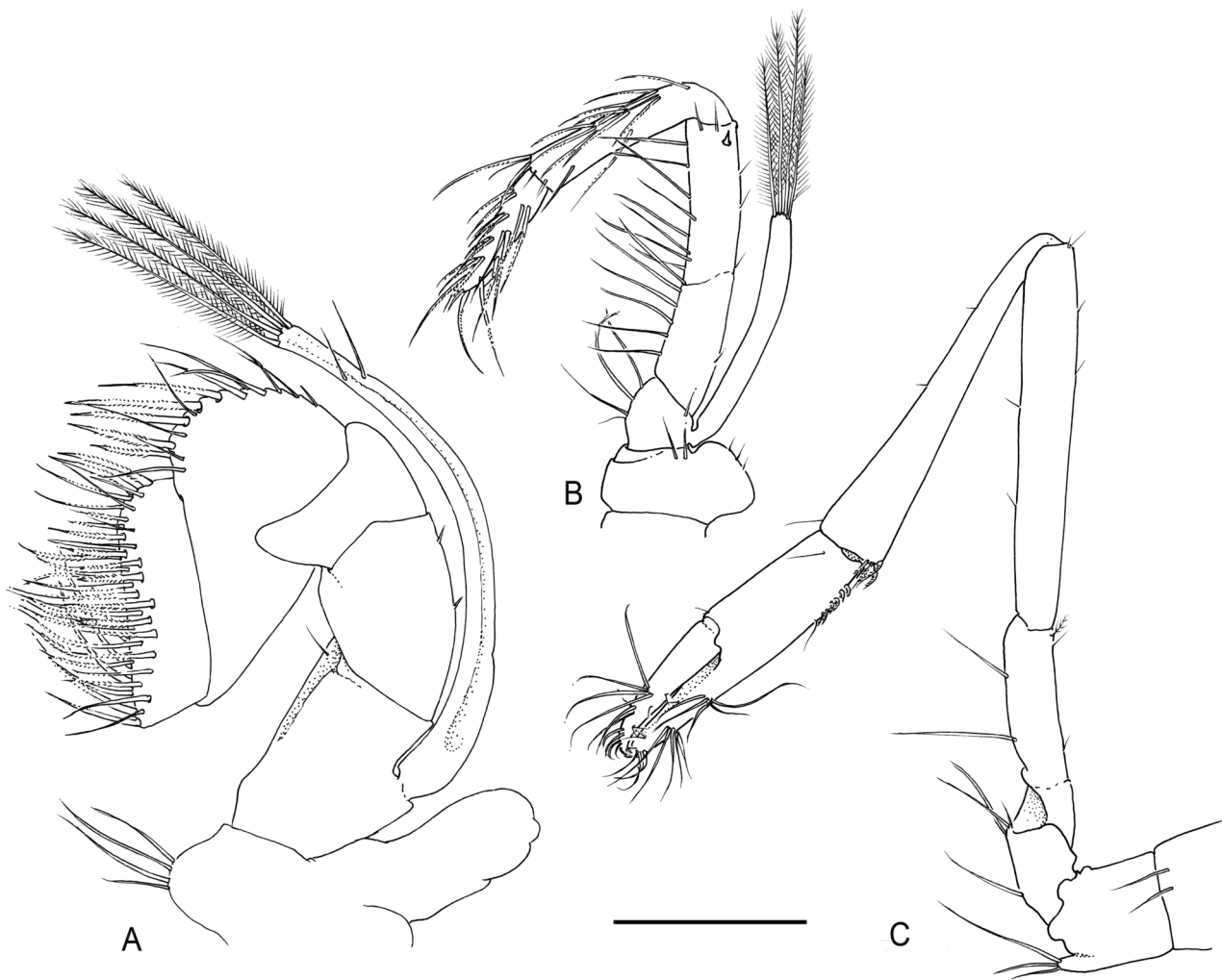


FIGURE 44. *Periclimenes colesi* De Grave & Anker, 2009, RMNH.CRUS.D.57900, ovigerous female, pochl. 1.8 mm. A, left second maxilliped; B, left third maxilliped; C, left first pereiopod. Scale bar: A=0.25 mm; B, C=0.5 mm.

Mandible (Fig. 43C) with cylindrical molar process bearing a few brushes of setae distally; incisor process slender, with four well developed teeth distally, of which lateralmost slightly enlarged; without palp.

Maxillula (Fig. 43D) with upper lacinia subrectangular with row of few serrulate spines and setae medially; lower lacinia slenderer, with few serrulate setae distally; palp bilobed, medial lobe with single short recurved simple seta.

Maxilla (Fig. 43E) with short tapering non-setose palp with few plumose setae laterally; basal endite well developed, distinctly bilobed, with short, minutely serrulate setae medially; coxal endite obsolete, median margin convex, without setae; scaphognathite normal, widest centrally, about 2.7 times longer than broad, with marginal plumose setae.

First maxilliped (Fig. 43F) with short, slender, tapering palp with one simple subdistal seta; basal region broad, not distinctly separated from the coxal region; median margin provided with setulose and slender simple setae; caridean lobe distinct, with coarsely setulose plumose marginal setae; flagellum of exopod well developed with 4 long plumose distal setae and few short subdistal setae; epipod bilobed.

Second maxilliped (Fig. 44A) with dactylar segment narrow, 3.3 times longer than wide, straight medially, densely fringed with numerous coarsely serrulate, spiniform, and long curled finely serrulate setae medially; propodal segment longer than dactylar segment, almost twice as long as wide, distomedial margin rounded, with few long serrulate and simple setae; carpus short, unarmed; meral segment short, not excavate; ischium excavate, fused to basis; basis with long slender exopod exceeding length of endopod, with 4 long plumose setae distally and

few short setae subdistally; coxa slightly produced medially, with few small simple setae medially with rounded small oblong epipod laterally.

Third maxilliped (Fig. 44B) slender; terminal segment 3.6 times longer than proximal width, slightly shorter than length of penultimate segment, with few serrulate and simple setae medially; penultimate segment slender, 4.7 times longer than wide; meral segment as long as penultimate segment, with distinct articulating distolateral cuspidate seta; ischial segment slightly shorter than meral segment; both meral and ischial segments with long setae along medial margin; basal segment short, medial margin convex with few long setae; exopod reaching mid length of meral segment, with 4 distal plumose setae; coxa slightly produced medially, with rounded lateral plate, without arthrobranch.

First pereiopod (Fig. 44C) slender, almost reaching distal margin of scaphocerite; chela with palm subcylindrical, straight, 2.0 times longer than wide; fingers almost as long as palm, straight not subspatulate, with brushes of few setae in distal part, cutting edges entire, tips of fingers hooked; carpo-propodal brush well developed; carpus 1.2 times length of chela, 5.5 times longer than distal width; merus as long as carpus, about twice length of ischium; ischium with few long simple setae medially; basis short, with few long simple setae medially; coxa with medial protuberance with few long simple setae.

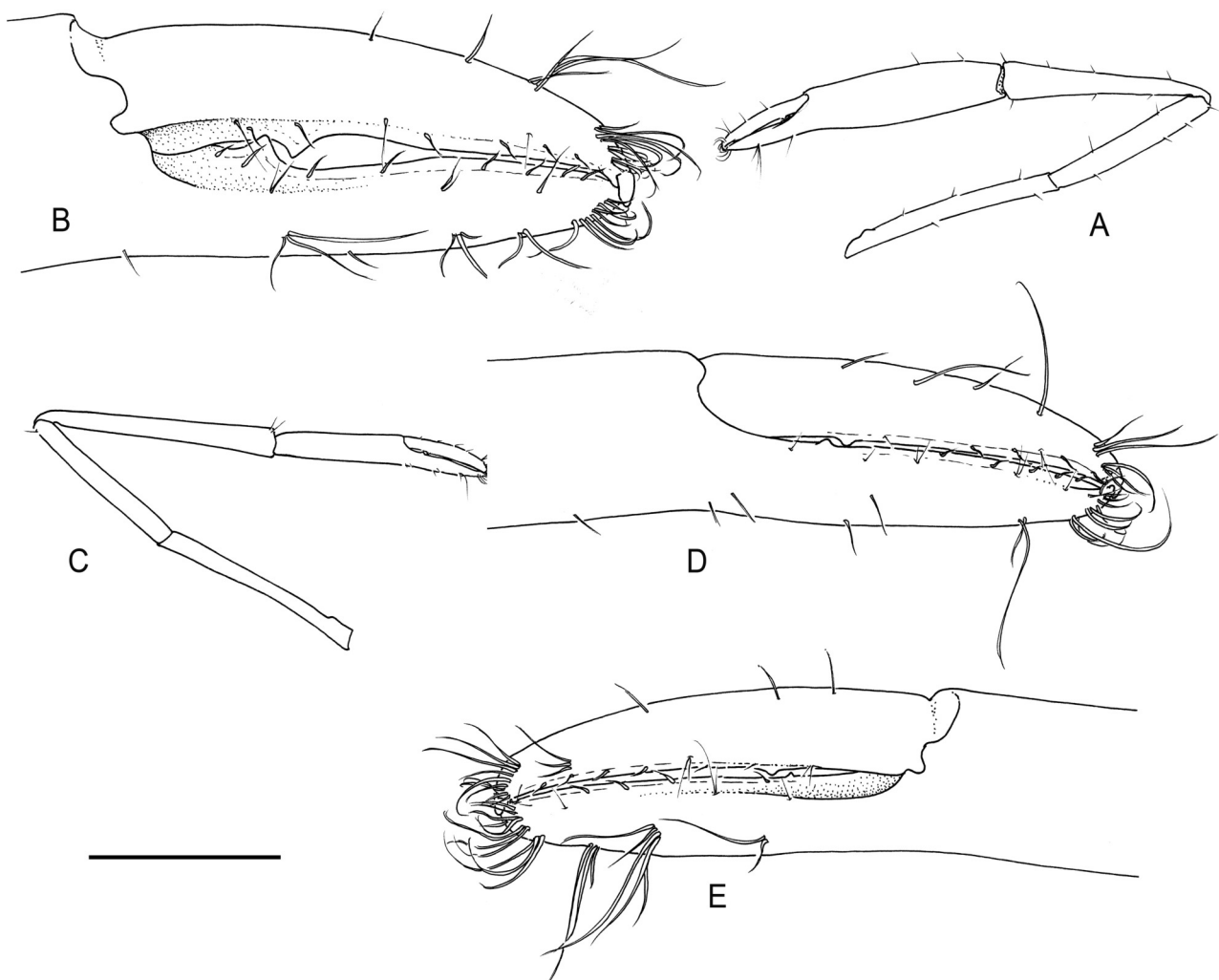


FIGURE 45. *Periclimenes colesi* De Grave & Anker, 2009, RMNH.CRUS.D.57900, ovigerous female, pochl. 1.8 mm. A, left major second pereiopod, lateral view; B, idem, chela, medial view; C, right minor second pereiopod, lateral view; D, idem, chela; E, idem, medial view. Scale bar: A, C=1.25 mm; B, D, E=0.25 mm.

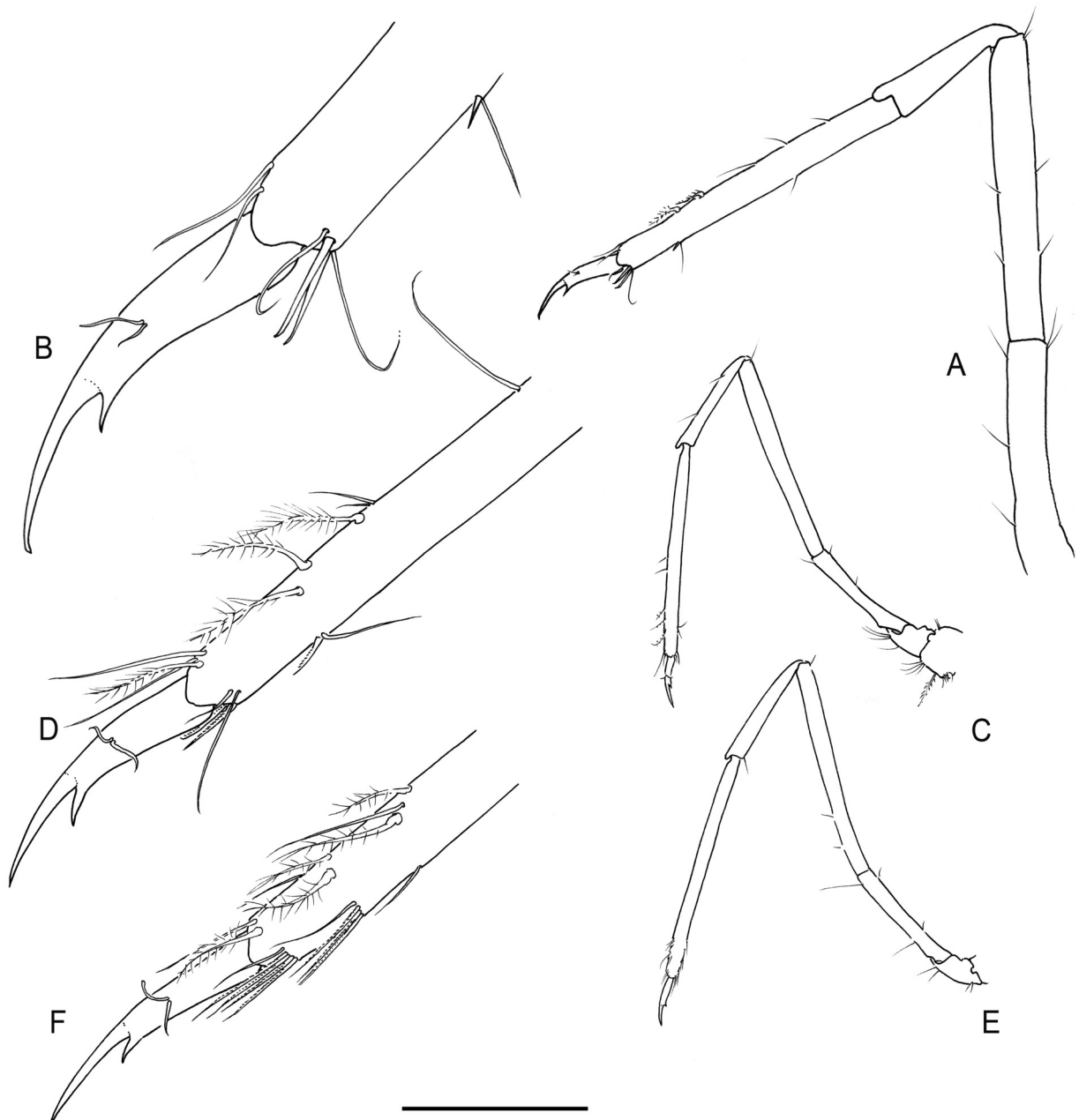


FIGURE 46. *Periclimenes colesi* De Grave & Anker, 2009, RMNH.CRUS.D.57900: A, B, male, pocl. 1.1 mm; C–F, ovigerous female, pocl. 1.8 mm. A, left third pereopod, lateral view; B, idem, dactylus and distal part propodus; C, left fourth pereopod, lateral view; D, idem, dactylus and distal part propodus; E, left fifth pereopod, lateral view; F, idem, dactylus and distal part propodus. Scale bar: A=0.5 mm; B=0.125 mm; C, E=1.25 mm; D, F=0.25 mm.

Second pereopods, subequal in length, similar. Major second pereopod (Fig. 45A) extending beyond antennular peduncle with chela; chela with palm subcylindrical, straight; palm about 3.5 times as long as wide; fingers (Fig. 45B) 0.5 of palm length, slightly gaping centrally; dactylus about as wide as fixed finger, without dorsolateral longitudinal carina, with brushes of setae in distal part, unguis strongly hooked, cutting edge with one slightly recurved tooth proximally; fixed finger with tip strongly hooked, with one tooth in proximal half, just posterior of tooth on cutting edge of dactylus; carpus, merus and ischium unarmed, their length ratios of 1.0, 0.9, and 1.0 times length of palm; basis and coxa without special features. Minor second pereopod (Fig. 45C), similar but more slender than major pereopod; chela with fingers (Fig. 45D, E) 0.75 times as long as subcylindrical palm, similar as in major chela; carpus, merus and ischium unarmed, their length ratios of 1.8, 1.3, and 1.5 times length of palm; basis and coxa without special features.

Ambulatory pereopods (Fig. 46A, C, D) slender, third, fourth and fifth similar in form, slightly increasing in length from third to fifth; dactylus (Fig. 46B, D, F) slender, uniformly tapering, about 0.25 of propodus length, 5.6 times as long as proximal width, with slender unguis almost as long as corpus, with short accessory tooth, 0.3 times of unguis length; propodus about 15 times longer than wide, with pair of distoventral serrulate spiniform setae and one smaller serrulate spiniform seta subdistally and plumose and simple setae distally on dorsal margin; carpus, merus and ischium 0.50, 1.0 and 0.50 of propodus length, unarmed; basis and coxa without special features; fifth pereopod similar with two pairs of long serrulate spiniform setae in distoventral part of propodus.

Endopod of first pleopod in ovigerous female (Fig. 47A) short, 0.30 of length of exopod, with long plumose setae along distal half of median margin. Endopod of first pleopod in male (Fig. 47B) short, 0.41 times length of exopod, distally rounded, with 4 plumose setae along lateral margin and one plumose seta in proximal part of medial margin with two small short setae somewhat more anteriorly. Endopod of second pleopod in male (Fig. 47C), 0.78 times length of exopod. Appendix masculina almost as long as appendix interna, with four long setae (sub)distally.

Uropods (Fig. 42A) extending beyond tip of telson; protopodite unarmed laterally; exopod with lateral border almost straight, entire, 3.5 times longer than wide, slightly longer than endopod, terminating in a small tooth with small mobile spinulate seta medially (Fig. 47D).

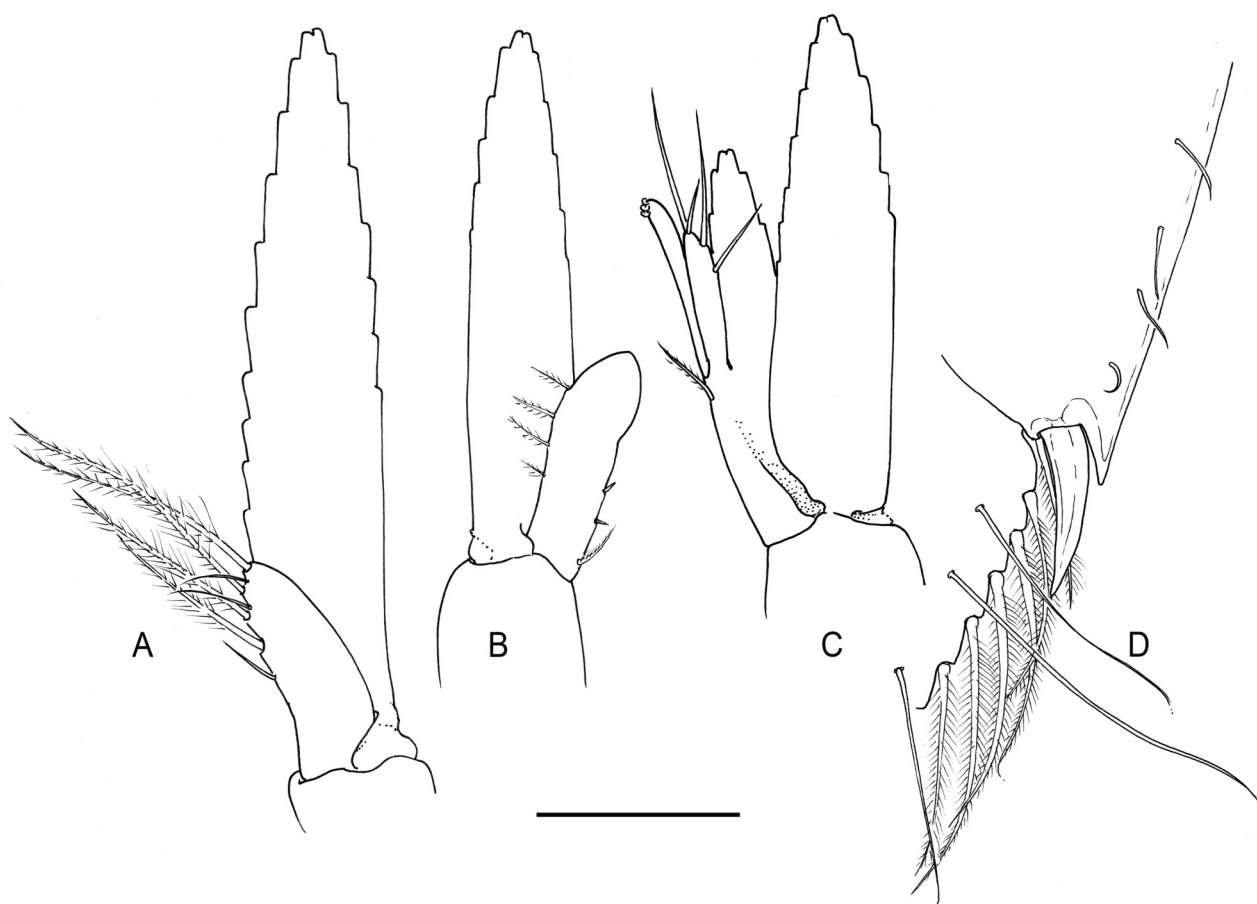


FIGURE 47. *Periclimenes colesi* De Grave & Anker, 2009, RMNH.CRUS.D.57900: A, D, ovigerous female, pochl. 1.8 mm; B, C, male, pochl. 1.1 mm. A, B, first pleopod; B, second pleopod; D, uropod, exopod, distolateral part. Scale bar: A–C=0.25 mm; D=0.125 mm.

About 30 eggs of ca. 0.5 mm in diameter present under abdomen.

Size. Ovigerous female pochl. 1.75 mm.

Colour. Colour pattern (Fig. 50, video 10) as described by De Grave & Anker (2009).

Remarks. The specimens largely fit the description by De Grave & Anker (2009). Rostrum (Figs. 42A–E, 48A–F) distally upturned, short, not reaching distal margin of basal antennular segment; dorsal lamina well developed, with 4 to 8 teeth (number increases with size), posterior-most tooth postorbital or level with orbit; ventral margin

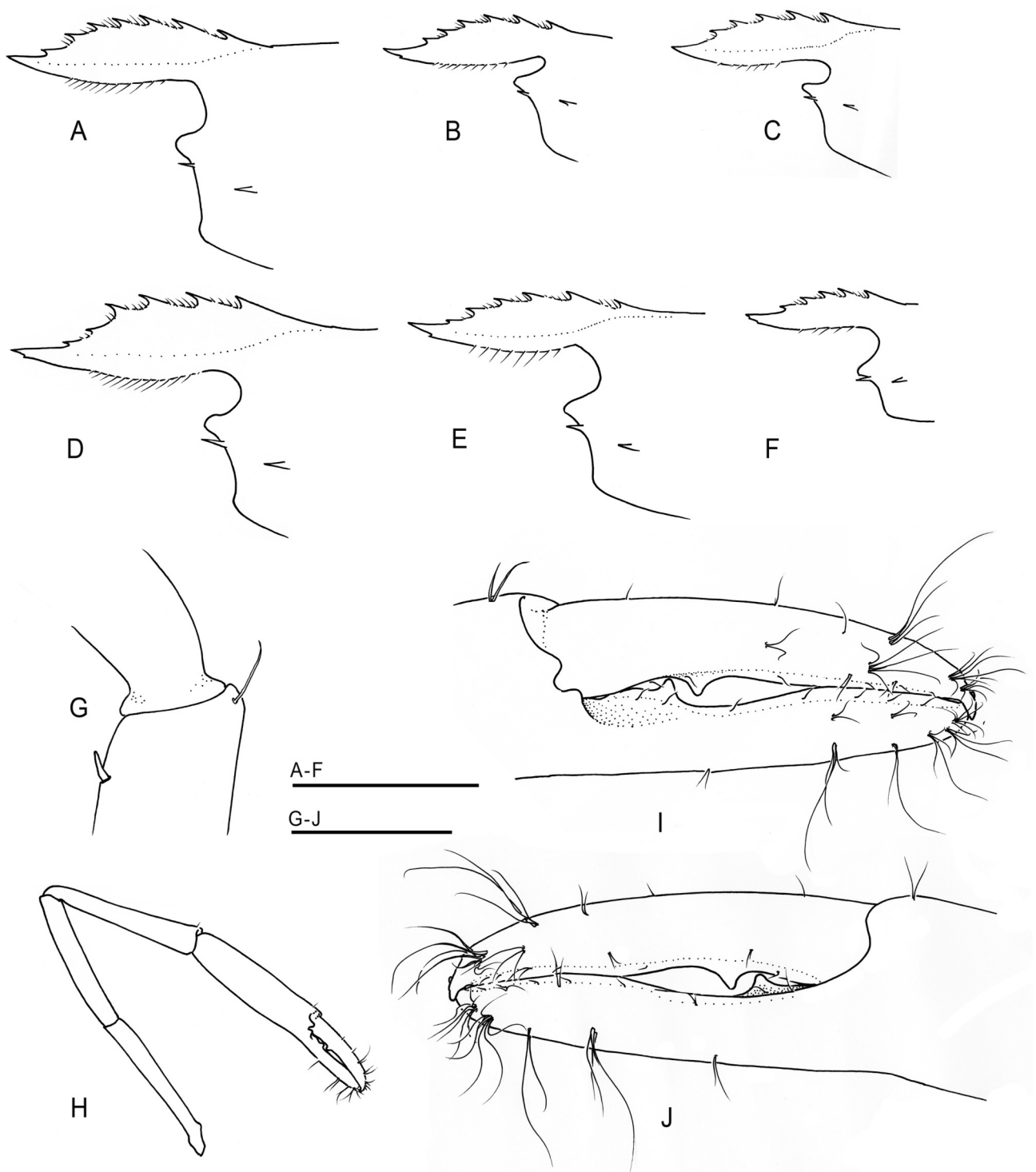


FIGURE 48. *Periclimenes colesi* De Grave & Anker, 2009. A, RMNH.CRUS.D.58217; B, E–J, RMNH.CRUS.D.58328; C, RMNH.CRUS.D.58221; D, RMNH.CRUS.D.58220. A, rostrum, ovigerous female, pochl. 1.5 mm; B, idem, male, pochl. 1.3 mm; C, idem, female, pochl. 1.2 mm; D, idem, ovigerous female, pochl. 1.8 mm; E, idem, ovigerous female, pochl. 1.6 mm; F, idem, male, pochl. 0.9 mm; G, third maxilliped, joint meral and carpal segments; H, right major second pereiopod; I, idem, chela, medial view; J, idem, lateral view. Scale bars: A–F=1.0 mm; G=0.125 mm; H=1.25 mm; I, J=0.25 mm.

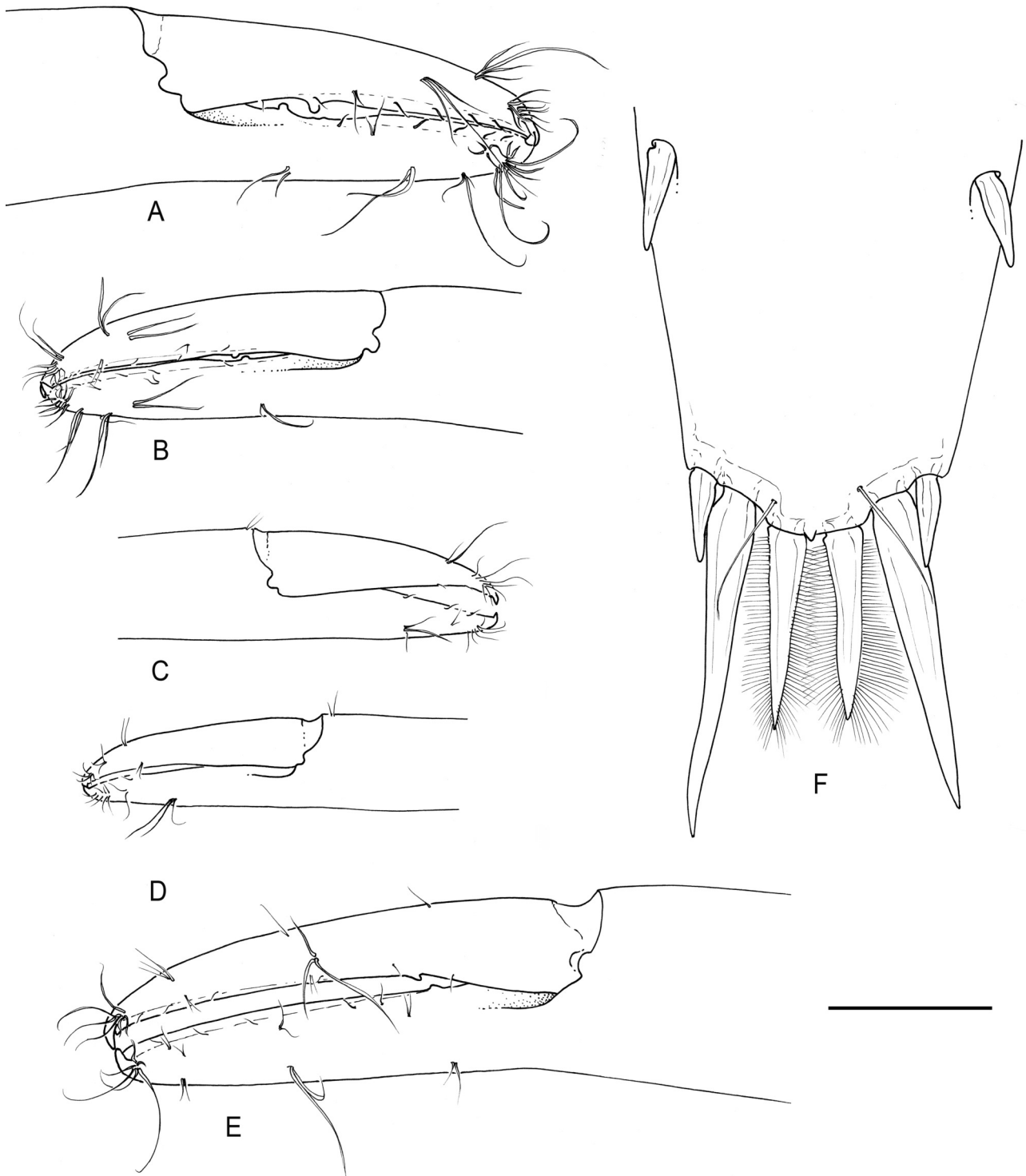


FIGURE 49. *Periclimenes colesi* De Grave & Anker, 2009. A, B, RMNH.CRUS.D.58328, female, pochl. 13.5 mm; C, D, idem, juvenile pochl. 0.7 mm; E, F, RMNH.CRUS.D.51755, ovigerous female, pochl. 1.5 mm. A, C, E, right major second chela; B, D, left minor second chela; F, telson, tip. Scale bar: A–E=0.25 mm; F=0.125 mm.

convex with 0 to 2 (usually 1) subdistal shallow, small teeth. This differs from the type material from Honduras in which this tooth is absent (De Grave & Anker 2009: figs. 3, 6–8). Basal segment of antennular peduncle with one distolateral tooth, no additional teeth on distal margin (Fig. 42C). Endite of maxilla bilobed (Fig. 42E). Third maxilliped (Figs. 44B, 48G) ischiomerus with single distolateral mobile spine, not present in type species;

distomesial margin glabrous, not crenulated. Second pereopods (Figs. 45A, C) subequal in size and shape, slender; fingers (Figs. 45A, C, 48H) 0.25–0.30 of chela length; cutting edge dactylus with tooth at 0.3–0.5 of length. In the present material, typically a distinct gape is present just distally of the proximal teeth on dactylus and fixed finger of the major second chela (Figs. 45B, 48I, J, 49A, B); the transition to the distal part of the cutting edge is broadly rounded; this feature is most pronounced in larger specimens (figs. Figs. 45B, 48I, J) whereas less developed or absent in smaller specimens (49A, C); in the type series this gape was not observed (Fig. 51E; De Grave & Anker 2009: fig. 15). In the present material, the fingers of the minor second chela have a proximal tooth each in larger specimens, sometimes followed by a small gape (Fig. 45D, E, 48B) whereas these teeth and gape are absent in smaller specimens (Fig. 48D); teeth on the cutting edges of the minor second chelae nor a gape were observed in the type-series. The third and fourth pereopods are of equal size; the propodi have one subdistal spine and a pair of distoventral spines on the flexor margin (Fig. 46B, D) whereas only a single distoventral spine is present in the type-series (De Grave & Anker 2009: fig. 18); the dactylus (Fig. 46A, C) is slender, biunguiculate; unguis slightly more than half length corpus; accessory tooth triangular, 0.15–0.5 of length unguis. Telson with two pairs of dorsal spines, anterior pair situated at about mid-length, posterior pair at two-thirds of telson length; three pairs of apical spines; lateral pair shortest, as long as dorsal spines; intermediate pair longest; mesial pair plumose, half length of intermediate pair; the apical margin is rounded in the present material (Fig. 43B) whereas a medial acute process is present in the type-series (Fig. 49F; De Grave & Anker 2009: fig. 23).

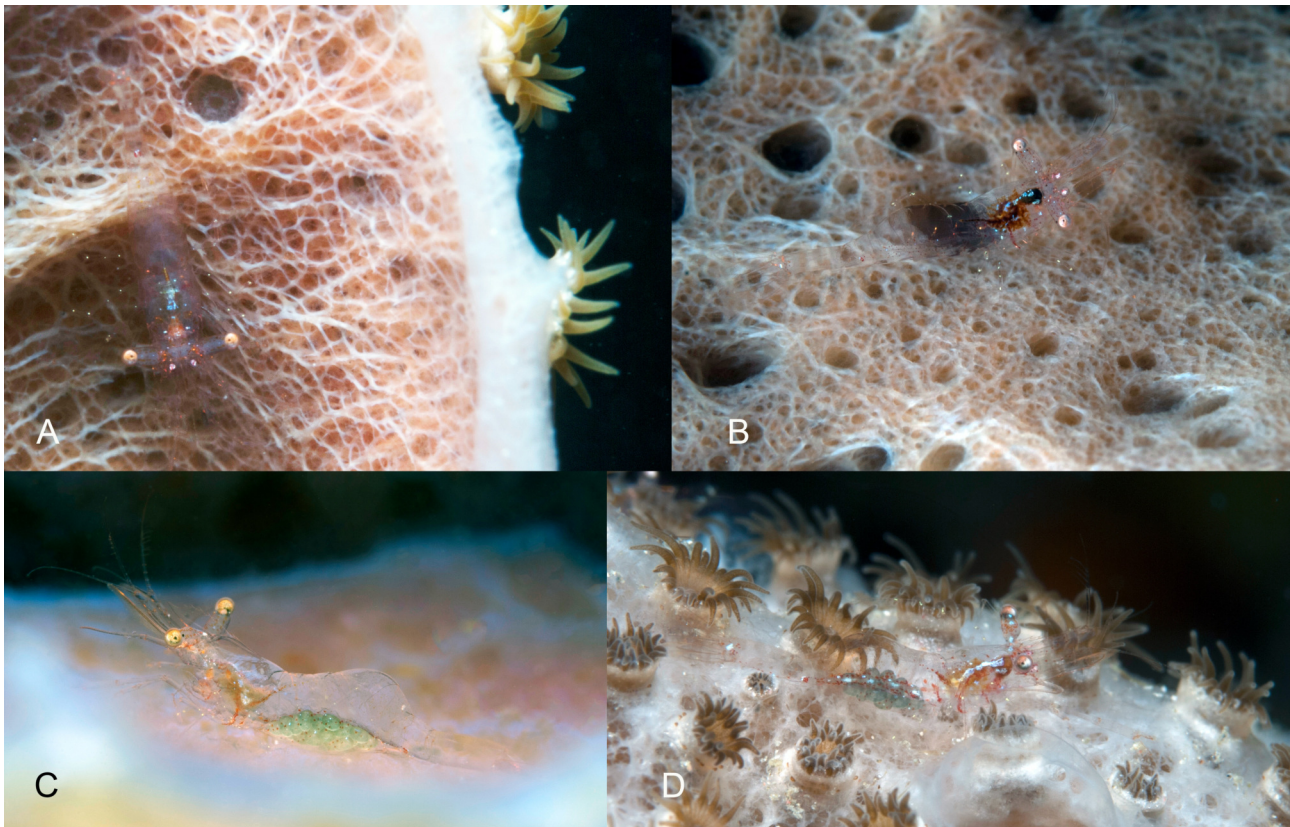


FIGURE 50. *Periclimenes colesi* De Grave & Anker, 2009. A, B, stn COA.03, Curaçao, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 2.xi.2013, depth 10 m, in *Callyspongia* (*Cladochalina*) *aculeata* (Linnaeus, 1759) with *Parazoanthus parasiticus* (Duchassaing & Michelotti, 1860); C, stn COA.23, Curaçao, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 6.xi.2013, depth 35 m, in *Niphates digitalis* (Lamarck, 1814); D, stn COA.01, Curaçao, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 31.x.2013, depth 31 m, in *C. (C.) aculeata* with *P. parasiticus*. (Photographs by C.H.J.M. Fransen.)

A proximal tooth on the fixed finger of the major second pereopod is not mentioned in the type description of *P. colesi*. By re-examining the paratypes of *P. colesi*, a small proximal tooth was found in one of the larger specimens (pocl. 1.5 mm).

Morphological and molecular differences (see below) between material found on Porifera and on Scleractinia in Curaçao and Bonaire have not been found, neither is there a difference noted between the colour patterns.

The differences in the dentition of the chelae and in the presence or absence of a median apical process on the posterior margin of the telson are constant between the Honduras and Curaçao/Bonaire populations. This might be a sign that cryptic species are involved. When molecular sequences of the Honduras populations come available, it might be possible to verify if cryptic species are indeed involved here. As morphological differences between the Honduras and Curaçao/Bonaire populations remain small and specimens from both localities were found on the same host (*C. (C.) aculeata*) they are for now regarded conspecific.

The most closely related species is *Periclimenes sandyi* De Grave, 2009. This species was also found in association with sponges. As some variation in the dentition of the rostrum and that of the fingers of the second chela was observed in material from Curaçao, it was suggested that *P. sandyi* might be a junior synonym of *P. colesi* (see De Grave & Anker 2017). When checking the extensive series of material from both Curaçao and Bonaire, none of the specimens examined had two distinct teeth on both fingers of the chelipeds as described for *P. sandyi* (De Grave 2009: fig. 3D), nor a crenulated distolateral margin of the ischiomerus of the third maxilliped (De Grave 2009: fig. 2F) in this species. It is therefore concluded here that *P. sandyi* is a valid species distinct from *P. colesi*.

Ecology. *Periclimenes colesi* is known to live in association with sponges: *C. (C.) aculeata* (De Grave & Anker 2009); *Mycale (Arenochalina) laxissima* (Duchassaing & Michelotti, 1864), *N. rosariensis*, and *N. erecta* (see De Grave & Anker 2017). It is now recorded for the first time from *Agelas tubulata* Lehnert & van Soest, 1996, *A. archeri*, *A. cauliformis*, *A. fistularis*, *A. lacunosa*, *C. (C.) plicifera*, *D. anchorata*, *I. birotulata*, and *N. digitalis*. The species is now recorded from stony corals, *Madracis pharensis*, *Mycetophyllia lamarckiana*, and *Porites astreoides* for the first time. This is also the first record of a member of the *P. iridescens* species complex associating with a stony coral.

Distribution. *Periclimenes colesi* is known from scattered locations in the tropical western Atlantic: Honduras (De Grave & Anker 2009), Caribbean coast of Panama (De Grave & Anker 2017), and Curaçao (Horká *et al.* 2016); in depths between 1 and 15 m. The species is herein recorded for the first time from Bonaire.

***Periclimenes crinoidalis* Chace, 1969**

(Figs. 51–52, video 11)

Periclimenes crinoidalis Chace, 1969: 251 (Curaçao); Chace 1972: 35 (Curaçao).

Not *Periclimenes crinoidalis*—Horká *et al.* 2016: supplementary table 1 (Curaçao), is *P. bowmani* Chace, 1972.

Material examined. **Curaçao:** RMNH.CRUS.D.28336: 1 male, pochl. 1.6 mm, R=6/1, 1 ovigerous female, pochl. 24.5 mm, R=1+8/4; Piscaderabaai, 8.v.1962, between arms of *Nemaster grandis* A.H. Clark, 1909, collected by I. Kristensen. **Bonaire:** RMNH.CRUS.D.57892: many specimens, pochl. 1.0–2.4 mm; stn BON.26, Small Wall, 12°10.685'N 068°17.539'W, 3.xi.2019, depth 42 m, scuba diving, on *N. grandis*, collected by C.H.J.M. Fransen (video 11).

Remarks. The morphological characters of the present specimens agree well with the original description by Chace (1969). Rostrum (Fig. 50A, B, D, E) straight, slightly directed downward, reaching distal margin of distal segment of antennular peduncle; dorsal lamina not developed, with 3–8 dorsal teeth (number increases with size) at equal distances, proximal tooth at level of orbit; ventral lamina slightly concave with 0–4 small teeth (number increases with size) distally. Hepatic tooth (Fig. 50A) slightly below level of antennular tooth, directed forward. Third abdominal segment (Fig. 50C) posteriorly produced. Telson (Fig. 50F) with 2 pairs of small dorsal spines at about 0.6 and 0.8 of telson length; lateral distal pair of same size as dorsal spines; posterior margin of telson (Fig. 50G) with small triangular process; this process was not figured nor mentioned by Chace (1969). Basal segment of antennular peduncle (Fig. 50B) with distolateral tooth and additional 2–3 teeth on anterior margin. Maxilla with endite bilobed. Ischiomerus of third maxilliped without distomedial mobile spine. Second pereopods (Fig. 51A, B) dissimilar and unequal; fingers of major chela (Fig. 51B, C) curved, with pair of low teeth in proximal part of cutting edge each (Fig. 51D, E); movable finger with distinct dorsal carina (Fig. 51B–E), fixed finger as broad as movable finger, ventral surface glabrous. Ambulatory pereopods with propodus (Fig. 51F) straight, with one subdistal ventral distally serrate spine (Fig. 51G, H) and two distoventral distally serrate spines. Dactylus of third pereopod (Fig. 51G, H) with almost straight entire flexor margin; accessory tooth small or absent; unguis slender, about half length of corpus.

Colour (video 11). Translucent with black and white markings, matching the colouration of the host.

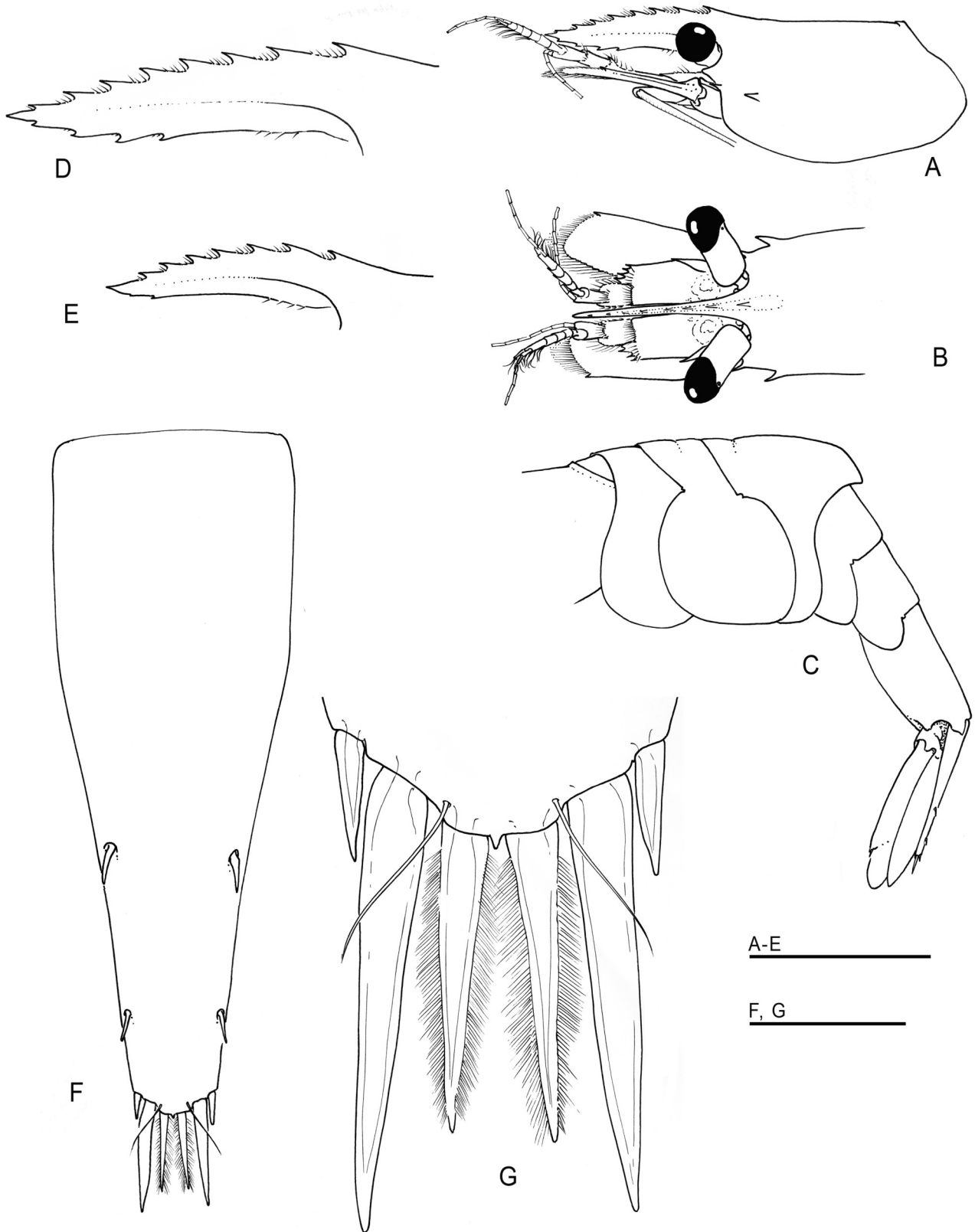


FIGURE 51. *Periclimenes crinoidalis* Chace, 1969, RMNH.CRUS.D.57892. A–D, F, G, ovigerous female, pochl. 2.4 mm; E, male, pochl. 1.5 mm. A, carapace and anterior appendages, lateral view; B, idem, dorsal view; C, abdomen, lateral view; D, E, rostrum, lateral view; F, telson, dorsal view; G, idem, distal part. Scale bars: A–C=2.0 mm; D, E=1.0 mm; F=0.5 mm; G=0.125 mm.

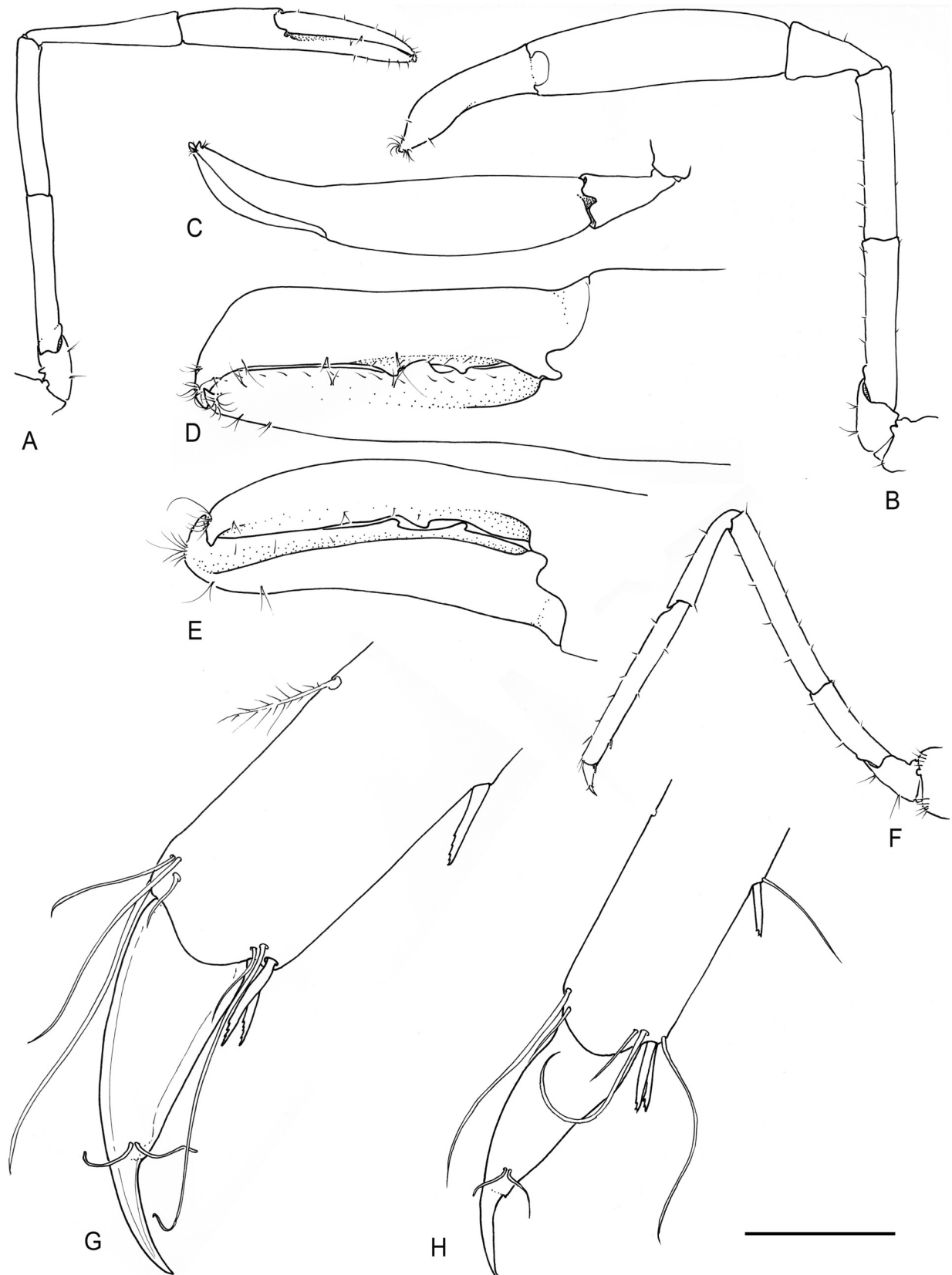


FIGURE 52. *Periclimenes crinoidalis* Chace, 1969, RMNH.CRUS.D.57892. A–G, ovigerous female, pochl. 2.4 mm; H, male, pochl. 1.5 mm. A, right minor second pereiopod, lateral view; B, left major second pereiopod, lateral view; C, idem, chela and carpus, ventral view; D, idem, chela, medial view; E, idem, lateral view; F, left third pereiopod, lateral view; G, H, idem, distal part propodus and dactylus. Scale bar: A–C, F=1.25 mm; D, E=0.25 mm; G, H=0.125 mm.

Ecology. The species was found in association with the crinoid *Nemaster grandis* A.H. Clark, 1909 by Chace (1969), Criales (1984), and Vera-Caripe *et al.* (2019).

Distribution. Known from few localities in the tropical western Atlantic: Curaçao (Chace 1969, 1972), Santa Marta, Columbia (Criales 1984), Martinique (Poupin 2018), Venezuela (Vera-Caripe *et al.* 2019) in depths between 15 and 38 m. Previous records from Curaçao by Chace (1969, 1972). Herein recorded for the first time from Bonaire at a depth of 42 m.

***Periclimenes harringtoni* Lebour, 1949**

(Figs. 53–54, video 12)

Periclimenes harringtoni—Humann *et al.* 2013: 111 (Bonaire).

Material examined. **Curaçao:** RMNH.CRUS.D.58224: 1 ovigerous female; CAR.03, Sea Aquarium, 12°04.907'N 68°53.763'W, 26.iii.2014, depth 16 m, scuba diving, in *Neofibularia nolitangere* (Duchassaing & Michelotti, 1864), collected by C. Rauch. RMNH.CRUS.D.58225: 2 specimens, CAR.03, Sea Aquarium, 12°04.907'N 68°53.763'W, 26.iii.2014, depth 19 m, scuba diving, in *N. nolitangere*, collected by C. Rauch. RMNH.CRUS.D.58226: 1 specimen, CAR.07, Kleine Knip, 12°20.475'N 69°09.154'W, depth unknown, scuba diving, in *N. nolitangere*, collected by C. Rauch. RMNH.CRUS.D.58227: 1 ovigerous female; CAR.07, Kleine Knip, 12°20.475'N 69°09.154'W, depth 8 m, scuba diving, in *N. nolitangere*, collected by C. Rauch. RMNH.CRUS.D.58228: 1 ovigerous female; CAR.09, Sunset Waters, 12°16.046'N 69°07.657'W, depth 11 m, scuba diving, in *N. nolitangere*, collected by C. Rauch. RMNH.CRUS.D.58229: 1 ovigerous female, pochl. 2.6 mm, Slangenbaai, 10.iv.2017, depth 10 m, scuba diving, in *N. nolitangere*, collected by C.H.J.M. Fransen CF10A-3. RMNH.CRUS.D.58230: 1 non ovigerous female, pochl. 1.9 mm; 1 male, pochl. 2.7 mm, CF13A-1, Directors bay, 13.vi.2017, depth 11 m, scuba diving, in *N. nolitangere*, collected by C.H.J.M. Fransen (video 12). Stn CF13B, Tu gboat, 17.vi.2017, depth unknown, scuba diving, in *N. nolitangere*, C.H.J.M. Fransen (video 12), not collected. RMNH.CRUS.D.58230: 2 non-ovigerous females, pochl. 2.0 and 1.8 mm, CF17A-1, Habitat, 17.iv.2017, depth 5 m, scuba diving, in *N. nolitangere*, collected by C.H.J.M. Fransen (video 12). **Bonaire:** RMNH.CRUS.D.57905: 1 ovigerous female, pochl. 4.5 mm, stn BON.37, Andrea I, 12°11.285'N 068°17.795'W, 6.xi.2019, depth 5 m, scuba diving, in *N. nolitangere*, collected by C.H.J.M. Fransen (video 12). Stn BON.45, Klein Bonaire: South Bay, 12°09.001'N 068°19.234'W, 8.xi.2019, depth 10 m, scuba diving, in *N. nolitangere*, C.H.J.M. Fransen (video 12), not collected.

Remarks. The morphological characters of the present specimens agree well with the original description by Lebour (1949) and redescription by Holthuis (1951b). Rostrum (Fig. 53A–D) straight, short, reaching middle of second segment of antennular peduncle; dorsal lamina developed, with 5–7 dorsal teeth (number increases with size) at equal distances except for posteriormost tooth which is situated at somewhat more distance, proximal 1–2 teeth postorbital; ventral lamina slightly concave with 1 or 2 small teeth (number increases with size) subdistally. Antennal tooth small (Fig. 53A); hepatic tooth (Fig. 53A) more robust, situated slightly below level of antennular tooth, directed forward. Third abdominal segment slightly produced posteriorly. Telson (Fig. 53E) with 2 pairs of rather large dorsal spines at about 0.6 and 0.7 of telson length; lateral distal pair of slightly smaller than dorsal spines; posterior margin of telson (Fig. 53F) with acute triangular median process. Basal segment of antennular peduncle with distolateral tooth, without additional teeth on anterior margin. Maxilla with endite bilobed. Ischiomerus of third maxilliped without distomedial mobile spine. Second pereopods dissimilar and unequal; major chela with fingers very short, one-fourth to one-fifth of length of palm; fingers with 2 distinct teeth in about middle of cutting edges; dactylus with longitudinal carina. Ambulatory pereopods slender, with propodi straight, without spines on flexor margin except for distoventral one; dactyli very long and slender (Fig. 54A, B), biunguiculate; accessory tooth very small; unguis slender, distinctly longer than corpus.

Colour (video 12). Translucent with a reddish tinge, covered with small and larger white spots over entire body. Eystalks with white band anterodorsally. Larger white spots at joints of appendages. Fingers of second pereopods white.

Ecology. The species is a symbiont of the 'Touch-me-not sponge', *N. nolitangere* (Humann *et al.* 2013, Poupin 2018).

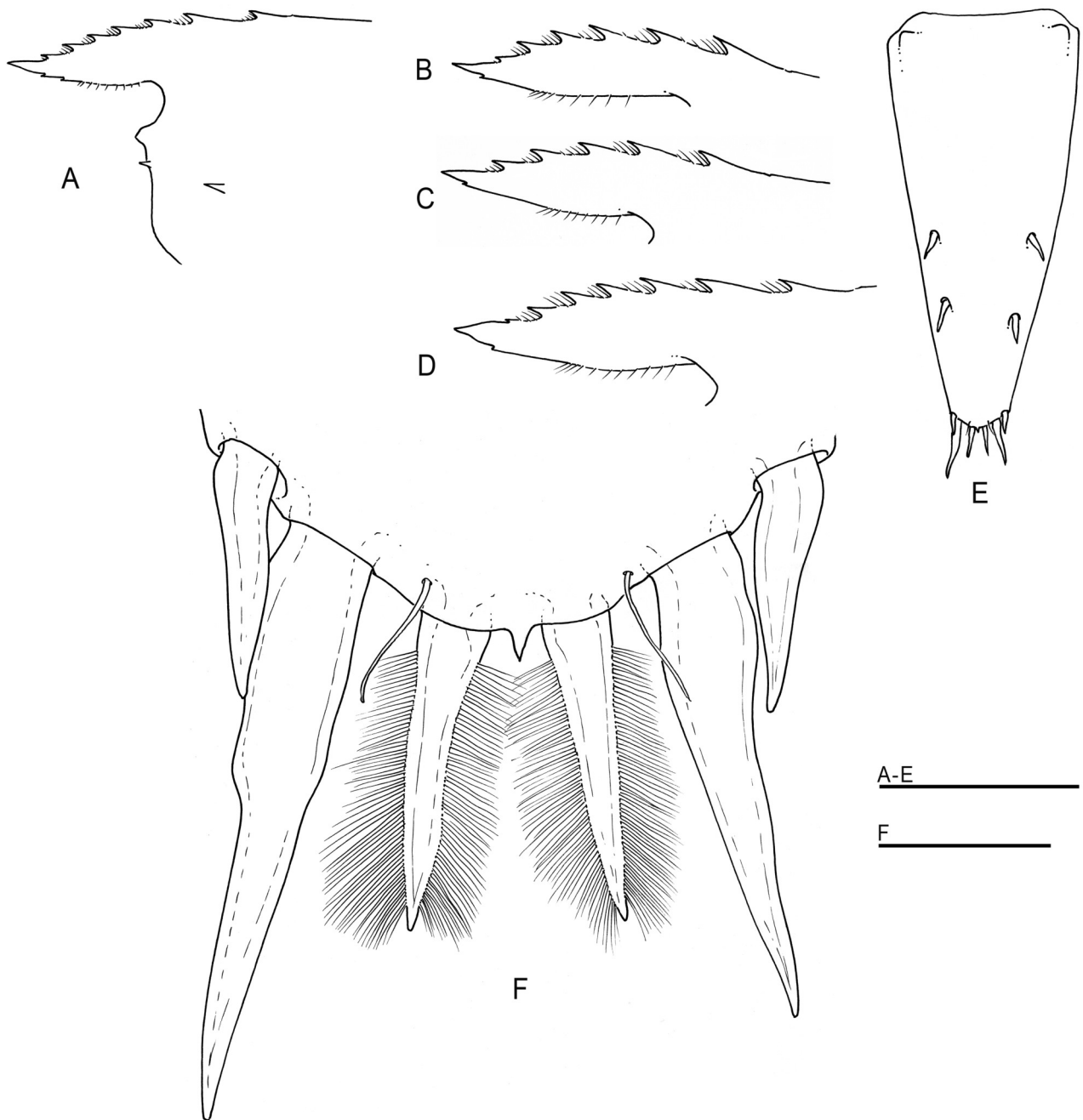


FIGURE 53. *Periclimenes harringtoni* Lebour, 1949. A, E, F, RMNH.CRUS.D.57905; B–D, RMNH.CRUS.D.58230. A, rostrum, ovigerous female, pochl. 4.5 mm; B, idem, female, pochl. 2.1 mm; C, idem, female, pochl. 2.3 mm; D, idem, male, pochl. 2.7 mm; E, telson; F, idem, tip. Scale bars: A=2.0 mm; B–D=1.0 mm; E=1.25 mm; F=0.125 mm.

Distribution. Recorded from scattered locations in the tropical western Atlantic: Harrington, Bermuda (Lebour 1949), Dry Tortugas, Florida (Holthuis 1951b), West Flower Garden Bank (Pequegnat & Ray 1974), St Vincent and Bonaire (Humann *et al.* 2013), and Martinique (Poupin 2018). Known to occur in depths between 1 and 119 m depth. The species is herein recorded from Curaçao for the first time.

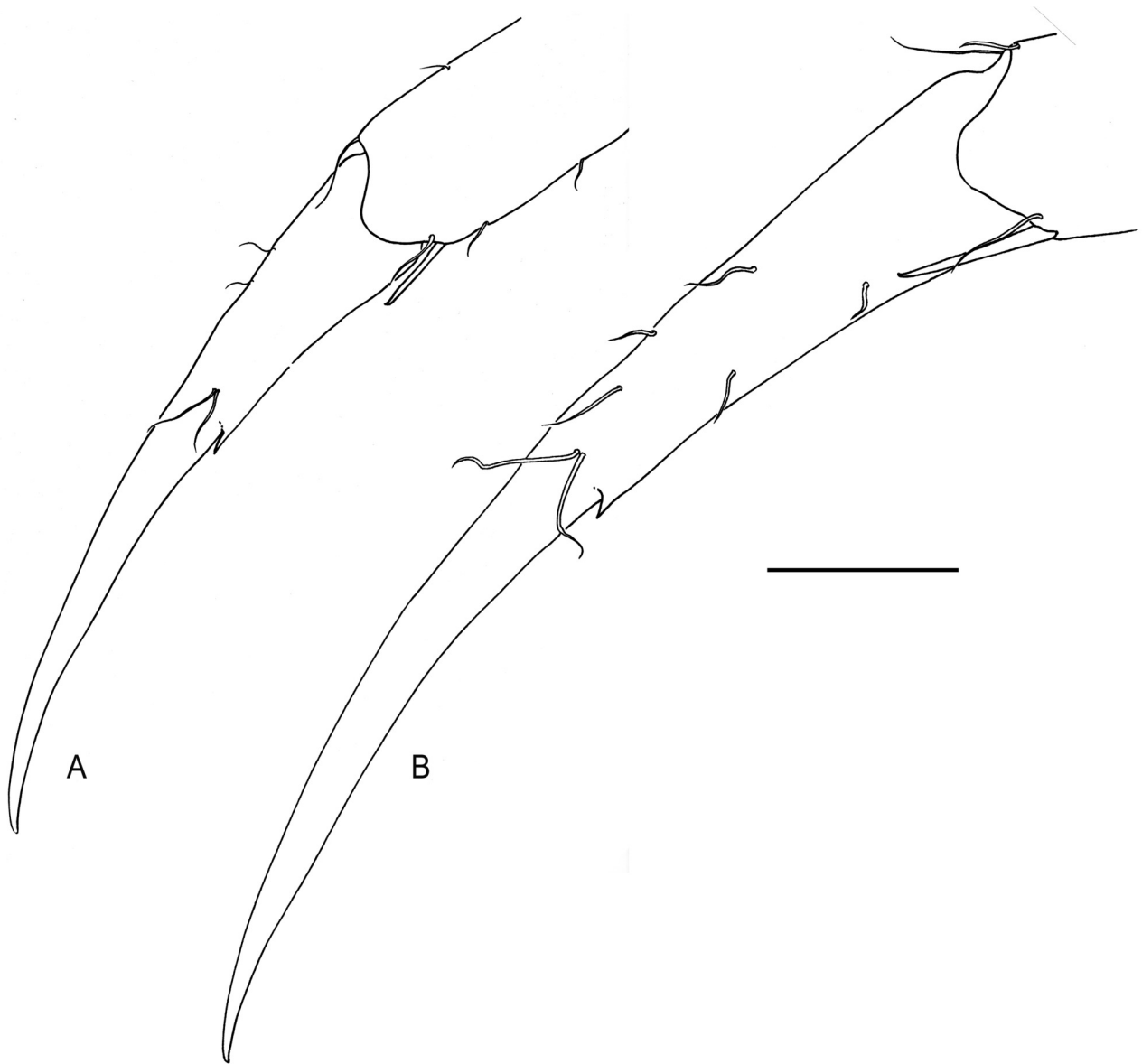


FIGURE 54. *Periclimenes harringtoni* Lebour, 1949. A, left third pereopod dactylus, ovigerous female, pocl. 4.5 mm, RMNH.CRUS.D.57905; B, idem, male, pocl. 2.7 mm, RMNH.CRUS.D.58230. Scale bar: A=0.25 mm; B=0.125 mm.

***Periclimenes* aff. *iridescens* Lebour, 1949**

(Figs. 55–61)

? *Periclimenes iridescens*—Criales 1980: 73 (Bonaire, Curaçao).

Material examined. Bonaire: RMNH.CRUS.D.57893: 4 ovigerous females, pocl. 1.6–1.8 mm, 1 male, pocl. 1.4 mm, 1 juvenile pocl. 1.1 mm, stn BON.26, Small Wall, 12°10.685'N 068°17.539'W, 3.xi.2019, depth 42 m, scuba diving, on tuft of algae on encrusting *Millepora* with *Nemaster grandis*, collected by C.H.J.M. Fransen.

Description. Small sized, rather slender shrimp, with slender pereopods (Fig. 55A). Carapace smooth. Rostrum (Fig. 55A–G) well developed, reaching to end of basal segment of antennular peduncle; lamina moderately deep, lateral carina indistinct, situated near to proximally slightly convex ventral margin with or without one small subdistal tooth; convex posterior part of ventral margin with single row of plumose setae proximally; dorsal margin convex, elevated, strongly compressed, with 5–6 subequal teeth, posteriormost tooth slightly more distant from distal teeth than distance between distal teeth, situated well behind posterior margin of orbit; few plumose setae

just in front of dorsal teeth. Supra-orbital spines absent. Inferior orbital angle well developed, produced, rounded in lateral view. Antennal spine small, submarginal, situated below inferior orbital angle. Hepatic spine distinctly larger than antennal spine, situated well behind level of posterior orbital margin and slightly below level of antennal spine. Anterolateral angle of carapace (Fig. 55B) bluntly rounded, not produced.

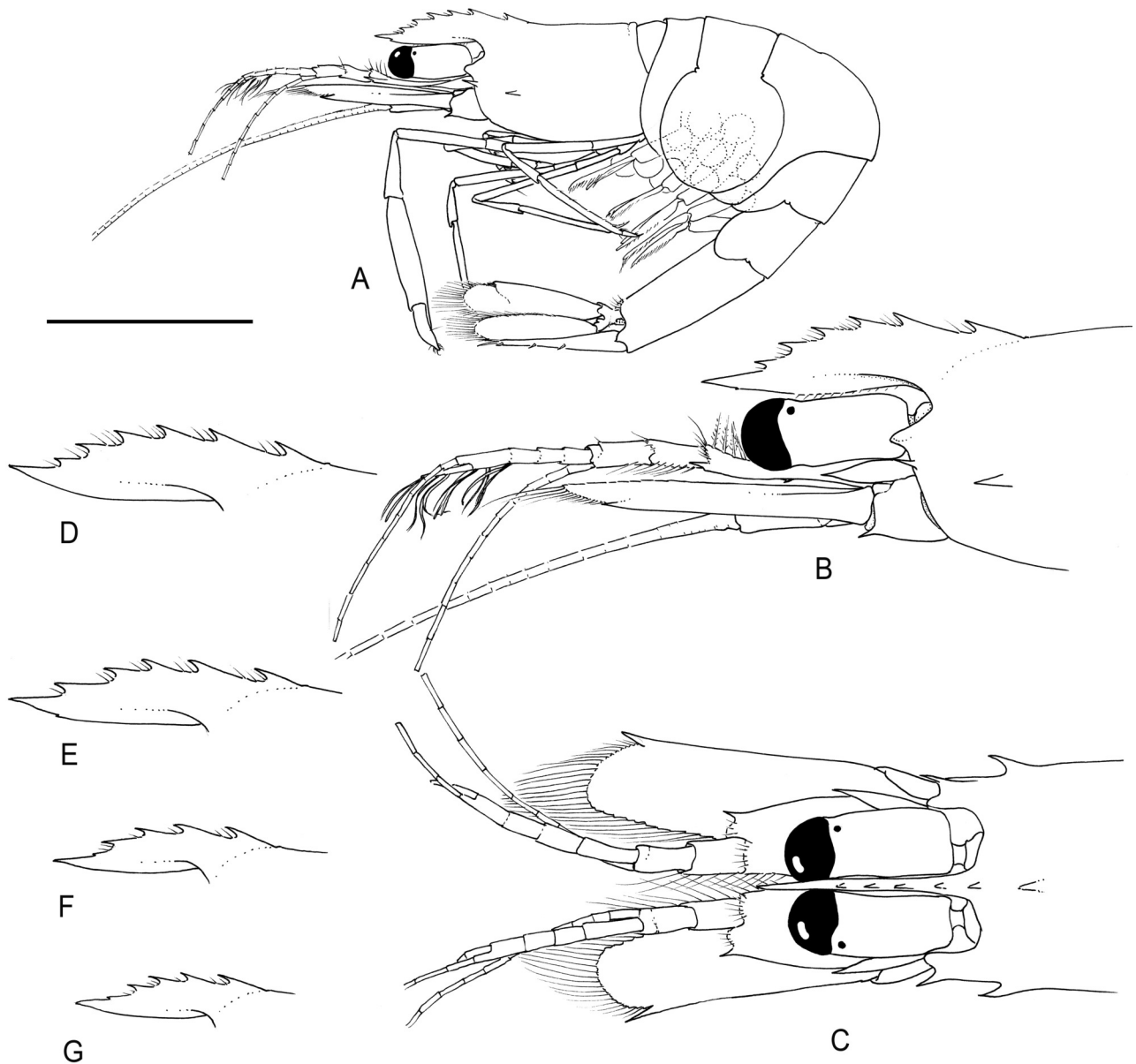


FIGURE 55. *Periclimenes* aff. *iridescens* Lebour, 1949, RMNH.CRUS.D.57893. A–C, ovigerous female, pochl. 1.8 mm; D, ovigerous female, pochl. 1.7 mm; E, ovigerous female, pochl. 1.6 mm; F, male pochl. 1.4 mm; G, juvenile pochl. 1.1 mm. A, habitus, lateral; B, anterior appendages, lateral; C, anterior appendages, dorsal; D–G, rostrum, lateral. Scale bar: A=2.0 mm; B–G=1.0 mm.

Pleon (Fig. 55A) smooth. Third pleonite not produced posterodorsally. Pleura all broadly rounded. Sixth abdominal pleonite twice as long as fifth, posteroventral angle feebly produced, rounded, posterolateral angle acute.

Telson (Fig. 56A–C) 0.85 times as long as sixth pleonite and 3.9 times longer than anterior width; lateral margins converge posteriorly; two pairs of small sized submarginal dorsal cuspidate setae present at 0.50 and 0.75 of telson length; posterior margin 0.43 of anterior width, with median acute process, with three pairs of spiniform setae; lateral pair short, slightly shorter than dorsal cuspidate setae; intermediate spiniform setae well developed, about 0.19 of telson length, 2.0 times length of submedian spiniform setae.

Eyes (Fig. 55B, C) well developed; cornea globular, with distinct accessory pigment spot dorsolaterally; eyestalks twice as long as proximal width.

Antennular peduncle (Fig. 55B, C) exceeding tip of rostrum by distal two segments; proximal segment long, slender, 2.7 times longer than wide; lateral margin slightly convex, anterolateral margin produced, with strong distolateral tooth and row of setae; medial ventral margin with tooth; stylocerite slender, acute, almost reaching to middle of segment; statocyst containing granular statolith; intermediate and distal segments short, together equal to 0.5 of proximal segment length; upper outer flagellum biramous, with first 4 segments fused; aesthetascs present on distal 4 segments of fused part and short free ramus; shorter free ramus two-segmented, longer rami with about 9 segments; lower inner flagellum slender, about as long as upper flagellum.

Antennal basicerite (Fig. 55B) with lateral tooth; ischiocerite and merocerite normal; carpocerite slender, reaching 0.4 of length of scaphocerite; scaphocerite long, rather slender, with lamella overreaching distal margin of antennular peduncle; lateral border straight, ending in acute large distolateral tooth; lamella extending beyond distolateral tooth, feebly angulated distomedially, about 3.3 times longer than wide, with greatest width at about half of its length.

Epistome and labrum normal.

Second and third thoracic sternites unarmed. Fourth thoracic sternite without medial process, with shallow lateral carinae posteromedial of first pereopods.

Fifth thoracic sternite with shallow lateral plates posteromedial of second pereopods.

Sixth to eighth thoracic sternites unarmed.

Mandible (Fig. 56D, E) with cylindrical molar process bearing a few brushes of setae distally; incisor process slender, with four well developed teeth distally of right mandible, of which lateralmost and medialmost teeth slightly enlarged, with two small denticles subdistally on medial margin; left mandible with incisor process with five well developed teeth distally of which lateralmost and medialmost teeth enlarged; without palp.

Maxillula (Fig. 56F) with upper lacinia subrectangular with row of few spines and serrulate setae medially; lower lacinia slenderer, with few serrulate setae distally; palp bilobed, medial lobe with single short recurved simple seta.

Maxilla (Fig. 56G) with short tapering non-setose palp with few plumose setae laterally; basal endite well developed, distinctly bilobed, with minutely serrulate setae medially; coxal endite obsolete, median margin convex, without setae; scaphognathite normal, widest centrally, about 2.8 times longer than broad, with marginal plumose setae.

First maxilliped (Fig. 56H) with short, slender, tapering palp without setae; basal region broad, not distinctly separated from the coxal region; median margin of coxa and basis provided with setulose and slender simple setae; caridean lobe distinct, with coarsely setulose plumose marginal setae; flagellum of exopod well developed with 4 long plumose distal setae and few short subdistal setae; epipod rounded.

Second maxilliped (Fig. 57A) with dactylar segment narrow, 3.1 times longer than wide, straight medially, densely fringed with numerous coarsely serrulate, spiniform, and long curled, finely serrulate setae medially; propodal segment longer than dactylar segment, almost twice as long as wide, distomedial margin rounded, with few long serrulate and simple setae; carpus short, unarmed; meral segment short, not excavate; ischium excavate, fused to basis; basis with long slender exopod exceeding length of endopod, with 4 long plumose setae distally; coxa slightly produced medially, with rounded small oblong epipod laterally.

Third maxilliped (Fig. 57B) slender; terminal segment 4.5 times longer than proximal width, slightly shorter than length of penultimate segment, with few serrulate and simple setae medially; penultimate segment slender, 4.7 times longer than wide; meral and ischial segments fused, 1.5 times longer than penultimate segment, with long setae along medial margin; basal segment short, medial margin convex with few long setae; exopod reaching 0.7 of ischiomerall segment, with 4 plumose setae distally; coxa slightly produced medially, with rounded lateral plate, without arthrobranch.

First pereopod (Fig. 57C) slender, almost reaching distal margin of scaphocerite; chela with palm subcylindrical, straight, twice as long as wide; fingers almost as long as palm, straight not subspatulate, with brushes of few setae in distal part, cutting edges entire, tips of fingers hooked; carpo-propodal brush well developed; carpus 1.1 times length of chela, 3.75 times longer than distal width; merus slightly longer than carpus, about twice length of ischium; ischium with few long simple setae medially; basis short, with few long simple setae medially; coxa with small medial protuberance with long simple seta.

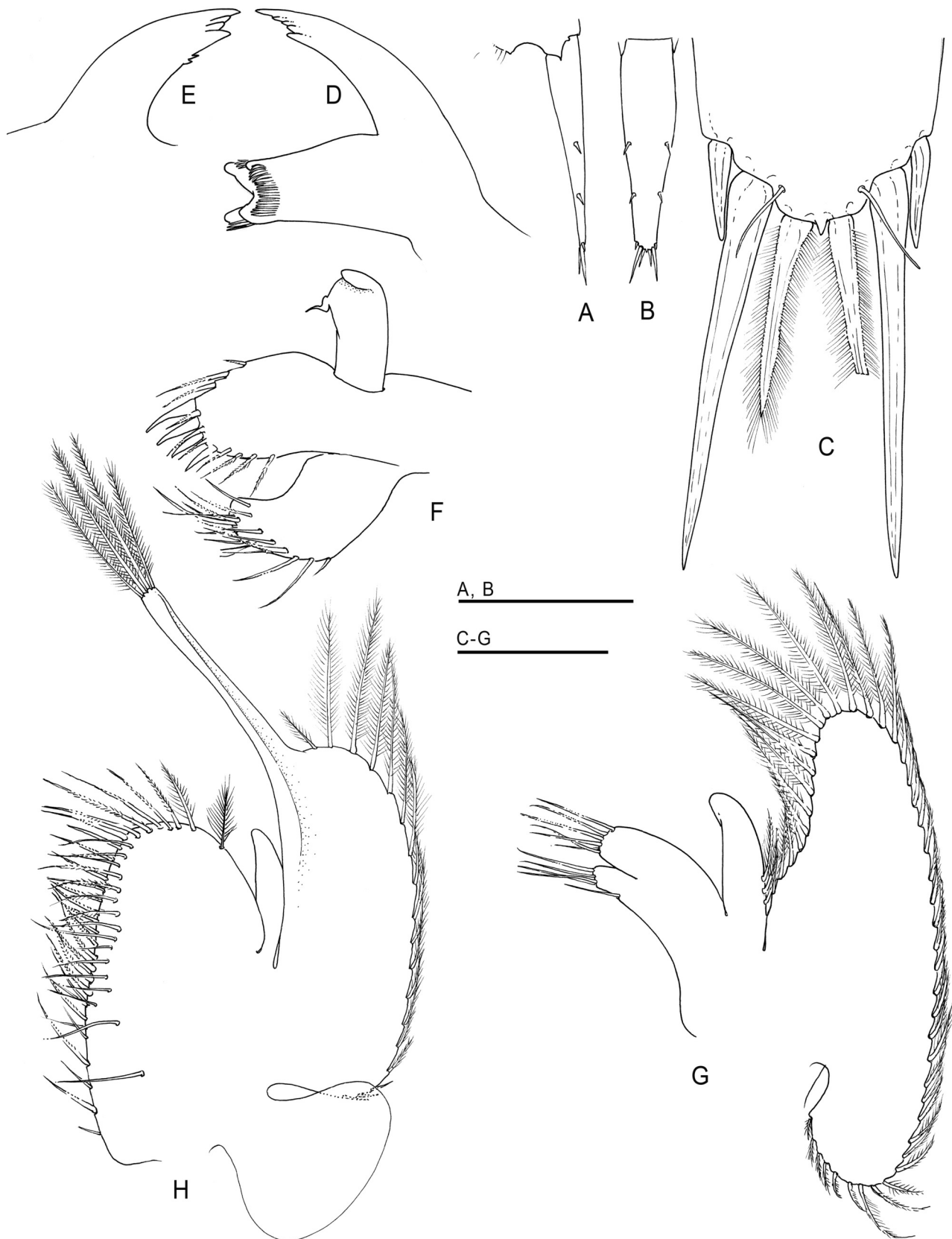


FIGURE 56. *Periclimenes* aff. *iridescens* Lebour, 1949, RMNH.CRUS.D.57893, ovigerous female, pochl. 1.8 mm. A, telson, lateral; B, idem, dorsal; C, idem, tip, dorsal; D, left mandible; E, right mandible, incisor process; F, left maxillula; G, left maxilla; H, left first maxilliped. Scale bars: A, B=1.0 mm; C=0.125 mm; D–G=0.25 mm.

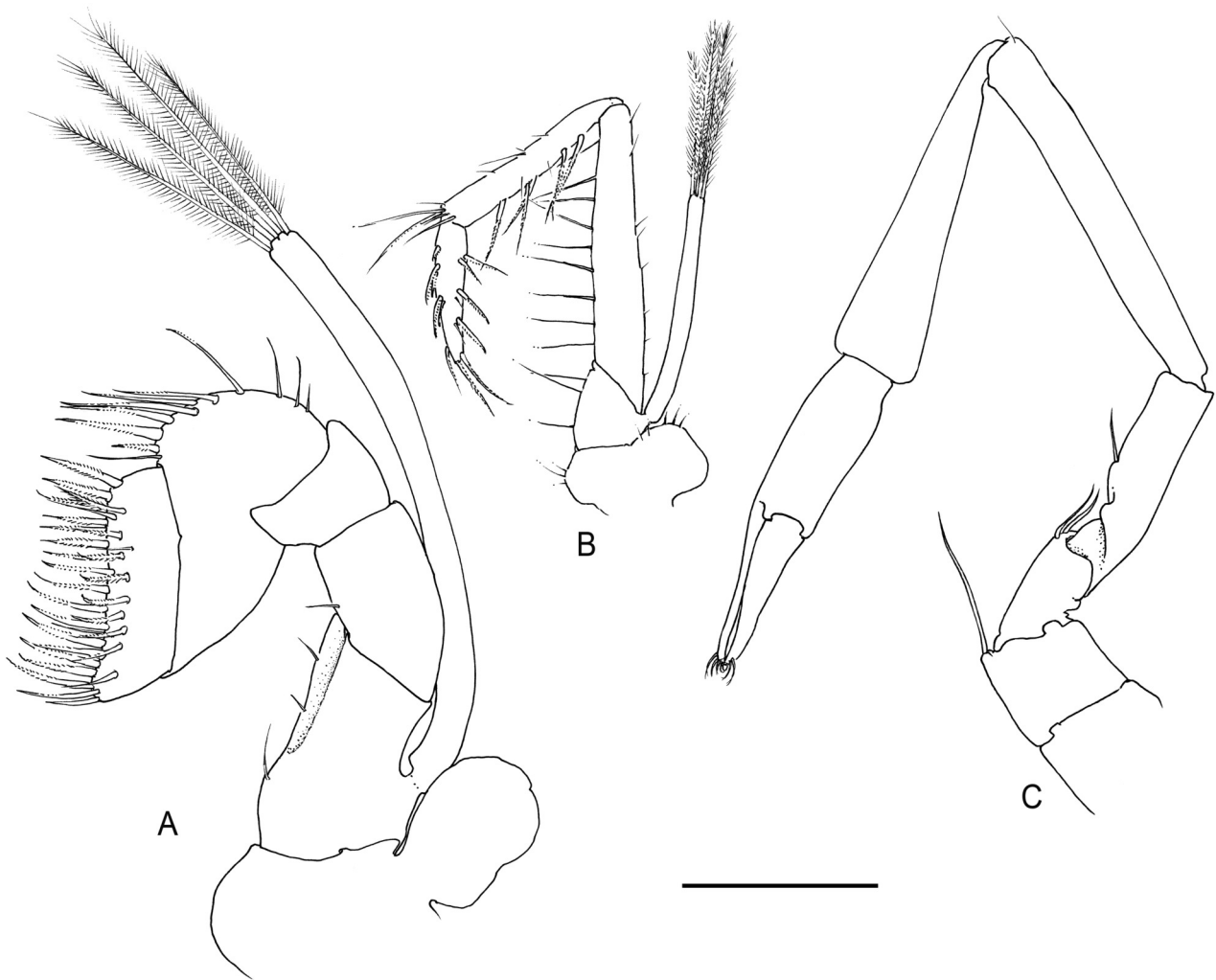


FIGURE 57. *Periclimenes* aff. *iridescens* Lebour, 1949, RMNH.CRUS.D.57893, ovigerous female, pocl. 1.8 mm. A, left second maxilliped; B, left third maxilliped; C, left first pereiopod. Scale bar: A=0.25 mm; B, C=0.5 mm.

Second pereiopods, subequal in length, dissimilar. Major second pereiopod (Fig. 58A) extending beyond antennular peduncle with chela; chela with palm subcylindrical, straight; palm about 4.4 times as long as wide; fingers (Fig. 58B–D) 0.46 of palm length, very slightly gaping centrally; dactylus about as wide as fixed finger, with distinct dorsolateral longitudinal carina, with brushes of setae in distal part, unguis strongly hooked, cutting edge with one triangular tooth proximally; fixed finger with tip strongly hooked, cutting edge with one triangular tooth in proximal half, at same level of tooth on cutting edge of dactylus; carpus, merus and ischium unarmed, their length ratios of 0.55, 0.80, and 0.88 times length of palm; basis and coxa without special features. Minor second pereiopod (Fig. 59A), similar but more slender than major pereiopod; chela with palm subcylindrical, straight; palm about 3.7 times as long as wide; fingers (Fig. 59B, C) 0.85 times as long as subcylindrical palm, slender, cutting edges not gaping, entire; dactylus without dorsolateral longitudinal carina; carpus, merus and ischium unarmed, their length ratios of 1.8, 1.3, and 1.5 times length of palm; basis and coxa without special features.

Ambulatory pereiopods (Fig. 60A, C, E) slender, similar in form, slightly increasing in length from third to fifth; dactylus (Fig. 60B) of third pereiopod slender, uniformly tapering, about 0.23 of propodus length, 4.4 times as long as proximal width, with slender unguis 0.65 times as long as corpus, with short accessory tooth, 0.22 times unguis length; propodus about 12 times longer than wide, with two distoventral serrulate spiniform setae and few simple spiniform seta subdistally on ventral border, with few plumose and simple setae distally on dorsal margin; carpus, merus and ischium 0.41, 0.88, and 0.48 of propodus length, unarmed; basis and coxa without special features; fourth pereiopod (Fig. 60C, D) similar, with row of one pair of serrulate spiniform setae, one single serrulate spiniform

seta, and one simple spiniform seta on distoventral margin of propodus; fifth pereopod (Fig. 60E, F) with row of two pairs of serrulate spiniform setae and one single serrulate spiniform seta on distoventral margin of propodus.

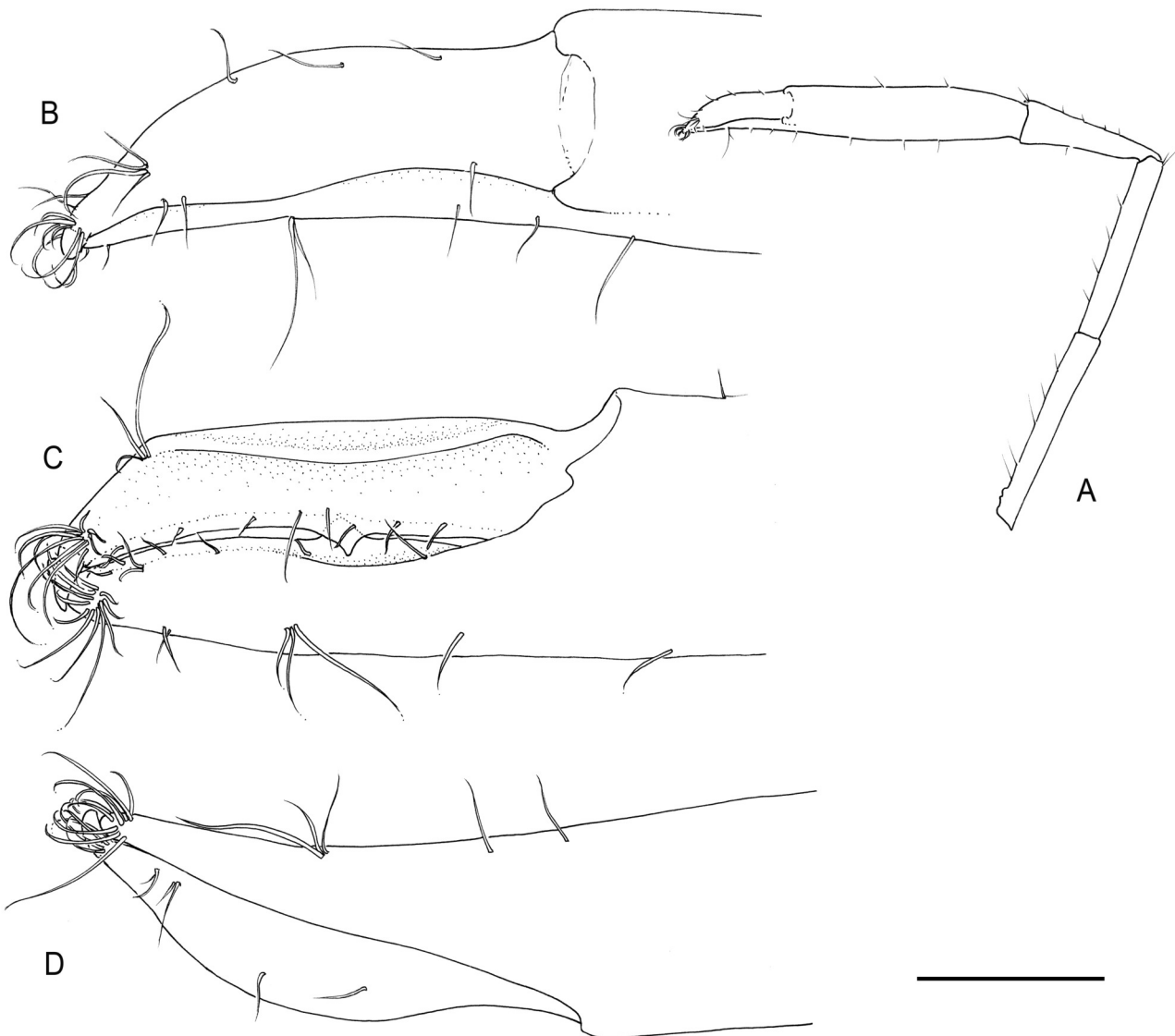


FIGURE 58. *Periclimenes* aff. *iridescens* Lebour, 1949, RMNH.CRUS.D.57893, ovigerous female, pochl. 1.8 mm. A, left major second pereopod; B, idem, chela, dorsal view; C, idem, chela, lateral view; D, idem, chela, ventral view. Scale bar: A=1.25 mm; B–D=0.25 mm.

Endopod of first pleopod in ovigerous female (Fig. 61C) short, 0.26 of length of exopod, with long plumose setae along its entire margin. Endopod of first pleopod in male (Fig. 61A) short, 0.47 times length of exopod, distally rounded, with 3 plumose setae along lateral margin and one long plumose seta in proximal part of medial margin with three small short setae somewhat more anteriorly. Endopod of second pleopod in male (Fig. 61B), 0.90 times length of exopod. Appendix masculina almost as long as appendix interna, with four long setae (sub)distally.

Uropods (Fig. 55A) extending beyond tip of telson; protopodite unarmed laterally; exopod with lateral border almost straight, entire, 2.9 times longer than wide, slightly longer than endopod, terminating in a small tooth with small mobile spiniform seta medially (Fig. 61D).

About 30 eggs of ca. 0.5 mm in diameter present under abdomen.

Size. Ovigerous female pochl. 1.75 mm.

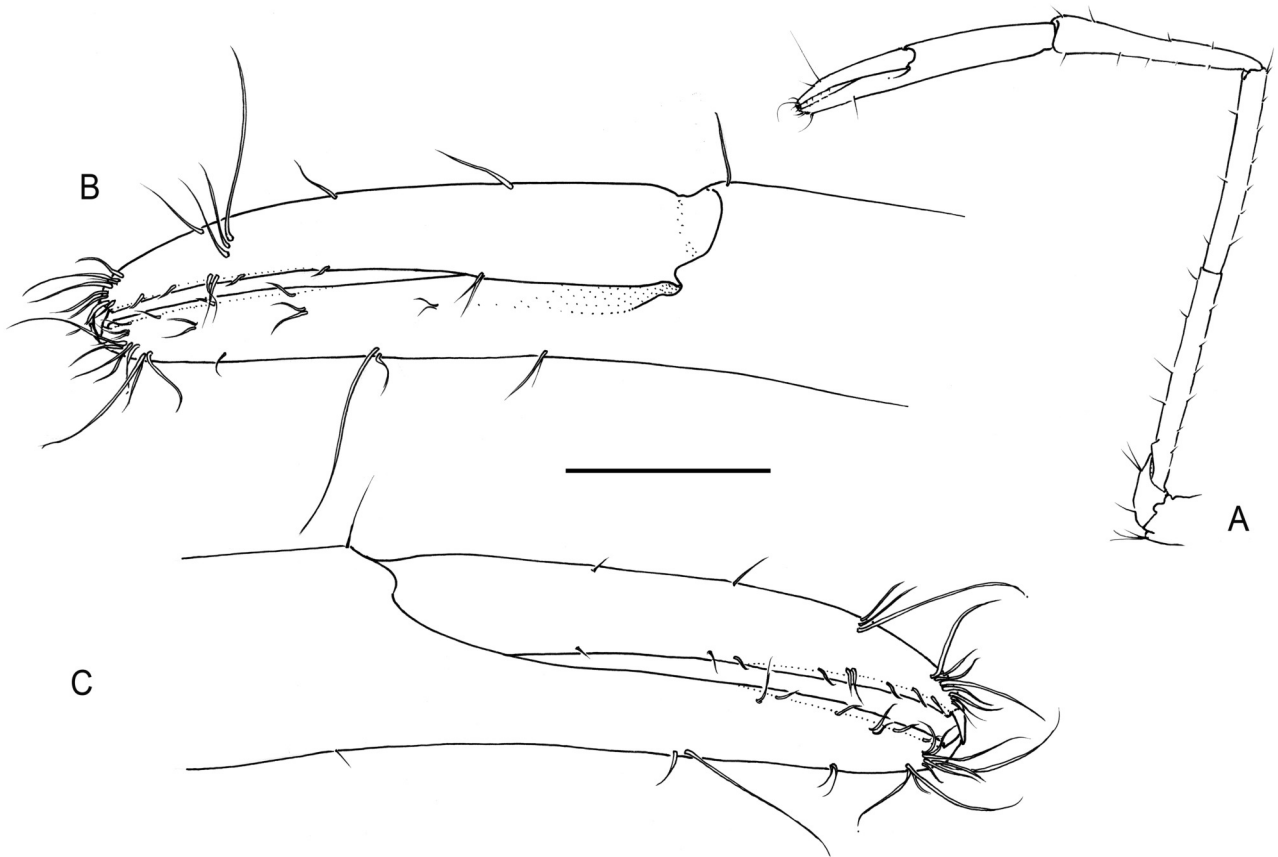


FIGURE 59. *Periclimenes* aff. *iridescens* Lebour, 1949, RMNH.CRUS.D.57893, ovigerous female, pochl. 1.7 mm. A, left minor second pereiopod; B, idem, chela, dorsolateral view; C, idem, chela, medial view. Scale bar: A=1.25 mm; B–C=0.25 mm.

Colour. The species was accidentally recorded on video but the footage is not very clear. It seems largely translucent with small scattered white chromatophores at the basis of the tail fan, and appendages, with a red longitudinal line running from the antennulae ventrally over the sternum and abdomen, and a white longitudinal line over the carapace dorsally. The cornea of the eyes is whitish as well as the eggs in the ovigerous females.

Remarks. The present specimens fit the original description by Lebour (1949) and the redescription of the holotype specimen by Heard & Spotte (1991). The holotype ovigerous female (pochl. 2.0 mm) is slightly larger than the largest female (pochl. 1.75 mm) from Bonaire. The holotype has 7 dorsal rostral teeth whereas the two largest females (Fig. 55B, D) from Bonaire have 6 dorsal rostral teeth. The smaller specimens (Fig. 55E–G) from Bonaire have 5 dorsal rostral teeth. A small subdistal ventral tooth on the rostrum described for the holotype is present in two specimens (Fig. 55B, E) from Bonaire; the other specimens (Fig. 55D, F, G) lack a ventral tooth there. The second pereiopods are very unequal as described for the holotype; the proportions of the segments in the material from Bonaire are also similar to those in the holotype. A remarkable feature of the holotype is the rounded form of the tooth on the cutting edge of the major chela movable finger and the absence of a tooth there on the fixed finger (Heard & Spotte 1991: fig. 5d). In the present material a triangular tooth is present on the cutting edges of both fingers (Fig. 58C). Another remarkable feature in the holotype as drawn by Lebour (1949: fig. 4.11) but not mentioned in her description is the dorsolateral longitudinal carina on the dactylus of the major second chela. This feature is also striking in the material from Bonaire (Fig. 58B–D). In the holotype the dactylus of the major chela is curving over and extending well beyond the fixed finger; in the material from Bonaire this is also observed, but not as distinct as in the holotype. The ambulatory pereiopods (Fig. 60) are as described for the holotype; with biunguiculate dactyli and few sets of spines in the distal part of propodal flexor margins; these spines are finely serrate in the present material which has not been noted for the holotype. The armament of the telson is as in the holotype, including the median acute process on the posterior margin (Fig. 56C).

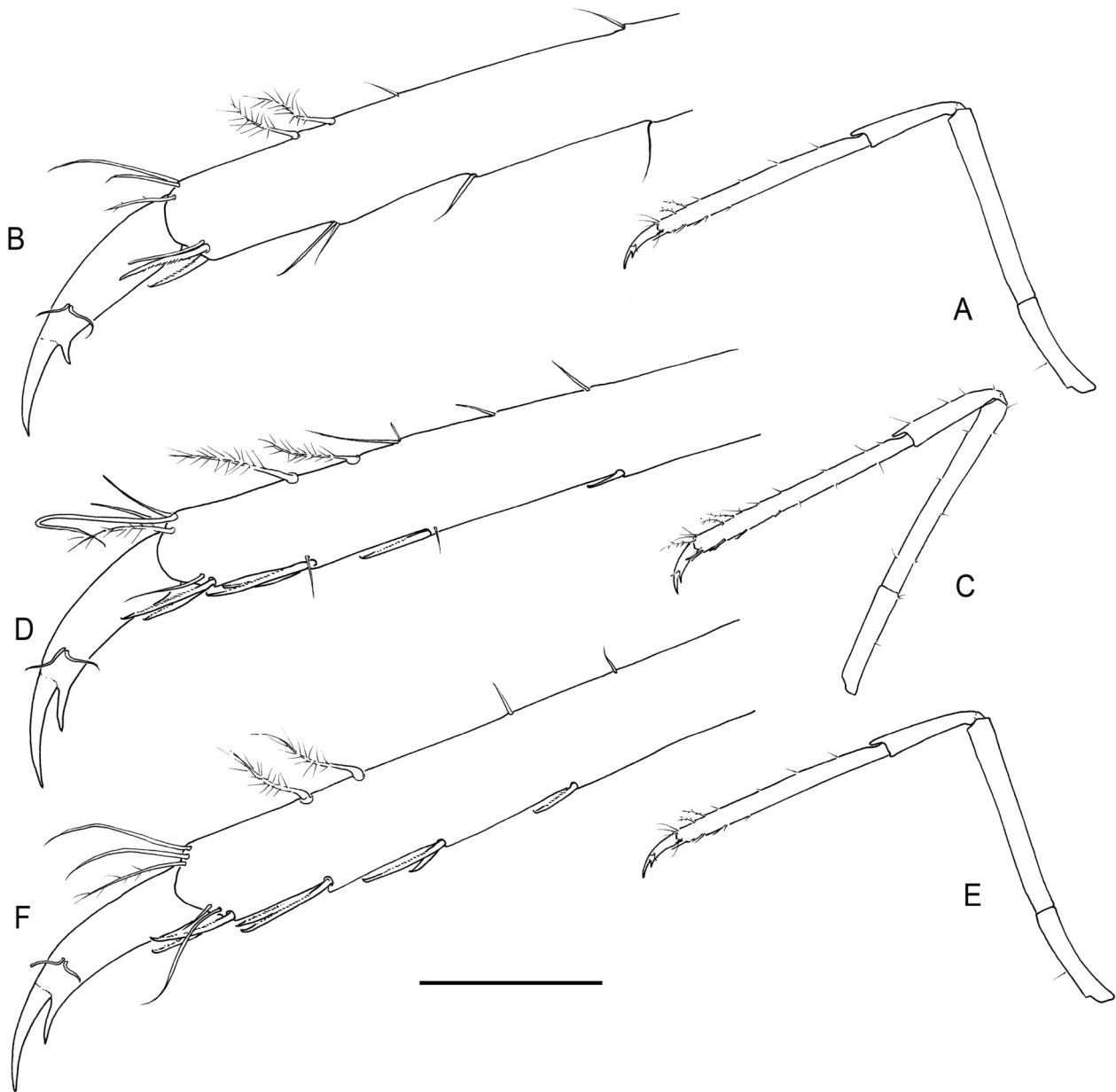


FIGURE 60. *Periclimenes* aff. *iridescens* Lebour, 1949, RMNH.CRUS.D.57893, ovigerous female, pochl. 1.7 mm. A, left third pereopod, lateral view; B, idem, dactylus and distal part propodus; C, left fourth pereopod, lateral view; D, idem, dactylus and distal part propodus; E, left fifth pereopod, lateral view; F, idem, dactylus and distal part propodus. Scale bar: A, C, E=1.25 mm; B, D, F=0.25 mm.

The present specimens could well be conspecific with *P. iridescens*. *Periclimenes iridescens* has been recorded in the western North Atlantic several times: off Venezuela (Holthuis, 1951b), Tobago (Chace 1972; Abele & Kim, 1986), Curaçao and Bonaire (Criales 1980), Colombia (Criales 1984); Islas del Rosario, Columbia (Corredor *et al.* 1979); Florida Gulf coast (Hopkins *et al.* 1977; Herbst *et al.* 1979; Williams 1984), Cape Hatteras, North Carolina (Herbst *et al.* 1979; Williams 1984), Los Roques (Grajal & Laughlin 1984; Rodríguez 1986), Martinique (Carré 2005; Poupin 2018), and Cubague (Hernández-Ávila *et al.* 2007). However, most of these records are doubtful as several closely related and very similar species have been described in the species complex since: *P. patae* Heard & Spotte, 1991; *P. antipathophilus* Spotte, Heard & Bubucis, 1994; *P. mclellandi* Heard & Spotte, 1997; *P. colesi* De Grave & Anker, 2009; and *P. sandyi* De Grave, 2009. Another species initially recognized in the *P. iridescens* species complex as *P. siankaanensis* Martínez-Mayén & Román-Contreras, 2006 was subsequently transferred to the genus *Phycomenes* Bruce, 2008 (Bruce 2010).

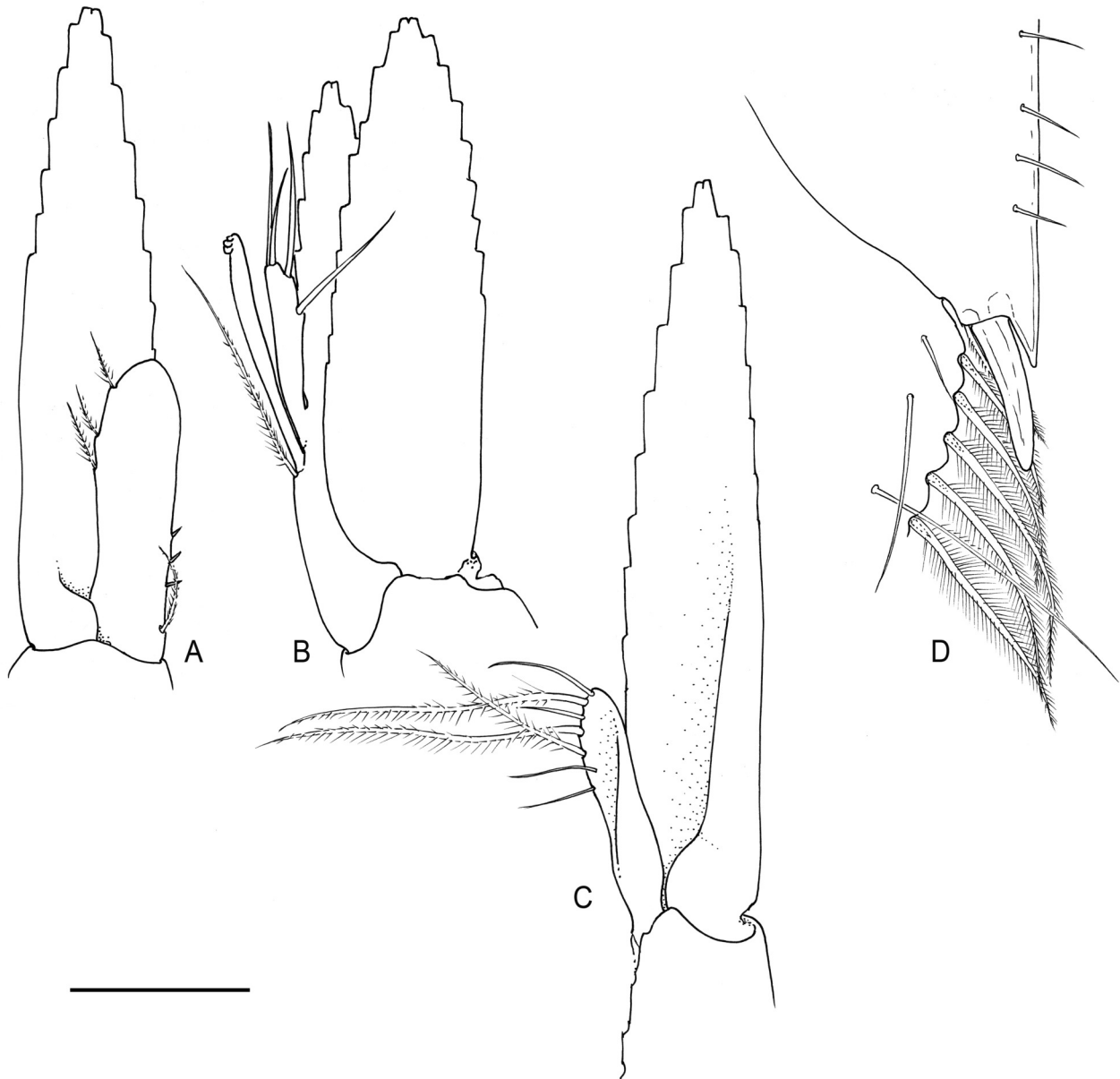


FIGURE 61. *Periclimenes* aff. *iridescens* Lebour, 1949, RMNH.CRUS.D.57893. A, B, male, pochl. 1.4 mm; C, D, ovigerous female, pochl. 1.7 mm. A, C, left first pleopod; B, left second pleopod; D, uropod, exopod, distolateral part. Scale bar: A–C=0.25 mm; D=0.125 mm.

Ecology. The present material was collected from considerable depth (42 m) as was the holotype specimen (80–100 fms (= 146–183 m)). As the holotype of *P. iridescens* was collected by tow-net, a possible host was not recorded. The present material was collected from a tuft of algae overgrowing *Millepora* sp. overgrowing a *S. luetkeni* wire coral with the crinoid *N. grandis* on which the shrimp was also recorded.

Distribution. The distribution of the species remains unclear due to the confusion with other species within the *P. iridescens* species complex (see below). Criales (1980) mentioned *P. iridescens* from both Curaçao and Bonaire.

***Periclimenes mclellandi* Heard & Spotte, 1997**

(Fig. 62)

Periclimenes mclellandi—Horká *et al.* 2016: supplementary table 1 (Curaçao).

Material examined. Curaçao: ZMA.CRUS.D.103516: 15 damaged specimens, Piscaderabaai, 2nd buoy, 14.iv.1978, collected by J.H. Stock. RMNH.CRUS.D.51647: 1 damaged specimen, pocl. 1.6 mm, R=1+4/0; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, 02.v.2005, depth 17.4 m, scuba diving, on *Pseudoplexaura porosa* forma a (fcn. F109), collected by N. Snijders (fcn. g040). RMNH.CRUS.D.51648: 1 ovigerous female, pocl. 1.5 mm, R=1+4/0; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, 02.v.2005, depth 17.4 m, scuba diving, on *P. porosa* forma a (fcn. F109), collected by N. Snijders (fcn. g041). RMNH.CRUS.D.58231: 1 specimen, stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 29.iv.2005, depth 18.5 m, scuba diving, on *Pseudopterogorgia* sp., collected by N. Snijders (fcn. g032). RMNH.CRUS.D.58232: 1 specimen, stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 29.iv.2005, depth 18.5 m, scuba diving, on *Pseudopterogorgia* sp., collected by N. Snijders (fcn. g033). RMNH.CRUS.D.58233: 1 ovigerous female, pocl. 1.6 mm, R=1+3/0, stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 29.iv.2005, depth 18 m, scuba diving, on *Pseudopterogorgia* sp., collected by N. Snijders (fcn. g031). RMNH.CRUS.D.51650: 4 specimens; stn CUR.05, south coast, Marie Pampoen/Carpile, 12°05'42.1"N 068°54'43.0"W, 10.vi.2005, depth 15.6 m, scuba diving, on *Plexaura nina* Bayer & Deichmann, 1958 (F398), collected by N. Snijders (g112). RMNH.CRUS.D.51644: 1 ovigerous female, pocl. 1.9 mm, R=1+4/0; stn CUR.05, south coast, Marie Pampoen/Carpile, 12°05'42.1"N 068°54'43.0"W, 09.v.2005, depth 16.7 m, scuba diving, on *Eunicea clavigera* Bayer, 1961 (F174), collected by N. Snijders (g057). RMNH.CRUS.D.51645: 1 ovigerous female, pocl. 1.9 mm, R=1+4/0; stn CUR.05, south coast, Marie Pampoen/Carpile, 12°05'42.1"N 068°54'43.0"W, 09.v.2005, depth 16.8 m, scuba diving, on *E. clavigera* (F175), collected by N. Snijders (g058). RMNH.CRUS.D.58234: 1 specimen, stn CUR.05, south coast, Marie Pampoen/Carpile, 12°05'42.1"N 068°54'43.0"W, 09.v.2005, depth 10.6 m, scuba diving, on *Plexaura* sp. a (fcn. F176), collected by N. Snijders (fcn. g059). RMNH.CRUS.D.58235: 1 specimen, stn CUR.09, south coast, Jan Thiel/Diver's Leap, 12°04'25.0"N 068°52'40.9"W, 23.v.2005, depth 16.3 m, scuba diving, on *P. nina* (fcn. F271), collected by N. Snijders (fcn. g081). RMNH.CRUS.D.58236: 1 specimen, stn CUR.12, south coast, Playa Jeremy, 12°19'44.1"N 069°09'00.2"W, 06.vi.2005, depth 18.5 m, scuba diving, on *Pseudoplexaura* sp., collected by N. Snijders (fcn. g105). RMNH.CRUS.D.58237: 1 specimen, stn CUR.15, south coast, Barank'I Karanito, 12°02'13.5"N 068°48'14.2"W, 19.v.2005, depth 14 m, scuba diving, on *P. nina* (F249), collected by N. Snijders (fcn. g076). RMNH.CRUS.D.51646: 1 ovigerous female, pocl. 1.3 mm, R=1+3/0; stn CUR.21, south coast, Sint Michielsbaai/Boka Sami, 12°08'50.9"N 068°59'56.6"W, depth 38.5 m, scuba diving, 31.v.2005, on *Muricea laxa* Verrill, 1864 (fcn. F332), collected by F. Stokvis (fcn. g091). RMNH.CRUS.D.51649: 3 ovigerous females, pocl. 1.8 mm, R=1+3/0; pocl. 1.6 mm, R=1+3/0; pocl. 1.6 mm, R=1+3/0; 2 males (DNA), pocl. 1.3 mm, R=1+3/0; pocl. 1.4 mm, R=1+3/0; stn CUR.25, south coast, Kleine Knip, 12°20'28.8"N 069°09'08.3"W, 08.vi.2005, depth 16.7 m, scuba diving, on *P. nina* (fcn. F387), collected by N. Snijders (fcn. g110). RMNH.CRUS.D.58238: 1 male, pocl. 1.0 mm, Tugboat, 19.vi.2017, depth 10 m, scuba diving, on soft coral, collected by C.H.J.M Fransen (fcn. CF19A-2). **Bonaire:** RMNH.CRUS.D.58239: 5 specimens, Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 6.xi.2019, depth unknown, scuba diving, on brown gorgonian, collected by Peter Wirtz (fcn. 9) (photo).

Remarks. The morphological characters of the present specimens agree well with the original description by Heard & Spotte (1997). Rostrum (Fig. 62A–C) straight, short, just overreaching midlength of basal segment of antennular peduncle in females, not extending midsection in males; dorsal lamina developed, with 4–5 dorsal teeth at equal distances, proximalmost tooth at level of orbital; ventral lamina slightly concave without teeth. Antennal tooth small (Fig. 62A, C); hepatic tooth (Fig. 62A–C) more robust, situated slightly below level of antennular tooth, directed forward. Third abdominal segment not produced posteriorly. Telson (Fig. 62D) with 2 pairs of small dorsal spines at about 0.6 and 0.85 of telson length which is slightly more distally in comparison to described for the type-material; lateral pair of distal spines as small as dorsal spines; posterior margin of telson (Fig. 62E) without median process in present material while present in type-material. Basal segment of antennular peduncle with distolateral tooth, without additional teeth on anterior margin. Maxilla with endite bilobed. Ischiomerus of third maxilliped without distomedial mobile spine; with rudimentary arthrobranch. Second pereopods equal or subequal, undifferentiated, lacking teeth on cutting edges of fingers; fingers slender, about as long as palm, dactylus without longitudinal carina. Ambulatory pereopods slender, with propodi straight, without spines on flexor margin except for distoventral one; dactyli (Fig. 62F) simple, not biunguiculate; unguis about 2/3rd of corpus length, joint between corpus and unguis indistinct.

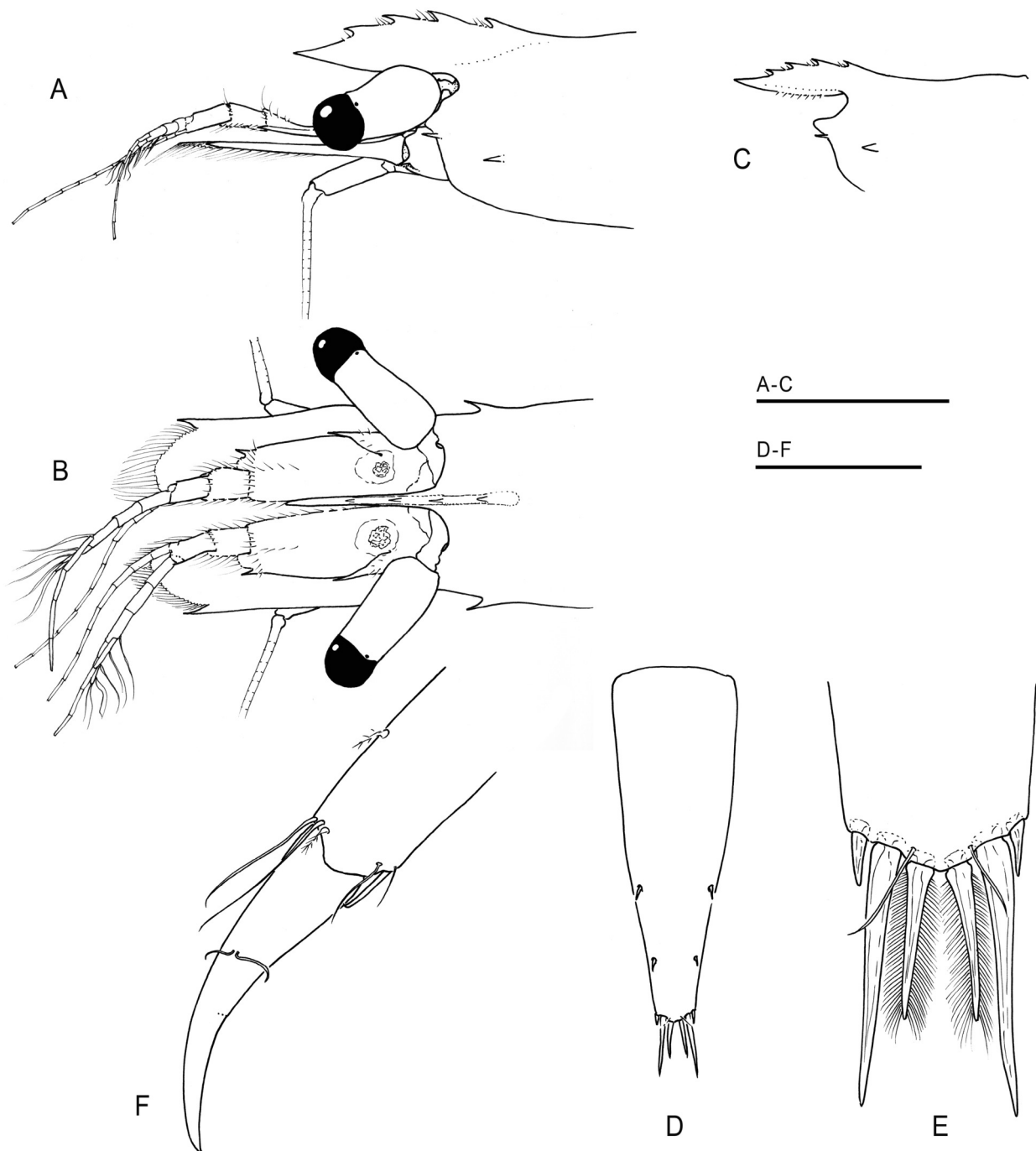


FIGURE 62. *Periclimenes mclellandi* Heard & Spotte, 1997. A, B, RMNH.CRUS.D.51649, ovigerous female, pochl. 1.8 mm; C–F, RMNH.CRUS.D.58238, 1 male pochl. 1.0 mm. A, anterior appendages, lateral view; B, idem, dorsal view; C, rostrum; D, telson, E, idem, tip; F, left third pereopod dactylus. Scale bars: A, B=1.0 mm; D=0.5 mm; E, F=0.125 mm.

Ecology. The species is primarily associated with shallow water gorgonians: *Antillogorgia americana* (Gmelin, 1791) (cf. Heard & Spotte 1997 (as *Pseudopterogorgia americana*); De Grave & Anker, 2017); and *Plexaurella* cf. *grandiflora* Verrill, 1912 (cf. De Grave & Anker 2017). The species has also been recorded on sponges (De Grave & Anker 2017). The species is herein recorded from: *Pseudoplexaura porosa*; *Plexaura nina*; *M. laxa*; and *E. clavigera* for the first time.

Distribution. Previously known from two locations in the tropical western Atlantic: Turks and Caicos Islands (Heard & Spotte 1997; Debelius 1999) and Caribbean coast of Panama (De Grave & Anker 2017). Known to occur in depths between 1 and 43 m. Herein recorded for the first time from Bonaire.

***Periclimenes meyeri* Chace, 1969**

Periclimenes meyeri Chace, 1969: 255 (Curaçao); Chace 1972: 37 (Curaçao).

Ecology. Symbiont of unstalked crinoids, probably of the genus *Nemaster* (cf. Chace 1969).

Distribution. Only known from its type locality on Curaçao (Chace 1969, 1972) and Las Islas del Rosario, Columbia (Corredor *et al.* 1979); at a depth of 24 m (Chace 1969).

***Periclimenes pandionis* Holthuis, 1951b**

Periclimenes pandionis—Olthof *et al.* 2018: 537 (Bonaire).

Ecology. There is no information available on its potential host.

Distribution. Only known from few localities in the tropical western Atlantic: the coast of Florida and the Indian River, and possibly Guadeloupe, in deeper waters between 33 and 385 m depth (Poupin & Corbari 2016). Previously recorded from Bonaire by Olthof *et al.* (2018).

***Periclimenes patae* Heard & Spotte, 1991**

(Fig. 63)

Periclimenes patae—Horká *et al.* 2016: supplementary table S1 (Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.58240: 1 juvenile, pocl. 0.9 mm, R1+2/0; stn CUR.08, south coast, Slangenbaai, 12°08'22.7"N 068°59'49.6"W, depth unknown, 04.v.2005, scuba diving, host unknown, collected by N. Snijders. RMNH.CRUS.D.51662: 1 ovigerous female, pocl. 2.0 mm, R=1+5/1, left second pereopod missing; 1 specimen, pocl. 1.4 mm, R=1+4/1; stn CUR.09, south coast, Jan Thiel/Diver's Leap, 12°04'25.0"N 068°52'40.9"W, 23.v.2005, depth 5 m, scuba diving, on *Eunicea tourneforti* forma *tourneforti* H. Milne Edwards & Haime, 1857 (fcn. F270), collected by N. Snijders (fcn. g080). RMNH.CRUS.D.58241: 5 juveniles, pocl. 0.7–0.9 mm, R=3/0; stn CUR.15, south coast, Barank'i Karanito, 12°02'13.5"N 068°48'14.2"W, 19.v.2005, depth 29.3 m, scuba diving, on *Antipathes* sp., collected by N. Snijders (fcn. g071). RMNH.CRUS.D.58242: 2 juveniles, pocl. 0.7 mm, R=3/0; pocl. 1.3 mm, R=4/0; stn CUR.15, south coast, Barank'i Karanito, 12°02'13.5"N 068°48'14.2"W, 19.v.2005, depth 28.7 m, on *Antipathes* sp., collected by N. Snijders (fcn. g072). RMNH.CRUS.D.58243: 1 specimen; stn CUR.28, south coast, Sponge Forest, 12°17'44.1"N 069°09'26.0"W, 14.vi.2005, depth 18.1 m, scuba diving, on *Pseudoplexaura porosa* forma *porosa* (Houttuyn, 1772) (fcn. F416), collected by N. Snijders (fcn. g119a). RMNH.CRUS.D.57057: 2 specimens; stn COA.04, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 2.xi.2013, depth 8 m, scuba diving, on *Gorgonia ventalina* Linnaeus, 1758, collected by B.T. Reijnen. RMNH.CRUS.D.58244: 1 specimen; stn COA.10, Waterfabriek II, 12°06'37.00"N 68°57'16.30"W, 30.x.2013, depth 7 m, scuba diving, on *Eunicea* sp., collected by C.H.J.M. Fransen. RMNH.CRUS.D.58245: 1 specimen; stn COA.10, Waterfabriek II, 12°06'37.00"N 68°57'16.30"W, 31.x.2013, depth 5 m, scuba diving, on *Pterogorgia citrina* (Esper, 1792), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58246: 3 juveniles, pocl.0.93–1.05 mm; stn COA.18, Playa Forti, 12°21'58.10"N 69°09'13.50"W, 1.xi.2013, depth 20 m, scuba diving, on *Antillogorgia* sp. (collected), collected by C.H.J.M. Fransen. OUMNH.ZC.2019-06-21: 6 specimens, pocl. 1.3–2.0 mm; Snake Bay, about 300 m east of Sun Reef, depth 30 m, 17.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittman (fcn. 10). OUMNH.ZC.2019-06-22: 3 females, pocl. 3.2–3.6 mm; Watamula, 12°23'1.3194"N 69°9'44.64"W, depth 18 m, 25.ii.2015, from *Gorgonia* sp., leg. P. Wirtz & K. Wittman (fcn. 28).

Remarks. The morphological characters of the present specimens agree well with the original description by Heard & Spotte (1991). Rostrum (Fig. 63A–G) straight, or distally slightly upcurved, short, just overreaching basal segment of antennular peduncle in larger specimens, shorter in smaller specimens; dorsal lamina developed, with 2–6 dorsal teeth at equal distances, proximalmost tooth postorbital in larger specimens; ventral lamina slightly concave with small subdistal tooth in large specimens or without teeth in small specimens. Antennal spine small (Fig. 63A, C–G); hepatic spine (Fig. 63A–G) slightly more robust, situated slightly below level of antennular spine, directed

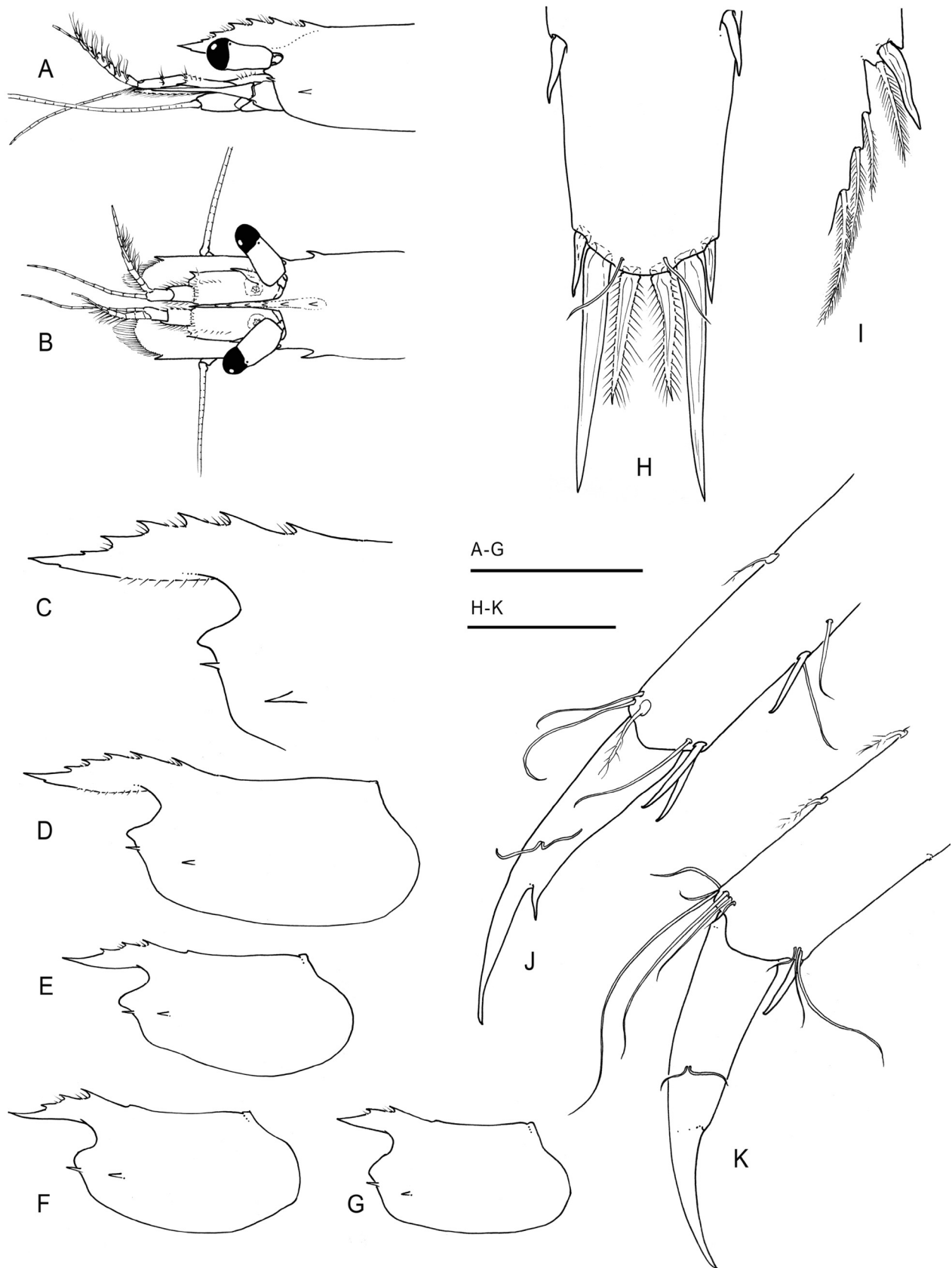


FIGURE 63. *Periclimenes patae* Heard & Spotte, 1991. A–D, K, RMNH.CRUS.D.51662; E–J, RMNH.CRUS.D.58246. A, anterior appendages, lateral view; B, idem, dorsal view; C, rostrum, ovigerous female, pocl. 2.1 mm; D, idem, male, pocl. 1.4 mm; E, juvenile, pocl. 1.1 mm; F, idem, pocl. 1.0 mm; G, idem, pocl. 0.9 mm; H, telson, tip; I, uropod exopod, distolateral part; J, K, left third pereiopod dactylus. Scale bars: A, B=2.0 mm; C–G=1.0 mm; H–K=0.125 mm.

forward. Third abdominal segment not produced posteriorly. Telson with 2 pairs of dorsal spines at about 0.6 and 0.75 of telson length; lateral pair of distal spines of same size as dorsal spines; posterior margin of telson (Fig. 63H) without median process in present material while present in type-material. Basal segment of antennular peduncle with distolateral tooth, without additional teeth on anterior margin. Maxilla endite not bilobed. Ischiomerus of third maxilliped without distomedial mobile spine; with rudimentary arthrobranch. Second pereopods equal or subequal, lacking teeth on cutting edges of fingers; fingers slender, about as long as palm, dactylus without longitudinal carina. Ambulatory pereopods slender, with propodi straight, without spines on flexor margin except for distoventral pair, occasionally a subdistal spine is present on the ventral margin (Fig. 63J); dactyli (Fig. 63K) usually simple, seldom biunguiculate with small accessory tooth (Fig. 63J); unguis about two thirds of corpus length, delineation between corpus and unguis indistinct (Fig. 63J, K). Exopod of uropod with very small distolateral tooth flanked by distinct mobile spine (Fig. 63I).

Ecology. Lives in association with shallow-water octocorals: *Antillologorgia americana* (Gmelin, 1791) (cf. Heard & Spotte 1997 as *Pseudopterogorgia americana*); *Plexaurella* sp. (De Grave & Anker 2017). Herein recorded for the first time from: *E. tourneforti*; *P. porosa*; *G. ventalina*; *P. citrina*; and the antipatharian *A. caribbeana*.

Distribution. Known from scattered locations in the tropical western Atlantic: Florida Keys, Turks and Caicos Islands (Heard & Spotte 1991); Caribbean coast of Panama (De Grave & Anker 2017). Known to occur in depths between 1 and 12 m. Previously recorded from Curaçao by Horká *et al.* (2016).

***Periclimenes pauper* Holthuis, 1951b**

Periclimenes pauper—Criales 1980: 74 (Curaçao).

Ecology. The unique type-specimen was collected in the littoral without mention of a host. Specimens collected by Criales (1980) were found on the octocoral *E. tourneforti*.

Distribution. Known from the West Atlantic: Cubagua (Holthuis, 1951b, as *Periclimenes (Harpilius) pauper*) and Curaçao (Criales 1980).

***Periclimenes perryae* Chace, 1942**

(Figs. 64–65, video 13)

Periclimenes perryae—Horká *et al.* 2016: supplementary table S1 (Curaçao); Faasse 2016: 52 (Sint Eustatius); Poupin 2018: 110 (Sint Maarten).

Material examined. Curaçao: RMNH.CRUS.D.57058: 11 specimens; stn COA.17, Cas Abou, 12°13'40.30"N 69°05'30.40"W, 03.xi.2013, depth 27 m, scuba diving, on *Astrophyton muricatum* (Lamarck, 1816), collected by B.T. Reijnen (photo COA.17 001–013). OUMNH.ZC.2019-06-23: 1 male, poel. 2.0 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 10 m, 17.ii.2015, from *A. muricatum*, leg. P. Wirtz & K. Wittman (fcn. 11). **Bonaire:** RMNH.CRUS.D.58247: 1 specimen; stn BON.19, Hilma Hooker, 12°06.271'N 068°17.291'W, 30.x.2019, depth 5 m, scuba diving, on *A. muricatum*, collected by B.W. Hoeksema. RMNH.CRUS.D.58248: 1 specimen; stn BON.27, Red Slave, 12°01.592'N 068°15.063'W, 03.xi.2019, depth 6 m, scuba diving, on *A. muricatum*, collected by A.H.M. Ligthart. RMNH.CRUS.D.58249: 1 male, 1 ovigerous female; stn BON.33, Invisibles, 12°04.646'N 068°16.800'W, 6.xi.2019, depth 7 m, scuba diving, on *A. muricatum*, collected by C.H.J.M. Fransen (video 13).

Remarks. The morphological characters of the present specimens agree well with the original description by Chace (1942) and figures provided by Holthuis (1951b). Rostrum (Fig. 64A, B) straight, slightly directed downward, reaching distal margin of distal segment of antennular peduncle; dorsal lamina not developed, with 7–8 dorsal teeth at equal distances, all on rostrum proper; ventral lamina straight or slightly concave with 1–2 small teeth distally. Hepatic tooth at level of antennular tooth, directed forward. Third abdominal segment not produced posteriorly. Telson (Fig. 64D) with 2 pairs of small dorsal spines at about 0.6 and 0.8 of telson length; lateral distal pair of same size as dorsal spines; posterior margin of telson (Fig. 64E) entire, without small triangular process. Basal segment of antennular peduncle (Fig. 64C) with distolateral tooth and additional 2 teeth on anterior margin. Maxilla with endite bilobed. Ischiomerus of third maxilliped without distomedial mobile spine. Second pereopods dissimilar and unequal; fingers

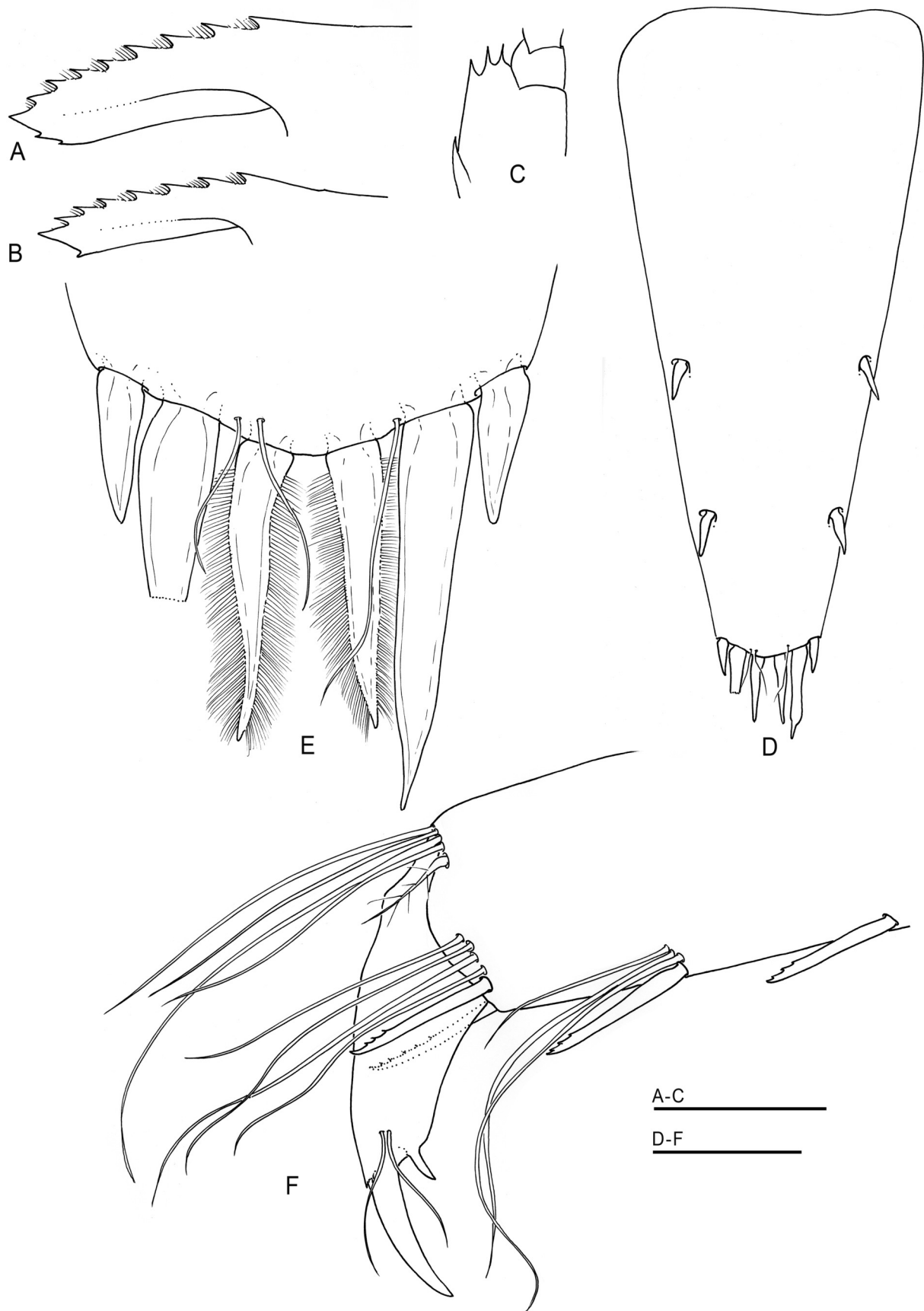


FIGURE 64. *Periclimenes perryae* Chace, 1942, RMNH.CRUS.D.58249 (fcn. BON.33-3). A, C–F, ovigerous female, pochl. 2.9 mm; B, male pochl. 1.9 mm. A, B, rostrum; C, antennular peduncle, basal segment, distal part, dorsal view; D, telson; idem, tip; E, left third pereiopod dactylus. Scale bars: A–C=1.0 mm; D=0.5 mm; E, F =0.125 mm.



FIGURE 65. *Periclimenes perryae* Chace, 1942, stn COA.17, Curaçao, Cas Abou, 12°13'40.30"N 69°05'30.40"W, 3.xi.2013, depth 27 m, on *Astrophyton muricatum* (Lamarck, 1816), collected by B.T. Reijnen. A, lateral view; B, dorsal view. (Photographs by C.H.J.M. Fransen.)

of major chela with pair of low teeth in proximal part of cutting edge each; movable finger curved, with distinct dorsal carina, fixed finger as broad as movable finger, ventral margin glabrous. Ambulatory pereopods with propodus straight, with two ventral distally serrate spines in distal part (Fig. 64F) and two distoventral distally serrate spines. Dactylus of third pereopod (Fig. 64F) with slightly concave flexor margin; accessory tooth distinct, subdistal and slender; dorsal margin with small scale-like structure at joint with unguis; unguis slender, about half length of corpus.

Ecology. The species is known to live in association with the basket star *Astrophyton muricatum* (Lamarck, 1816) (Chace 1942; Horká *et al.* 2016; Faasse 2016; De Grave & Anker 2017; Poupin 2018).

Distribution. Known from scattered locations in the tropical western Atlantic: Florida (Chace, 1942; Holthuis 1951b), Santa Marta, Colombia (Criales 1984), Sint Eustatius (Faasse 2016), Caribbean coast of Panama (Felder *et*

al. 2009; De Grave & Anker 2017), and Sint Maarten and Martinique (Poupin 2018). Occurring in depths between 1 and 10 m. Previous record from Curaçao by Horká *et al.* (2016). Herein recorded for the first time from Bonaire.

***Periclimenes rathbunae* Schmitt, 1924**

(Fig. 66, video 14)

Periclimenes rathbunae Schmitt, 1924a: 70 (Curaçao); Schmitt 1936: 370 (Bonaire); Holthuis, 1951b: 58 (Curaçao, Bonaire); Criales 1980 (Curaçao); Brinkmann & Fransen 2016: 438, 446 (Bonaire, Curaçao); Hoeksema & Fransen 2017: 607 (Curaçao); Poupin 2018: 110 (Sint Maarten).



FIGURE 66. *Periclimenes rathbunae* Schmitt, 1924. A, stn CAO.05, Curaçao, Car Wrecks, 12°09'39.60"N 69°00'14.70"W, 3.xi.2013, on *Stichodactyla helianthus* (Ellis, 1768); B, stn CAO.18, Curaçao, Playa Forti, 12°21'58.10"N 69°09'13.50"W, 1.xi.2013, depth 15 m, on *Condylactis gigantea* (Weinland, 1860); C, stn CAO.01, Curaçao, Hilton Reef, 12°07'18.44"N 68°58'0.23"W, 31.x.2013, depth 20 m; on *S. helianthus*; D, stn CAO.17, Curaçao, Cas Abou, 12°13'40.30"N 69°05'30.40"W, 3.xi.2013, depth 8 m, on *Dendrogyra cylindrus* (Ehrenberg, 1834); E, stn CAO.21, Curaçao, Marie Pampoën, 12°05'26.74"N 68°54'17.84"W, 5.xi.2013, depth 10 m, on *D. cylindrus*; F, stn BON.14, Bonaire, Bari, 12°10.036'N 068°17.219'W, 28.x.2019, depth 12 m, on *D. cylindrus*. (Photographs by C.H.J.M. Fransen.)

Material examined. Curaçao: RMNH.CRUS.D.58250: 2 specimens; stn CAR.14, Vaersenbaai, 12°09.678'N 68°00.23'W, 11.iv.2014, depth unknown, scuba diving, on sea anemone, collected by C. Rauch. OUMNH: several specimens, stn C2, Curaçao, Kokomo Beach, 26.ii.2015, depth unknown, on *Stichodactyla helianthus* (Ellis, 1768), collected by Peter Wirtz. Stn CF09A, Hilton reef, 9.vi.2017, depth 2 m, scuba diving, on *S. helianthus*, C.H.J.M. Fransen (video 14), not collected. Stn CF10B, St. Michielsbaai, 10.vi.2017, depth 5 m, scuba diving, on *S. helianthus*, C.H.J.M. Fransen (video 14), not collected. RMNH.CRUS.D.58251: 1 ovigerous female, pochl. 2.8 mm; stn CF14A-1, Playa Kalki, 14.vi.2017, depth 5 m, on *S. helianthus*, collected by C.H.J.M. Fransen. RMNH.CRUS.D.58252: 1 juvenile, pochl. 1.8 mm; stn CF14A-3, Playa Kalki, 14.vi.2017, depth 20 m, scuba diving, on *M. meandrites*, collected by C.H.J.M. Fransen (video 14). RMNH.CRUS.D.58253: 1 non ovigerous female, pochl. 3.9 mm; stn CF16B-2, Blue Bay, 16.vi.2017, depth 3 m, scuba diving, on *Condylactis gigantea* (Weinland, 1860), collected by C.H.J.M. Fransen (video 14). OUMNH.ZC.2019-06-24: 1 female, pochl. 3.0 mm; Vaersenbaai (= Kokomo Beach), 12°9'37.8"N 69°0'20.52"W, depth 39 m, 26.ii.2015, from *S. helianthus*, leg. P. Wirtz & K. Wittman (fcn. 31). **Bonaire:** RMNH.CRUS.D.58254: 1 specimen; stn BON.12, Kai (Lac), 12°06.255'N 068°13.347'W, 27.x.2019, depth 0.5 m, snorkeling, on *S. helianthus*, collected by C.H.J.M. Fransen (video 14). Stn BON.14, Bari, 12°10.036'N 068°17.219'W, 28.x.2019, depth 12 m, scuba diving, on *Dendrogyra cylindrus* (Ehrenberg, 1834), C.H.J.M. Fransen (photo), not collected. Stn BON.21, Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 31.x.2019, depth 8 m, scuba diving, *C. gigantea*, C.H.J.M. Fransen (video 14), not collected. RMNH.CRUS.D.58255: 1 specimen; stn BON.22, Kai (Lac), 12°06.183'N 068°13.333'W, 31.x.2019, depth 1 m, snorkeling, on *S. helianthus*, collected by W. de Gier. RMNH.CRUS.D.58256: 1 specimen; stn BON.27, Red Slave, 12°01.592'N 068°15.063'W, 3.xi.2019, depth 1 m, scuba diving, collected by M.A. Faasse. Stn BON.29, Front Porch, 12°09.904'N 068°17.194'W, 04.xi.2019, depth 10 m, scuba diving, on *D. cylindrus*, C.H.J.M. Fransen (video 14), not collected. Stn BON.33, Invisibles, 12°04.646'N 068°16.800'W, xi.2019, depth 5 m, scuba diving, on *D. cylindrus*, C.H.J.M. Fransen (video 14), not collected.

Ecology. Known to live in association with sea anemones: *Actinoporus elegans* Duchassaing, 1850, *Bartholomea annulata* (Lesueur, 1817), *B. granulifer* (Lesueur, 1817), *C. gigantea*, *Homostichanthus duerdeni* Carlgren, 1900, *L. neglecta*, *L. lucida*; with *S. helianthus* as preferred host (Silbiger & Childress 2008; De Grave & Anker 2017; Brooker *et al.* 2019). Occasionally found in association with the stony corals *D. cylindrus* (cf. Brinkmann & Fransen 2016) and *Mussa angulosa* (Pallas, 1766) (García-Hernández & Schizas 2021), the corallimorpharian *Ricordea florida* Duchassaing & Michelotti, 1860 (Ritson-Williams & Paul 2007), on the gorgonian *E. tourneforti* Milne-Edwards & Haime, 1857 (Criales 1980) and on the sea slug *Elysia crispata* Mörch, 1863 (Hoeksema & Fransen 2017). Herein for the first time recorded from the stony coral *M. meandrites*.

Distribution. Widely distributed in shallow waters of the tropical western Atlantic; usually in depth between 0 and 5 m, rarer in depths to 20 m (De Grave & Anker 2017).

***Periclimentes yucatanicus* (Ives, 1891)**

(Fig. 67, video 15)

Periclimentes yucatanicus – Brinkmann & Fransen 2016: 438 (Curaçao); Faasse 2016: 52 (Sint Eustatius); Wicksten 1995a: 458 (Bonaire); Wicksten 1995b: 477 (Bonaire); Poupin 2018: 110 (Sint Maarten).

Material examined. Curaçao: RMNH.CRUS.D.26237: 1 non-ovigerous female, pochl. 4.0 mm; 2 males pochl. 2.3 and 2.6 mm; Piscaderabaai, off Carmabi, viii.1968, collected by F. Nijhout. RMNH.CRUS.D.37650: 5 ovigerous females, pochl. 3.4–4.8 mm, 1 non-ovigerous female, pochl. 2.9 mm; Bojeo, 22.vii.1978, depth 10 m, on *Condylactis gigantea*, collected by Svoboda. RMNH.CRUS.D.30623: 1 ovigerous female pochl. 5.3 mm; Piscaderabaai, 16.iv.1972, depth 1–3 m, coral reef, on *C. gigantea*, collected by J.C. den Hartog (fcn. 1126). RMNH.CRUS.D.30624: 1 damaged non-ovigerous female, Piscaderabaai, 07.iv.1971, depth 1 m, coral reef, on *C. gigantea*, collected by J.C. den Hartog (fcn. 2). RMNH.CRUS.D.37650: 5 ovigerous females pochl. 3.4, 3.5, 3.9, 4.2, and 4.3 mm; 1 non-ovigerous female pochl. 2.6 mm; Bojeo, 22.vii.1978, depth 10 m, on *C. gigantea*, collected by Svoboda. RMNH.CRUS.D.58258: 1 ovigerous female pochl. 3.7 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, 26.iv.2005, depth 14.8 m, scuba diving, on *C. gigantea*, collected by N. Snijders (fcn. g005). RMNH.CRUS.D.58259: 1 ovigerous female pochl. 4.3 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 16.7 m, 26.iv.2005, scuba diving, on *C. gigantea*, collected by N. Snijders

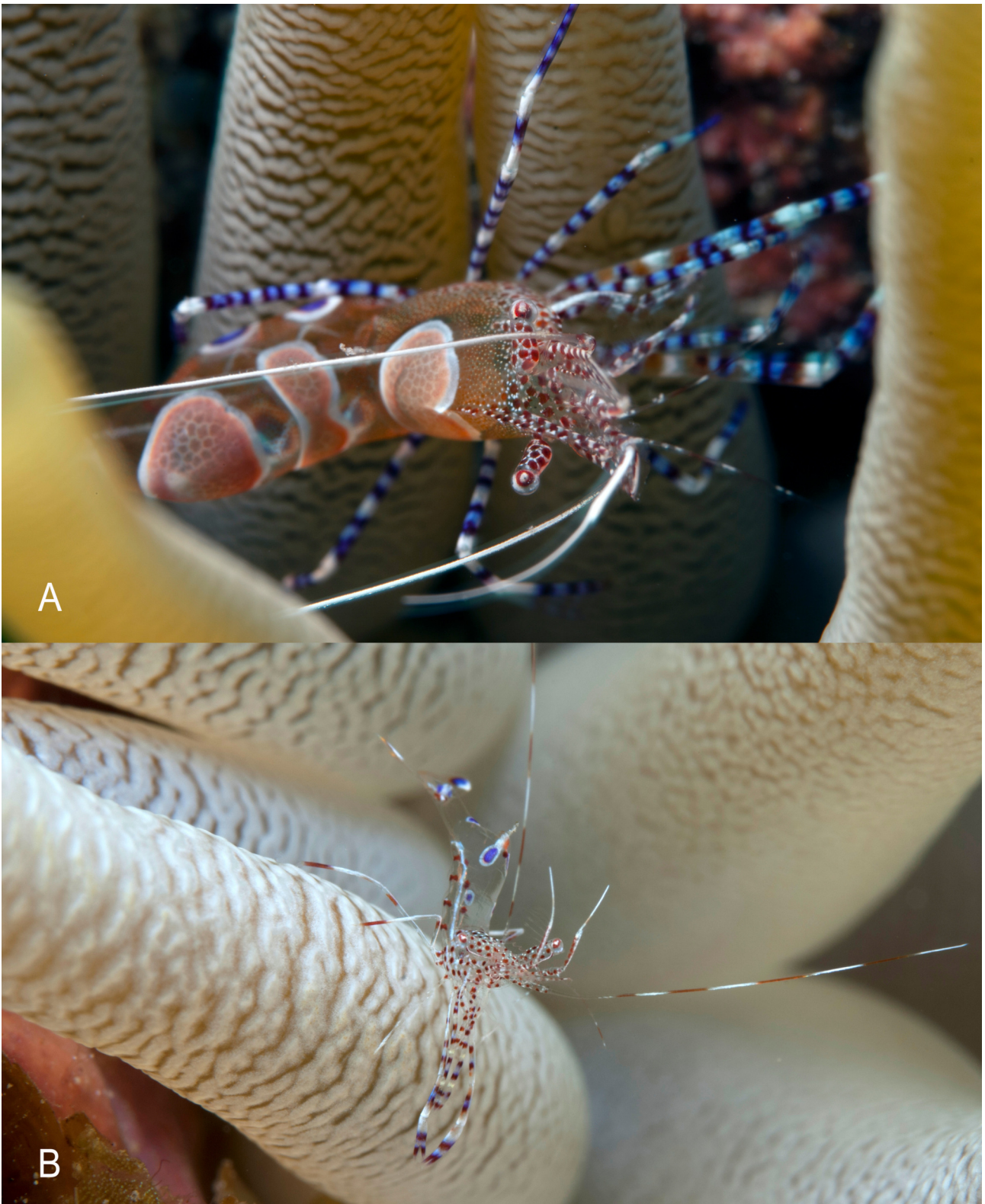


FIGURE 67. *Periclimene yucatanicus* (Ives, 1891). A, adult ovigerous female, stn BON.10, Bonaire, Salt Pier, 12°05.006'N 068°16.912'W, 26.x.2019, depth 3 m, on *Condylactis gigantea* (Weinland, 1860); B, juvenile specimen, stn CAO.04, Curaçao, Blauwbaai, 12°08'05,70"N 68°59'03,50"W, 2.xi.2013, on *C. gigantea*. (Photographs by C.H.J.M. Fransen.)

(fcn. g009). RMNH.CRUS.D.53149: 1 ovigerous female pocl. 4.8 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 6.1 m, 26.iv.2005, scuba diving, on *C. gigantea*, collected by N. Snijders (fcn. g015). RMNH.CRUS.D.58260: 1 ovigerous female pocl. 4.2 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, depth 6.2 m, 26.iv.2005, scuba diving, on *C. gigantea*, collected by N. Snijders (fcn. g016). RMNH.CRUS.D.53151: 1 ovigerous female pocl. 4.3 mm; stn CUR.02, south coast, Atlantis diving/Drielstraat, 12°05'42.1"N 068°54'43.0"W, depth 19.2 m, 26.iv.2005, scuba diving, on *C. gigantea*, collected by N. Snijders (fcn. g017). RMNH.CRUS.D.58261: 1 ovigerous female pocl. 4.3 mm; stn CUR.07, south coast, Vaersenbaai, 12°09'38.3"N 069°08'17.2"W, depth 6.3 m, 03.v.2005, scuba diving, on *C. gigantea*, collected by N. Snijders (fcn. g048). Stn CAO.04, Curaçao, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 02.xi.2013, on *C. gigantea*, photo COA.04–053), not collected. RMNH.CRUS.D.56998: 1 specimen; stn COA.14, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 05.xi.2013, depth 5 m, scuba diving, on *C. gigantea*, collected by C.H.J.M. Fransen (photo COA.14–127). RMNH.CRUS.D.56999: 1 specimen; stn COA.18, Playa Forti, 12°21'58.10"N 69°09'13.50"W, 01.xi.2013, depth 15 m, scuba diving, on *C. gigantea*, collected by C.H.J.M. Fransen (photo COA.18 033–038). Stn CF09A, Hilton reef, 09.vi.2017, depth 10 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn CF10B, St. Michielsbaai, 10.vi.2017, depth 15 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn CF11B, Parasasa Beach, 11.vi.2017, depth 10 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn CF13B, Tugboat, 13.vi.2017, depth 15 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn CF14B, Playa Kalki, 14.vi.2017, depth 10 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn CF16C, Hilton reef, 16.vi.2017, nightdive, 15 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn CF20A, Playa Lagun, 20.vi.2017, depth 5 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. **Bonaire:** RMNH.CRUS.D.46176: 2 non-ovigerous females pocl. 3.0 and 3.2 mm; 1 juvenile pocl. 1.8 mm; Calabos Reef, 01–06.viii.1994, depth 20–25 m, on *C. gigantea*, collected by D. Downs & M.K. Wicksten. Stn BON.02, Pink Beach (Kabayé), 12°03.849'N 068°16.896'W, 23.x.2019, depth 8 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn BON.04, Alice in Wonderland, 12°05.993'N 068°17.118'W, depth 30 m, 24.x.2019, depth 4 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected. Stn BON.10, Bonaire, Salt Pier, 12°05.006'N 068°16.912'W, 26.x.2019, depth 3 m, on *C. gigantea*, photograph by C.H.J.M. Fransen, not collected. RMNH.CRUS.D.58262: 1 specimen; stn BON.18, Red Slave, 12°01.605'N, 068°15.079'W, 28.x.2019, depth 4 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (photo, video 15). Stn BON.21, Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 31.x.2019, depth 8 m, scuba diving, on *C. gigantea*, C.H.J.M. Fransen (video 15), not collected.

Ecology. Known to live in association with sea anemones *E. diaphana*, *Actinoporus elegans* Duchassaing, 1850, *Bartholomea annulata*, *C. gigantea*, *Lebrunia neglecta* Duchassaing & Michelotti, 1860 (as *Lebrunia danae* (Duchassaing & Michelotti, 1860)), *Laviactis lucida*, and *S. helianthus* (Silbiger & Childress 2008; De Grave & Anker 2017; Brooker *et al.* 2019). It has occasionally been recorded from the anemone-like corallimorpharians *Rhodactis osculifera* (Le Sueur, 1817) (Williams & Williams 1982; Ritson-Williams & Paul 2007; both as *Rhodactis sanctithomae* (Duchassaing & Michelotti, 1860)) and *Ricordea florida* (see Wicksten 1995a), a scyphozoan jellyfish *C. xamachana* (cf. Criales 1984; Silbiger & Childress 2008) and a scleractinian coral *Montastraea cavernosa* (Linnaeus, 1767) (González-Muñoz *et al.* 2019). The species is well-known as a fish cleaner (Titus *et al.* 2017; Horká *et al.* 2018).

Distribution. Widely distributed in the tropical and subtropical western Atlantic; 0–24 m depth (Poupin 2018).

Genus *Pontonia* Latreille, 1829

Pontonia manningi Fransen, 2000

(Fig. 68)

Pontonia manningi Fransen, 2000: 101 (Bonaire).

Material examined. Curaçao: RMNH.CRUS.D.58263: 2 specimens; stn COA.21, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 01.xi.2013, depth 35 m, scuba diving, in *Spondylus americanus* Hermann, 1781, collected by

S.E.T. van der Meij (photo COA.21 053–083). RMNH.CRUS.D.58264: 2 specimens; stn COA.23, Playa Hundu, 12°16'05.80"N 69°07'42.20"W, 07.xi.2013, depth 12 m, scuba diving, in *S. americanus*, collected by B.T. Reijnen (photo COA.23 184–194).

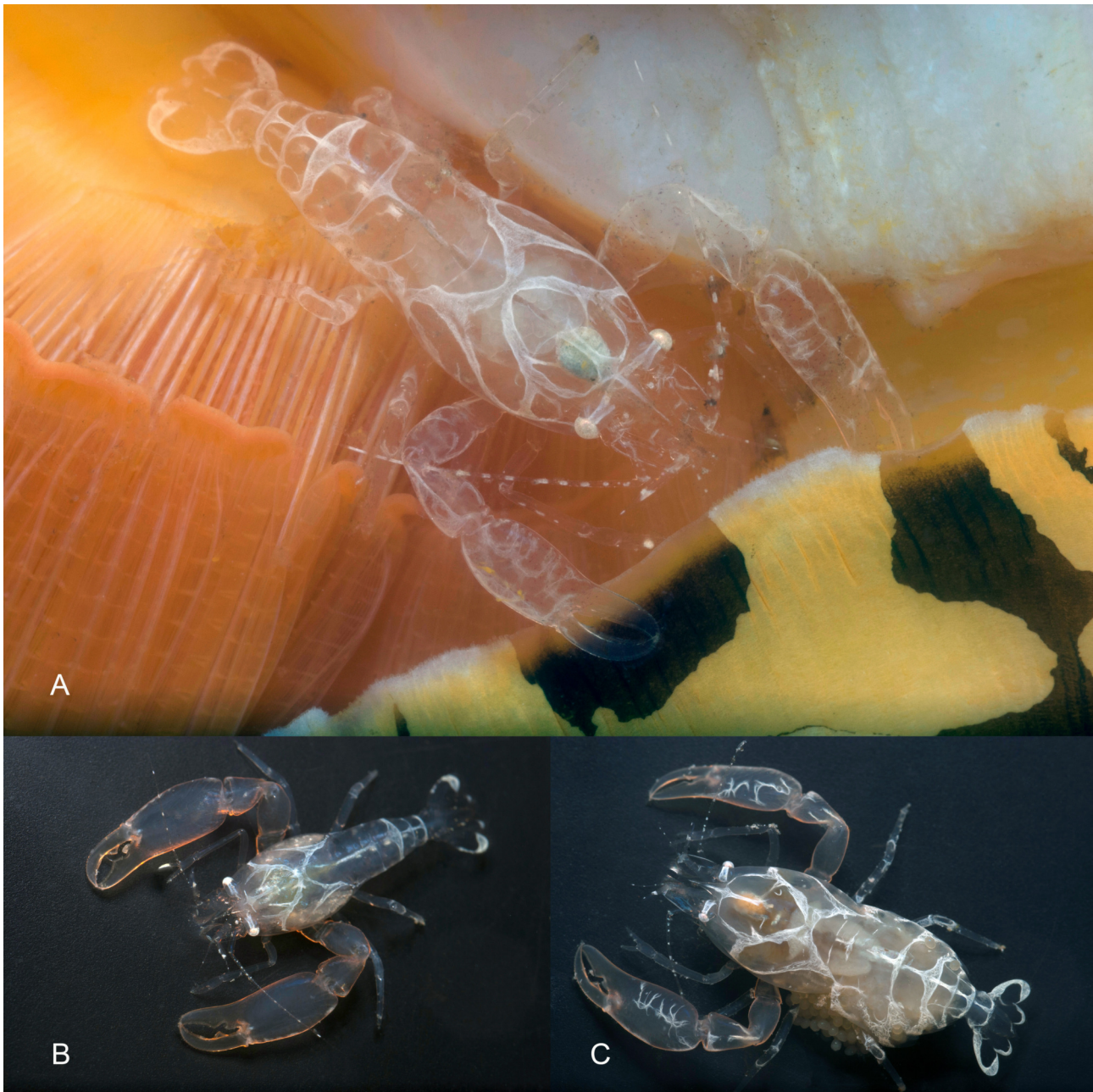


FIGURE 68. *Pontonia manningi* Fransen, 2000. A, stn CAO.21, Curaçao, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 1.xi.2013, depth 35 m, in *Spondylus americanus* Hermann, 1781; B, male, stn CAO.23, Curaçao, Playa Hundu, 12°16'05.80"N 69°07'42.20"W, 7.xi.2013, depth 12 m, from *S. americanus*; C, ovigerous female, same locality as B. (Photographs by C.H.J.M. Fransen.)

Ecology. Symbiont of various large bivalve mollusk species: *Argopecten gibbus* (Linnaeus, 1758); *Chlamys mildredae* Bayer, 1941; *S. americanus* (see Fransen 2002); *S. gaederopus* Linnaeus, 1758; *S. senegalensis* Schreibers, 1793; *Pteria colymbus* (Röding, 1798); and *Chlamys mildredae* Bayer, 1941 (Fransen 2002; Tavares *et al.* 2017).

Distribution. Amphi-Atlantic. In the western Atlantic it has been recorded from: North Carolina southwards to Maranhão, Banco Vitória, Espírito Santo and Trindade Island, Brazil. In the eastern Atlantic the species has been recorded from the Canary Islands and Cape Verde Islands. The species occurs in depths between 5 and 70 m (Fransen 2002; Tavares *et al.* 2017; Poupin 2018). The species is now recorded for the first time from Curaçao.

***Pontonia mexicana* Guérin-Méneville, 1855**

(Fig. 69, video 16)

Pontonia grayi Rathbun, 1901: 122; Schmitt 1924: 72 (Curaçao).

Pontonia mexicana—Holthuis 1951b: 130 (Bonaire, Curaçao); Fransen 2002: 132 (Bonaire, Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.58265: 2 specimens; stn COA.18, Playa Forti, 12°21'58.10"N 69°09'13.50"W, 01.xi.2013, depth 15 m, scuba diving, in *Pinna carnea* Gmelin, 1791 (photo B.T. Reijnen 015), collected by C.H.J.M. Fransen (photo B.T. Reijnen, 007, 009–014). RMNH.CRUS.D.58266: 1 male, pochl. 4.5 mm; stn CF19A-3, Tugboat, 19.vi.2017, depth 5 m, scuba diving, in *Pinna* sp., collected by C.H.J.M. Fransen (video 16).

Ecology. Symbiont of large bivalve mollusk species: *P. carnea*; *P. rigida* (Lightfoot, 1786); and *Atrina seminuda* (Lamarck, 1819) (Fransen 2002, De Grave & Anker 2017).

Distribution. Known from the tropical and subtropical western Atlantic from Florida south to the Brazilian Island Trinidad in depths between 0 and 10 m (Fransen 2002, De Grave & Anker 2017).



FIGURE 69. *Pontonia mexicana* Guérin-Méneville, 1855. Stn CAO.18, Curaçao, Playa Forti, 12°21'58.10"N 69°09'13.50"W, 1.xi.2013, depth 15 m, from *Pinna (Pinna) carnea* Gmelin, 1791. (Photograph by B.T. Reijnen.)

Genus *Pseudocoutierea* Holthuis, 1951b

***Pseudocoutierea acutidorsata* Olthof, Becking & Fransen, 2018**

Pseudocoutierea acutidorsata Olthof, Becking & Fransen, 2018: 538 (Bonaire).

Ecology. Associated with the octocoral *Callogorgia gracilis* (Milne Edwards & Haime, 1857).

Distribution. Only known from its type locality at Bonaire, at 138 m depth (Olthof *et al.* 2018).

***Pseudocoutierea antillensis* Chace, 1972**

(Fig. 70, video 17)

Pseudocoutierea antillensis Chace, 1972: 43 (Saba Bank); Criales 1980: 72 (Curaçao); Olthof *et al.* 2018: 538 (Curaçao).

Material examined. **Curaçao:** ZMA.CRUS.D.103.525: 7 specimens; Jan Thiel, 14.xi.1975, depth ca. 30 m, on *Eunicea* cf. *clavigera*, collected by J.H. Stock. ZMA.CRUS.D.103.524: many specimens, Piscadera, Boei 2, 14.xi.1975, depth ca. 15 m, on *Plexaura* cf. *nina*, collected by J.H. Stock. RMNH.CRUS.D.51631: 1 non-ovigerous female, pochl. 1.3 mm; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, 02.v.2005, depth 12.9 m, scuba diving, on *P. porosa* (fcn. F108), collected by N. Snijders (fcn. g039). RMNH.CRUS.D.58267: 1 specimen; stn CUR.01, south coast, Carmabi Reef/Hilton Pier, 12°16'19.2"N 068°58'09.0"W, 26.iv.2005, depth 15.6 m, scuba diving, on *Antillogorgia* sp., collected by N. Snijders (fcn. g003). RMNH.CRUS.D.51633: 1 non-ovigerous female, pochl. 1.1 mm; stn CUR.02, south coast, Atlantis diving/Drielstraat, 12°05'42.1"N 068°54'43.0"W, 10.vi.2005, depth 10.5 m, scuba diving, *P. dichotoma* (fcn. F409), collected by N. Snijders (fcn. g116). RMNH.CRUS.D.58268: 1 specimen; stn CUR.02, south coast, Atlantis diving/Drielstraat, 12°05'42.1"N 068°54'43.0"W, 10.vi.2005, depth 21.7 m, scuba diving, on *P. porosa* forma *porosa* (Houttuyn, 1772) (fcn. F408), collected by N. Snijders (fcn. g115). RMNH.CRUS.D.51626: 3 specimens; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 28.iv.2005, depth 12 m, scuba diving, on *A. bipinnata* (fcn. F044), collected by B.T. Reijnen (fcn. g026). RMNH.CRUS.D.51651: 1 male, pochl. 1.4 mm; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 16.vi.2005, depth 11.5 m, scuba diving, on *A. americana* (fcn. F421), collected by N. Snijders (fcn. g120). RMNH.CRUS.D.58269: 6 specimens; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 27.iv.2005, depth 16 m, scuba diving, on *Antillogorgia* sp., collected by N. Snijders (fcn. g027). RMNH.CRUS.D.58270: 1 specimen; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 08.v.2005, depth 24.4 m, scuba diving, on *Pseudoplexaura* sp., collected by N. Snijders (fcn. g053). RMNH.CRUS.D.58271: 1 specimen; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 08.v.2005, depth 14.3 m, scuba diving, on *Eunicea* sp., collected by N. Snijders (fcn. g054). RMNH.CRUS.D.58272: 1 specimen; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 13.v.2005, depth 7.5 m, scuba diving, on *Eunicea succinea* forma *succinea* (Pallas, 1766) (fcn. F203), collected by N. Snijders (fcn. g069). RMNH.CRUS.D.58273: 1 specimen; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 13.v.2005, depth 8.5 m, scuba diving, on *E. tourneforti* forma *tourneforti* (fcn. F195), collected by N. Snijders (fcn. g070). RMNH.CRUS.D.58274: 2 specimens; stn CUR.03, south coast, Hilton Reef, 12°07'19.5"N 068°58'07.8"W, 16.vi.2005, depth 6.8 m, scuba diving, on *E. flexuosa* (fcn. F420), collected by N. Snijders (fcn. g122). RMNH.CRUS.D.51629: 1 male, pochl. 1.2 mm; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 29.iv.2005, depth 31 m, scuba diving, on *A. americana* (fcn. F045), collected by F.R. Stokvis (fcn. g029). RMNH.CRUS.D.51630: 1 ovigerous female, pochl. 1.4 mm; 1 non-ovigerous female, pochl. 1.3 mm; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 29.iv.2005, depth 13.2 m, scuba diving, on *E. flexuosa* (fcn. F048), collected by N. Snijders (fcn. g030). RMNH.CRUS.D.58275: 1 specimen; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 11.v.2005, depth 15.8 m, scuba diving, on *A. bipinnata* (fcn. F193), collected by N. Snijders (fcn. g066). RMNH.CRUS.D.58276: 1 specimen; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 03.v.2005, depth 26 m, scuba diving, on *Antillogorgia* sp., collected by N. Snijders (fcn. g046). RMNH.CRUS.D.58277: 1 specimen; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 03.v.2005, depth 13 m, scuba diving, on *Antillogorgia* sp., collected by N. Snijders (fcn. g047). RMNH.CRUS.D.58278: 1 specimen; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 30.iv.2005, depth 12.6 m, scuba diving, on *E. flexuosa* (fcn. F059), collected by N. Snijders (fcn. g035). RMNH.CRUS.D.58279: 1 ovigerous female; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 11.v.2005, depth 15.8 m, scuba diving, on *A. bipinnata* (fcn. F193), collected by N. Snijders (fcn. g067). RMNH.CRUS.D.58280: 2 specimens; stn CUR.04, south coast, West Side Piscaderabaai, 12°07'21.4"N 068°58'10.5"W, 29.iv.2005, depth 11.6 m, on *Antillogorgia* sp., collected by N. Snijders (fcn. g034). RMNH.CRUS.D.58281: 4 specimens; stn CUR.05, south coast, Marie Pampoen/Carpile, 12°05'42.1"N 068°54'43.0"W, depth 19.6 m, 09.v.2005, on *A. bipinnata* (fcn. F173), collected by N. Snijders (fcn. g056). RMNH.CRUS.D.58282: 1 specimen; stn CUR.05, south coast, Marie Pampoen/Carpile, 12°05'42.1"N 068°54'43.0"W, 09.v.2005, depth 10.6 m, scuba diving, on *Plexaura* sp. a (fcn. F176), collected by N. Snijders (fcn. g059a). RMNH.CRUS.D.58283: 1 specimen;

stn CUR.06, south coast, Waterfabriek, 12°06'35.4"N 068°57'15.0"W, 26.v.2005, depth 18 m, scuba diving, on *Pseudoplexaura* sp., collected by N. Snijders (fcn. g088). RMNH.CRUS.D.58284: 1 specimen; stn CUR.06, south coast, Waterfabriek, 12°06'35.4"N 068°57'15.0"W, 02.v.2005, depth 17.5 m, on *P. flagellosa* (fcn. F104), collected by N. Snijders (fcn. g038). RMNH.CRUS.D.51627: 1 specimen; stn CUR.07, south coast, Vaersenbaai, 12°09'38.3"N 069°08'17.2"W, 03.v.2005, depth 7.9 m, scuba diving, on *Eunicea mammosa* Lamouroux, 1816 (fcn. F120), collected by F.R. Stokvis (fcn. g049). RMNH.CRUS.D.58285: 5 specimens; stn CUR.08, south coast, Slangenbaai, 12°08'22.7"N 068°59'49.6"W, 18.vi.2005, depth 23 m, scuba diving, on *E. mammosa* (fcn. F125), collected by N. Snijders (fcn. g129). RMNH.CRUS.D.51628: 1 ovigerous female, pochl. 1.4 mm; stn CUR.09, south coast, Jan Thiel/Diver's Leap, 12°04'25.0"N 068°52'40.9"W, 23.v.2005, depth 16.3 m, scuba diving, on *P. nina* (fcn. F271), collected by N. Snijders (fcn. g081a). RMNH.CRUS.D.58286: 8 specimens; stn CUR.09, south coast, Jan Thiel/Diver's Leap, 12°04'25.0"N 068°52'40.9"W, 23.v.2005, depth 13 m, scuba diving, on *A. bipinnata* (fcn. F275), collected by N. Snijders (fcn. g082). RMNH.CRUS.D.58287: 1 specimen; stn CUR.11, west point, Playa Kalki, 12°22'29.8"N 069°09'27.7"W, 10.v.2005, depth 6.2 m, scuba diving, on *Plexaura* sp., N. Snijders (fcn. g061). RMNH.CRUS.D.58288: 1 ovigerous female; stn CUR.11, west point, Playa Kalki, 12°22'29.8"N 069°09'27.7"W, 10.v.2005, depth 20 m, on *Pseudoplexaura* spec. a (fcn. F191), collected by N. Snijders (fcn. g064). RMNH.CRUS.D.58289: 1 specimen; stn CUR.16, south coast, Fuikbaai, 12°03'01.6"N 068°50'05.2"W, 19.v.2005, depth 11.4 m, scuba diving, on *Plexaura homomalla* (Esper, 1794) (fcn. F255), collected by N. Snijders (fcn. g075). RMNH.CRUS.D.58290: 1 specimen; stn CUR.17, south coast, Caracasbaai, 12°03'01.6"N 068°52'01.2"W, 23.v.2005, depth 16.8 m, scuba diving, on *E. clavigera* (fcn. F267), collected by N. Snijders (fcn. g079). RMNH.CRUS.D.58291: 1 specimen; stn CUR.17, south coast, Caracasbaai, 12°03'01.6"N 068°52'01.2"W, 03.vi.2005, depth 16.5 m, scuba diving, on *A. bipinnata* (fcn. F363), collected by N. Snijders (fcn. g102). RMNH.CRUS.D.58292: 2 specimens; stn CUR.18, south coast, Santa Martha, 12°16'04.9"N 069°07'43.6"W, 24.v.2005, depth 8 m, on *Plexaura* sp. a (fcn. F303), collected by N. Snijders (fcn. g086). RMNH.CRUS.D.58293: 1 specimen; stn CUR.22, south coast, Superior Producer, 12°05'21.5"N 068°56'35.5"W, 02.vi.2005, depth 15.4 m, scuba diving, on *Eunicea calyculata* (Ellis & Solander, 1786) (fcn. F357), collected by N. Snijders (fcn. g095). RMNH.CRUS.D.58294: 3 specimens; stn CUR.22, south coast, Superior Producer, 12°05'21.5"N 068°56'35.5"W, 02.vi.2005, depth 13.5 m, scuba diving, on *Eunicea succinea* (Pallas, 1766) (fcn. F354), collected by N. Snijders (fcn. g092). RMNH.CRUS.D.51632: 2 specimens; stn CUR.22, south coast, Superior Producer, 12°05'21.5"N 068°56'35.5"W, 02.vi.2005, depth 14.2 m, scuba diving, *E. calyculata* (fcn. F358), collected by N. Snijders (fcn. g096). RMNH.CRUS.D.58295: 2 specimens; stn CUR.23, south coast, Avila Beach, 12°05'53.7"N 068°55'06.7"W, 03.vi.2005, depth 8.2 m, scuba diving, on *E. flexuosa* (fcn. F385), collected by N. Snijders (fcn. g101). RMNH.CRUS.D.51634: 1 male, pochl. 1.2 mm; stn CUR.31, east point, Awa di Oostpunt, 12°02'25.9"N 068°45'03.3"W, 18.vi.2005, depth 19.3 m, scuba diving, on *Briareum asbestinum* (Pallas, 1766), collected by N. Snijders (fcn. g126). RMNH.CRUS.D.51635: ca. 25 specimens; stn CUR.31, east point, Awa di Oostpunt, 12°02'25.9"N 068°45'03.3"W, 18.vi.2005, depth 18.2 m, scuba diving, on *P. flagellosa* (fcn. F437), collected by N. Snijders (fcn. g127). RMNH.CRUS.D.58296: 1 specimen; stn COA.09, Slangenbaai, 12°08'23.00"N 68°59'49.90"W, 25.x.2013, depth 40 m, scuba diving, host unknown, collected by S.E.T. van der Meij. RMNH.CRUS.D.58297: 1 specimen; stn COA.17, Cas Abou, 12°13'40.30"N 69°05'30.40"W, 03.xi.2013, depth 27 m, scuba diving, on *Antillogorgia* sp., collected by C.H.J.M. Fransen. RMNH.CRUS.D.58298: 2 specimens; stn COA.18, Playa Forti, 12°21'58.10"N 69°09'13.50"W, 01.xi.2013, depth 20 m, scuba diving, on *Antillogorgia* sp. (collected), collected by C.H.J.M. Fransen. RMNH.CRUS.D.58399: 1 specimen, stn COA.22, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 06.xi.2013, depth 20 m, scuba diving, on *Pseudoplexaura* sp. (collected), collected by B.T. Reijnen (photo COA.22 200–208). RMNH.CRUS.D.58300: 1 specimen; stn COA.22, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 06.xi.2013, depth 8 m, scuba diving, on *B. asbestinum*, collected by C.H.J.M. Fransen (photo COA.22 209–222). RMNH.CRUS.D.58301: 2 specimens; stn COA.23, Playa Hundu, 12°16'05.80"N 69°07'42.20"W, 07.xi.2013, depth 45 m, scuba diving, on *Pseudoplexaura* sp., collected by B.T. Reijnen. RMNH.CRUS.D.58302: 1 male pochl. 1.3 mm, 1 ovigerous female pochl. 1.5 mm; stn CAR.14, Vaersenbaai, 12°09.678'N 68°00.237'W, 11.iv.2014, depth 20 m, scuba diving, on *C. (C.) aculeata*, collected by C. Rauch. RMNH.CRUS.D.58303: 1 non-ovigerous female pochl. 1.2 mm; stn CAR.16, Slangebaai, 12°08.359'N 68°59.840'W, 14.iv.2014, depth 27 m, on *N. erecta*, collected by C. Rauch. RMNH.CRUS.D.58304: 1 specimen; Santa Marta, 17.iv.2014, depth unknown, on *A. cauliformis*, collected by C. Rauch. RMNH.CRUS.D.58306: 1 specimen; Redio City, 21.iv.2014, depth unknown, on *N. erecta*, collected by C. Rauch. RMNH.CRUS.D.58305: 2 ovigerous females pochl. 1.7 mm; stn CAR.24, Diver's leap, 12°04.439'N 68°52.714'W, 22.iv.2014, depth 23 m, on *N. erecta*, collected by C.

Rauch. RMNH.CRUS.D.58307: 2 non-ovigerous females pocl. 1.1–1.4 mm; stn CAR.26, Grote Knip, 12°21.087'N 69°09.095'W, 23.iv.2014, depth 26 m, on *N. erecta*, collected by C. Rauch. RMNH.CRUS.D.58308: 1 ovigerous female pocl. 1.4 mm; 2 males, pocl. 1.3–1.4 mm; 1 non-ovigerous female pocl. 1.4 mm; stn CAR.29, Fuikbaai, 12°02.855'N 68°49.838'W, 25.iv.2014, depth 30 m, on *A. cauliformis*, collected by C. Rauch. RMNH.CRUS.D.58309: 1 non-ovigerous female, pocl. 1.4 mm; stn CAR.29, Fuikbaai, 12°02.855'N 68°49.838'W, 25.iv.2014, depth 24 m, on *C. (C.) aculeata*, collected by C. Rauch. RMNH.CRUS.D.58310: many specimens; stn CF10A-2, Slangenbaai, 10.vi.2017, depth 20 m, scuba diving, on soft coral, collected by C.H.J.M. Fransen (video 17). RMNH.CRUS.D.58311: 1 male, pocl. 1.4 mm; stn CF12B-1, Substation, 12.vi.2017, depth 20 m, scuba diving, on soft coral, collected by C.H.J.M. Fransen. RMNH.CRUS.D.58312: 1 non-ovigerous female, pocl. 1.1 mm; stn CF18A-1, Vaersenbaai, 18.vi.2017, depth 10 m, scuba diving, on soft coral, collected by C.H.J.M. Fransen. OUMNH.ZC.2019-06-25: 5 females, pocl. 1.2–1.4 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 7 m, 16.ii.2015, from *Antillogorgia* sp., leg. P. Wirtz & K. Wittman (fcn. 5). OUMNH.ZC.2019-06-26: 1 female, pocl. 1.2 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 25 m, 18.ii.2015, from *Pseudoplexaura* sp., leg. P. Wirtz & K. Wittman (fcn. 13). OUMNH.ZC.2019-06-27: 4 females, pocl. 0.8–2.1 mm, Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 40 m, 23.ii.2015, from *Ellisella* sp., leg. P. Wirtz & K. Wittman (fcn. 26). **Bonaire**: RMNH.CRUS.D.57935: 1 specimen; stn BON.16, Tailor Made, 12°13.407'N 068°24.223'W, 29.x.2019, depth 35 m, scuba diving, on wire *Ellisella elongata* (Pallas, 1766), collected by C.H.J.M. Fransen. Stn BON.26, Small Wall, 12°10.685'N 068°17.539'W, 3.xi.2019, depth 40 m, scuba diving, on *E. elongata*, C.H.J.M. Fransen (video), not collected. RMNH.CRUS.D.57947: 1 specimen; stn BON.43, Tori's Reef, 12°04.247'N, 068°16.835'W, 8.xi.2019, depth 8 m, scuba diving, on *Pseudoplexaura* sp., collected by C.H.J.M. Fransen. Stn BON.44, Klein Bonaire, South Bay, 12°09.001'N 068°19.234'W, 8.xi.2019, depth 20 m, scuba diving, on *Plexaurella* sp., C.H.J.M. Fransen (video 17), not collected.

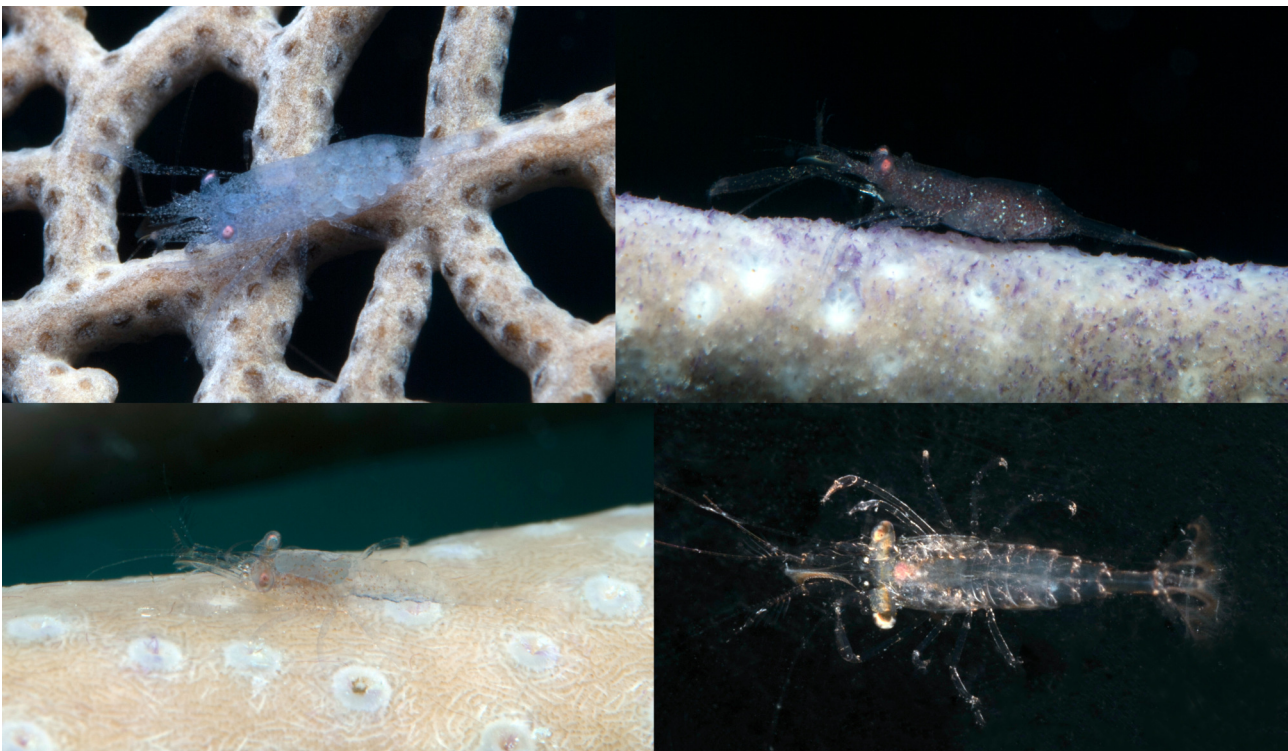


FIGURE 70. *Pseudocoutierea antillensis* Chace, 1972. A, stn CAO.04; B, stn CAO.22, Curaçao, Grote Knip, 12°21'04.10"N 69°09'06.90"W, 6.xi.2013, depth 20 m, on *Pseudoplexaura* spec.; C, idem, depth 8 m, on *Briareum asbestinum* (Pallas, 1766); D, stn BON.16, Tailor Made, 12°13.407'N 068°24.223'W, 29.x.2019, depth 35 m, on wire *Ellisella* spec. (Photographs by C.H.J.M. Fransen.)

Ecology. Associated with gorgonarians and alcyonarians: *Eunicea tourneforti*, *E. calyculata*, *E. fusca* Duchassaing & Michelotti, 1860, and *Plexaura* sp. (Criales 1980); *Leptogorgia virgulata* (cf. Criales 1984); *Antillogorgia americana* (Spotte *et al.* 1995; Spotte & Bubucis 1996, as *Pseudopterogorgia americana*). The species

has now been recorded for the first time from: *Plexaura nina*, *P. homomalla*, *Pseudoplexaura porosa*, *P. flagellosa*, *Plexaurella dichotoma*, *Antillologorgia bipinnata*, *Eunicea succinea* forma *succinea* (Pallas, 1766), *E. flexuosa*, *E. mammosa*, *E. clavigera*, and *Briareum asbestinum*. Recorded for the first time from Porifera: *Callyspongia vaginalis*, *Niphates erecta*, *Aplysina cauliformis*.

Distribution. Known from scattered locations in the tropical western Atlantic from the Saba Bank (Chace 1972); Cay Sal Bank, Bahamas (Lemaitre 1984); Cuba (Debelius 1999); Santa Marta, Columbia (Criales 1984); Islas del Rosario, Columbia (Corredor *et al.* 1979); Los Roques, Venezuela (Rodríguez 1986); British Virgin Islands (Spotte *et al.* 1995); Pine Cay, Turks and Caicos Islands, British West Indies (Spotte & Bubucis 1996). 1–13 m depth. Previous records from Curaçao by Criales (1980) and Olthof *et al.* (2018). Herein recorded for the first time from Bonaire.

Genus *Pseudopontonides* Heard, 1986

Pseudopontonides plumosus Snijders & Fransen, 2010

Pseudopontonides plumosus Snijders & Fransen, 2010: 7 (Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.51661: holotype ovigerous female; Otrabanda, harbor, Superior Producer, 12°05'21.5"N 068°56'35.5"W, 2.vi.2005, depth 29 m, on *Antipathes* sp., collected by N. Snijders. RMNH.CRUS.D.58313: 2 specimens; stn COA.04, Blauwbaai, 12°08'05.70"N 68°59'03.50"W, 02.xi.2013, depth 40 m, on bushy *Antipathes* sp., collected by C.H.J.M. Fransen. OUMNH.ZC.2019-06-28: 10 specimens, pocl. 0.8–1.6 mm, Sun Reef, 12.1392°N 68.9981°W, depth 7 m, 15.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittmann (sample 3). OUMNH.ZC.2019-06-29: 48 specimens including ovigerous females, pocl. 0.8–2.1 mm, Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 24 m, 15.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittmann (fcn. 4). OUMNH.ZC.2019-06-30: 9 specimens including ovigerous females, pocl. 0.7–1.7 mm, Snake Bay, about 300 m east of Sun Reef, depth 30 m, 17.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittmann (fcn. 10). OUMNH.ZC.2019-06-31: 16 specimens including ovigerous females, pocl. 1.2–2.3 mm, Snake Bay, about 300 m east of Sun Reef, depth 29 m, 19.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittmann (fcn. 20). OUMNH.ZC.2019-06-32: 10 specimens including ovigerous females, pocl. 0.8–2.0 mm; Blauw Baai, 12°7'59.88"N 68°59'10.3194"W, depth 17 m, 22.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittmann (fcn. 22).

Ecology. Associated with black corals of the genus *Antipathes* (Snijders & Fransen 2010; present study).

Distribution. Only known Curaçao; 7–40 m depth (Snijders & Fransen 2010; present study).

Pseudopontonides principis (Criales, 1980)

(Fig. 71, video 18)

Neopontonides principis Criales, 1980: 75 (Bonaire, Curaçao).

Pseudopontonides principis—Heard 1986: 481 (Bonaire, Curaçao); Snijders & Fransen 2010: 7 (Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.32017: ovigerous female holotype pocl. 3.3 mm; Oostpunt, 3.vii.1977, depth 18 m, on *Stichopathes gracilis*, collected by M.M. Criales. RMNH.CRUS.D.32688: 1 ovigerous female paratype, pocl. 3.0 mm; 1 male paratype pocl. 1.8 mm; Oostpunt, 3.vii.1977, depth 18 m, on *S. gracilis*, collected by M.M. Criales. RMNH.CRUS.D.51637: 1 specimen; stn CUR.04, Piscaderabaai, west side, 12°07'21.4"N 68°58'10.5"W, 11.v.2005, depth 21.5 m, on *S. luetkeni*, collected by N. Snijders (fcn. g065). RMNH.CRUS.D.51636: 1 specimen; stn CUR.05, Marie Pampoen/Carpile, 12°5'42.1"N 68°54'43.0"W, 09.v.2005, depth 24.6 m, on *S. luetkeni*, collected by N. Snijders (fcn. g055). RMNH.CRUS.D.51638: 1 specimen; Fuikbaai, 12°03'1.6"N 68°50'5.2"W, 19.v.2005, depth 28.7 m, on *Antipathes* sp., collected by N. Snijders (fcn. g074). RMNH.CRUS.D.58314: 1 specimen; stn COA.01, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 31.x.2013, depth 31 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by B.T. Reijnen (photo COA.01 036–045). RMNH.CRUS.D.58315: 2 specimens; stn COA.03, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 02.xi.2013, depth 35 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by S.E.T. van der Meij (photo COA.03 058–068). RMNH.CRUS.D.58316:



FIGURE 71. *Pseudopontonides principis* (Criales, 1980). A, adult ovigerous female, stn CAO.03, Curaçao, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 2.xi.2013, depth 35 m, on *Stichopathes luetkeni* Brook, 1889; B, adult ovigerous female, stn CAO.21, Curaçao, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 5.xi.2013, depth 35 m, on *S. luetkeni*; C, adult specimen, stn CAO.01, Hilton Reef, 12°07'18.44"N 68°58'10.23"W, 31.x.2013, depth 31 m, on *S. luetkeni*; D, adult specimen, stn BON.04, Bonaire, Alice in Wonderland, 12°05.993'N 068°17.118'W, 24.x.2019, depth 30 m, on *S. luetkeni*; E, juvenile specimen, stn CAO.03, Curaçao, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 2.xi.2013, depth 35 m, on *S. luetkeni*; F, juvenile specimen, stn CAO.14, Curaçao, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 5.xi.2013, depth 37 m, on *S. luetkeni*. (Photographs by C.H.J.M. Fransen.)

1 specimen; stn COA.03, W Piscadera Baai, 12°07'21.90"N 68°58'13.54"W, 02.xi.2013, depth 35 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by B.T. Reijnen (photo COA.03 069–080). RMNH.CRUS.D.58317: 7 specimens; stn COA.14, Playa Boka Sami, 12°08'51.40"N 68°59'55.50"W, 05.xi.2013, depth 37 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by S.E.T. van der Meij (photo COA.14 096–103). RMNH.CRUS.D.58318: 1 specimen; stn COA.21, Marie Pampoen, 12°05'26.74"N 68°54'17.84"W, 05.xi.2013, depth 35 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by B.T. Reijnen (photo COA.21 019–032, 039, 040). RMNH.CRUS.D.58319: 1 non ovigerous female, pochl. 1.9 mm; stn CF09A-1, Hilton Reef, 9.vi.2017, depth 22 m, scuba diving, on *S.*

luetkeni Brook, 1889, collected by C.H.J.M. Fransen (video 18). RMNH.CRUS.D.58320: 1 non ovigerous female, pochl. 2.5 mm; stn CF12A-1, Marie Pampoen, depth 25 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by C.H.J.M. Fransen (video 18). OUMNH.ZC.2019-06-33: 9 ovigerous females, pochl. 1.8–2.5 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 7 m, 15.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittmann (fcn. 3). OUMNH.ZC.2019-06-34: 4 females, pochl. 1.6–2.8 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 28 m, 16.ii.2015, from *Stichopathes* sp., leg. P. Wirtz & K. Wittmann (fcn. 6). OUMNH.ZC.2019-06-35: 16 specimens including ovigerous females, pochl. 1.1–1.4 mm; Sun Reef, 12°8'21.12"N 68°59'53.1594"W, depth 12 m, 17.ii.2015, from *Pseudoplexaura* sp., leg. P. Wirtz & K. Wittmann (fcn. 8). OUMNH.ZC.2019-06-36: 3 females, pochl. 1.1–2.1 mm; Snake Bay, about 300 m east of Sun Reef, depth 30 m, 17.ii.2015, from *A. caribbeana*, leg. P. Wirtz & K. Wittmann (fcn. 10). OUMNH.ZC.2019-06-37: 7 ovigerous females, pochl. 1.2–1.6 m; Vaersenbaai (= Kokomo Beach), 12°9'37.8"N 69°0'20.52"W, depth 39 m, 23.ii.2015, from *S. gracilis*, leg. P. Wirtz & K. Wittmann (fcn. 25). **Bonaire:** RMNH.CRUS.D.57932: 1 specimen; stn BON.04, Alice in Wonderland, 12°05.993'N 068°17.118'W, 24.x.2019, depth 30 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by C.H.J.M. Fransen (video 18). RMNH.CRUS.D.57938: 1 specimen; stn BON.19, Hilma Hooker, 12°06.271'N 068°17.291'W, 30.x.2019, depth 30 m, scuba diving, on *S. luetkeni* Brook, 1889, collected by C.H.J.M. Fransen (video 18). Stn BON.44, Klein Bonaire, South Bay, 12°09.001'N 068°19.234'W, 08.xi.2019, depth 20 m, scuba diving, on *S. luetkeni* Brook, 1889, C.H.J.M. Fransen (video 18), not collected. RMNH.CRUS.D.58321: 2 specimens; Bachelor's Beach (Fondu Di Kalki), 12°07.522'N 068°17.233'W, 01.xi.2019, depth 21–26 m, on brown whip coral, collected by Peter Wirtz (fcn. 1). RMNH.CRUS.D.58322: 1 ovigerous female, 1 female, 1 male; Bachelor's Beach (Fondu Di Kalki), 12°07.522'N 068°17.233'W, 02.xi.2019, depth 21–27 m, on brown whip coral, collected by Peter Wirtz (fcn. 2). RMNH.CRUS.D. 58323: 1 ovigerous female, pochl. 1.9 mm; 1 female, pochl. 1.5 mm; 2 males, pochl. 1.4 and 1.5 mm; Something Special (Pali Grande), 12°09.696'N 068°17.016'W, 6.xi.2019, depth unknown, scuba diving, collected by Peter Wirtz (fcn. 10) (photo).

Ecology. Usually associated with Antipatharia, commonly on *Stichopathes gracilis* (Criales 1980; Snijders & Fransen 2010) and *S. luetkeni* (cf. Snijders & Fransen 2010); *Tanacetipathes thamnea* (Warner, 1981), *T. tanacetum* (Pourtalès, 1880), and *Phanopathes expansa* (Opresko & Cairns, 1992) (see Wicksten *et al.* 2014); *Cirrhopathes ? secchini* Echeverria, 2002 (Wirtz *et al.* 2009). Also recorded from *Virgularia* sp. (Heard, 1986). Photographs (Fig. 71) show specimens with different colour patterns on differently coloured hosts. The species is herein recorded for the first time from *Antipathes caribbeana* Opresko, 1996, and *Pseudoplexaura* sp.

Distribution. Recorded from scattered locations in the tropical western Atlantic: Gulf of Mexico (Heard 1986; Wicksten *et al.* 2014); Puerto Rico (Heard 1986); Bahamas (Debelius 1999); Espírito Santo, Brazil (Wirtz *et al.* 2009); in depths of 5–42 m. Previous records from Curaçao by Criales (1980), Heard (1986) and Snijders & Fransen (2010) and from Bonaire by Heard (1986) and Snijders & Fransen (2010).

Genus *Rapipontonia* Marin, 2007

Rapipontonia platalea (Holthuis, 1951a)

(Fig. 72)

Material examined. Curaçao: RMNH.CRUS.D.51643: 1 damaged female, pochl. 1.1 mm, R=4/0; stn CUR.13, south coast, Playa Lagun, 12°19'05.5"N 069°09'02.0"W, depth 14.1 m, 06.vi.2005, scuba diving, on *Briareum asbestinum* (F374), collected by N. Snijders (fcn. g103). **Material for comparison. Eastern Atlantic:** RMNH.CRUS.D.51044: 2 females, 2 males; Cape Verde Islands, Sao Nocolau, SE coast, "Tydeman" Cancap VII Expedition, Stn 7.D.11, 16°34'N 24°17'W, 2–3.ix.1986. RMNH.CRUS.D.50048: 2 males, São Tomé, Pedra Hirondino, Rolas Island, 0°N 6°31'E, from gorgonians, depth 14 m, viii.2002, collected by P. Wirtz. RMNH.CRUS.D.50047: 2 males; São Tomé, Pedra de Brago, Rolas Island, from gorgonians, 12 m, viii.2002, collected by P. Wirtz.

Remarks. The present small specimen corresponds to the descriptions by Holthuis (1951a) and Marin (2009) of East Atlantic specimens and by Hale & De Grave (2007) of West Atlantic specimens. The posterior part of the abdomen is missing as well as all pereopods except for one detached left third, fourth or fifth pereopod. The rostrum (Fig. 72A) has four dorsal teeth and is without ventral teeth, it is not reaching the distal margin of the basal segment of the antennular peduncle which is similar to the small East Atlantic specimen depicted by Marin (2009: fig. 1C) and small specimens recorded by Hale & De Grave (2007). The epigastric tooth is missing although a scar

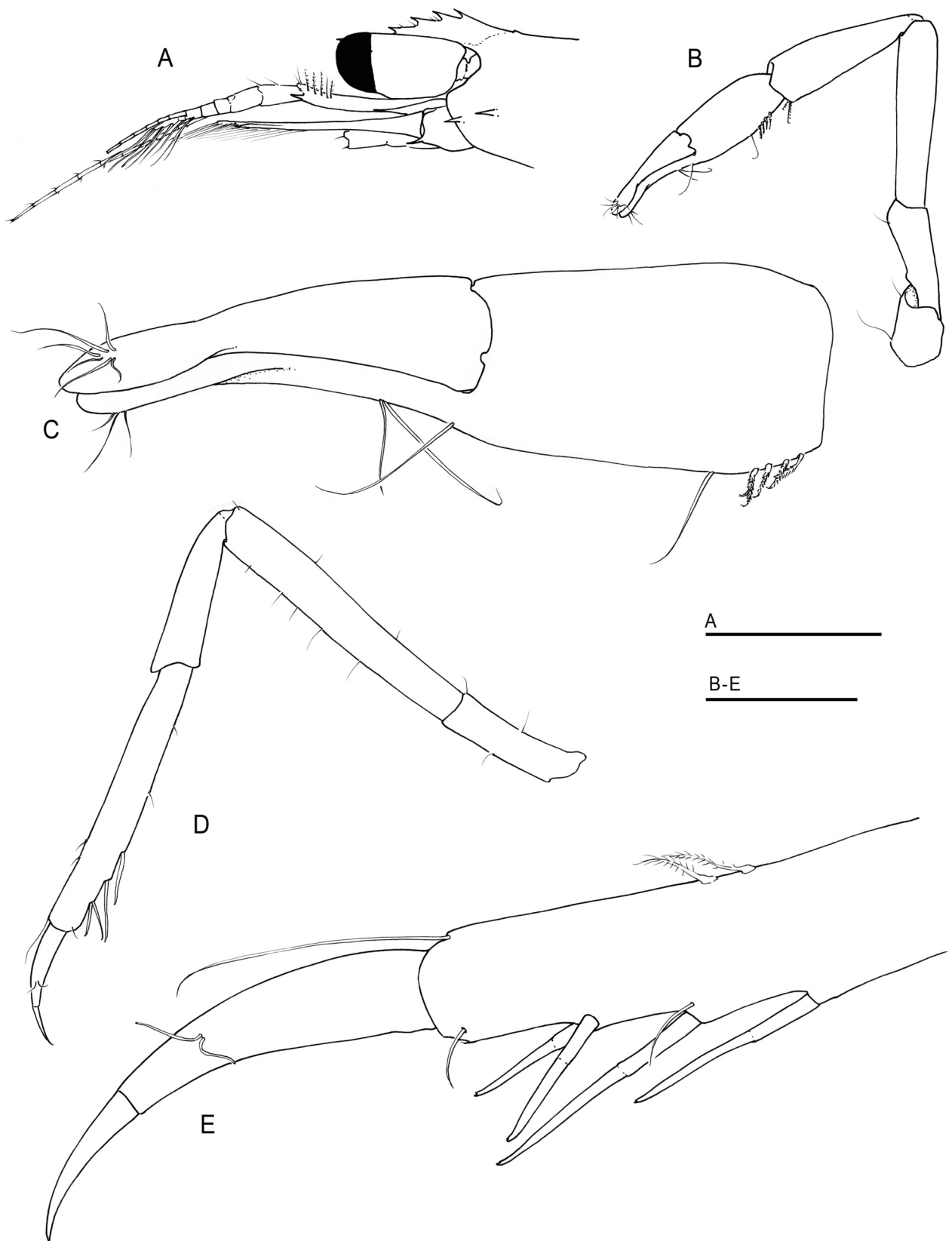


FIGURE 72. *Rapipontonia platalea* (Holthuis, 1951a), RMNH.CRUS.D.51643: 1 female, pocl. 1.1 mm. A, anterior appendages, lateral; B, first left pereopod; C, idem, chela; D, third, fourth or fifth left pereopod; E, idem, dactylus and distal part propodus. Scale bars: A=1.0 mm; B, D=0.5 mm; C, E=0.125 mm.

is present. The infraorbital angle is broadly rounded. The antennal spine is situated distinctly below the infraorbital angle. The hepatic spine is situated slightly above the level of the antennal spine. The first pereopods (Fig. 72B) show the spoon-like distal part of the fingers (Fig. 72C), typical for the genus. The detached third, fourth or fifth pereopod (Fig. 72D) has the distoventral margin of the propodus (Fig. 72E) bearing two unpaired and one pair of long distoventral spines. These spines are minutely bifurcate distally. This feature has not been observed for the East Atlantic specimens.

Ecology. The species was recorded from Antipatharia: *Antipathes* spp. (Wirtz & d'Udekem d'Acoz 2001, 2008), *Stichopathes gracilis* Gray, 1857 (Wirtz & d'Udekem d'Acoz 2008); *Plumapathes pennacea* (Pallas, 1766) (De Grave *et al.* 2019); from Gorgonacea: *Leptogorgia gaini* Stiasny, 1940 (Wirtz & d'Udekem d'Acoz 2001), *Leptogorgia* sp. (Wirtz, 2003; Wirtz & d'Udekem d'Acoz 2008; Wirtz & De Grave 2010); unidentified Gorgonaria (Wirtz & d'Udekem d'Acoz 2008; Wirtz *et al.* 2020); and from Hydrozoa: *Gymnangium longicauda* (Nutting, 1900), encrusted with the parazoanthid *Parazoanthus tunicans* Duerden, 1900. The species is herein recorded for the first time from the alcyonacean *Briareum asbestinum* (Pallas, 1766).

Distribution. The species has an amphi-Atlantic distribution. It has been recorded from scattered locations: Cape Verde Islands (Holthuis 1951a; Wirtz & d'Udekem d'Acoz 2001); Guinea (Wirtz & d'Udekem d'Acoz 2001); Senegal (Wirtz & De Grave 2010); São Tomé Island (Wirtz 2003; Wirtz & d'Udekem d'Acoz 2008); Gabon (Wirtz *et al.* 2020); Ascension Island and St. Helena (De Grave *et al.* 2019); Tobago (Hale & De Grave 2007); northern Yucatan peninsula, Mexico (Santano-Moreno *et al.* 2013). This is the first record of the species from Curaçao.

Genus *Tuleariocaris* Hipeau-Jacquotte, 1965

Tuleariocaris neglecta Chace, 1969

Tuleariocaris neglecta Chace, 1969: 226 (Curaçao).

Material examined. Curaçao: RMNH.CRUS.D.25125: 5 paratypes, 4 males pocl. 1.2, 1.4, 1.9, and 2.0 mm, 1 ovigerous females pocl. 2.5 mm, Piscaderabaai, 24.xii.1956, on *Diadema*, collected by L.B. Holthuis no. 1015. **Sint Eustatius:** RMNH.CRUS.D.28563: 1 non-ovigerous female, pocl. 1.1 mm, Lynch Bay, 1.iii.1957, collected by L.B. Holthuis.

Ecology. Associated with several species of sea urchins: *Diadema antillarum* (Philippi, 1845), *Astropyga magnifica* A.H. Clark, 1934, *Arbacia lixula* (Linnaeus, 1758), and *Echinometra lucunter* (Linnaeus, 1758) (Giribet & Lemer 2014).

Distribution. Widely distributed in the tropical and subtropical eastern and western Atlantic. Recorded in the western Atlantic from Florida and the northern Gulf of Mexico southwards to Panama and Curaçao in depths between 1–10 m (Giribet & Lemer 2014; De Grave & Anker 2017; Poupin 2018). Previously recorded from Curaçao by Chace (1969). The species is now recorded for the first time from Sint Eustatius.

Genus *Typton* O.G. Costa, 1844

Typton carneus Holthuis, 1951b

Typton carneus—Chace 1972: 46 (Saba Bank).

Ecology. Endosymbiont of sponges. Recorded from: *Tedania ignis* (Duchassaing & Michelotti) (Pachelle *et al.* 2016); *Tedania* cf. *ignis* (see De Grave & Anker 2017), *Tedania* (*Tedania*) cf. *klausii* Wulff, 2006 (De Grave & Anker 2017), and *Tedania* (*Tedania*) *klausii* Wulff, 2006 (Đuriš *et al.* 2011).

Distribution. Known from the western Atlantic: western Florida, Bahamas, Cuba Mexico (Bahía de la Ascensión), Belize, Haiti (Tortuga), Barbuda, Tobago, Venezuela and Brazil (Fernando de Noronha, Ceará, Paraíba, Pernambuco) in depths between 0 and 73 m (Holthuis, 1951b; Chace 1972; Felder & Chaney 1979; Felder *et al.* 2009; Simões 2009; Román-Contreras & Martínez-Mayén 2010; Đuriš *et al.* 2011; Vieira *et al.* 2012; Pachelle *et al.* 2016; De Grave & Anker 2017; Poupin 2018; Vera-Caripe & Lira-Gómez 2021).

Typton tortugae McClendon, 1911

(Figs. 73–74)

Typton tortugae—Westinga & Hoetjes 1981: 142, tab. 2 (Curaçao).

Material examined. Curaçao: ZMA.CRUS.D.103215: 1 male, pocl. 2.6 mm; 1 female pocl. 2.6 mm: St. Michiel, 11.xii.1975, depth 3 m, in *Sphaciospongia vesparia*, collected by P. Hoetjes S-110876-I. ZMA.CRUS.D.103216: 1 male, pocl. 3.0 mm, St. Michiel, 21.i.1975, depth 3 m, in *S. vesparia*, collected by P. Hoetjes S-210175-I. ZMA.CRUS.D.103217: 1 fov. pocl. 2.7 mm; 1 male, pocl. 3.0 mm: St. Michiel, 4.ii.1976, depth 3 m, in *S. vesparia*, collected by P. Hoetjes S-040276-I. ZMA.CRUS.D.103218: 1 ovigerous female., pocl. 3.7 mm, 1 male, pocl. 3.1 mm, St. Michiel, 12.viii.1976, depth 3 m, in *S. vesparia*, collected by P. Hoetjes S-120876-I. ZMA.CRUS.D.103219: 1 female, pocl. 3.1 mm, St. Michiel, 19.x.1976, depth 3 m, in *S. vesparia*, collected by P. Hoetjes S-181076-I (with damaged axiid).

Remarks. The present specimens correspond closely to the description by McClendon (1911) and the re-description by Anker *et al.* (2021). The specimens have the rostrum compressed, slightly upturned distally, short, not reaching midlength of the eyestalk (Fig. 73A, B); paraorbital process in form of well-developed triangular lobe; pterygostomial margin slightly produced anteriorly, rounded. Eyes reaching distal margin of basal antennular segment; cornea spherical, oblique, without Nebenaugae; eyestalks laterally compressed, with distinct longitudinal dorsal carina (Fig. 73B). Sixth somite of pleon without median posterior tooth, with posterolateral angle produced into subacute tooth (Fig. 73C). Telson (Fig. 73C) with two pairs of dorsal spines; anterior pair submarginal at 0.22 of telson length, posterior pair marginal at 0.63 of telson length; lateral pair of terminal spines (Fig. 73D) small, less than half length of dorsal spines; intermediate and median spines equal in length; distal margin of telson straight. Antennular peduncle (Fig. 73A, B) with basal segment without distolateral tooth; stylocerite short, not reaching midlength of basal segment; intermediate and ultimate segments short, as long as broad; upper outer flagellum with 3–5 segments fused, shorter free ramus unisegmented, longer ramus short, with about 5–6 segments; lower inner flagellum about as long as longer free ramus of upper outer flagellum. Antenna (Fig. 73A, B) with peduncle very slender, unarmed, carapocerite reaching midlength of intermediate segment of antennular peduncle. Second pereopods (Fig. 74A) subequal in size and form in present material, in the type material there seems to be a slightly bigger difference in size (McClendon 1911: Plate 1 fig. 2); ventral margins of merus, carpus, palm and fixed finger with acute short tubercles whereas in the type-series the ischium also shows a few tubercles ventrally (Anker *et al.* 2021: fig. 4A); dactylus subcircular, extending beyond fixed finger. Third pereopod (Fig. 74B) more robust than fourth (Fig. 74D) and fifth (Fig. 74F); propodus with one ventral spine in proximal part of flexor margin, one ventral spine in distal part of flexor margin, and a pair of spines distoventrally; propodus of fourth pereopod with one subdistal ventral spine and a pair of ventrodistal spines; fifth pereopod without ventral nor ventrodistal spines, with distoventral part of propodus with rows of serrate setae; dactyli of ambulatory pereopods (Fig. 74C, E, G) biunguiculate; accessory tooth small, subdistal; unguis distally hooked, with few rows of scales on proximodorsal margin. Uropods (Fig. 73C) not exceeding telson; exopod with entire, convex lateral margin ending in distinct acute distolateral tooth, flanked by mobile inward curved spine, twice as long as distolateral tooth (Fig. 73E).

Ecology. Endosymbiont of sponges. Recorded from *Sphaciospongia vesparia* (Pearse 1932; Westinga & Hoetjes 1981), and *Ircinia strobilina* (Duchassaing De Fonbressin & Michelotti, 1864) (McClendon 1911, as *Hircinia acuta* (Duchassaing & Michelotti, 1864)); Santana-Moreno *et al.* 2013).

Distribution. Known from the Western Atlantic: Bermuda, the Dry Tortugas, Virgin Islands, Gulf of México (Yucatan peninsula), Brazil (Pará, Maranhão and Fernando de Noronha), in depths to 45m (Chace 1972; Vieira *et al.* 2012; Santana-Moreno *et al.* 2013). The specimen recorded from the Gulf of California in the East Pacific (Holthuis, 1951b; Wicksten 1983) has recently been recognised as a distinct species: *Typton cousteaui* Anker, Pachel & Leray, 2021.

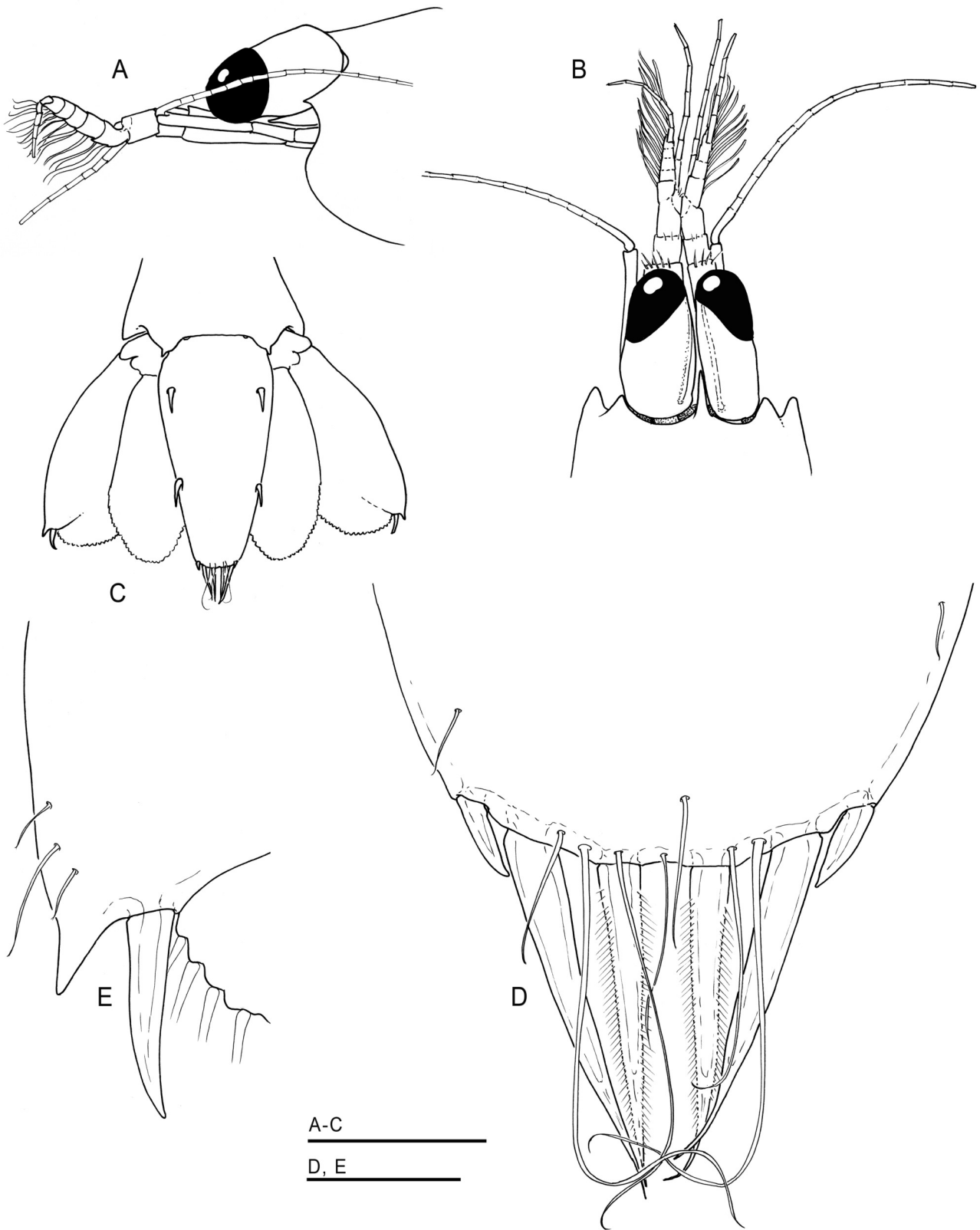


FIGURE 73. *Typton tortugae* McClendon, 1911, ZMA.CRUS.D.103215, ovigerous female, pocl. 2.5 mm. A, anterior appendages, lateral view; B, idem, dorsal view; C, tailfan; D, telson, distal margin; E, left exopod uropod. Scale bars: A–C=1.0 mm; D, E=0.125 mm.

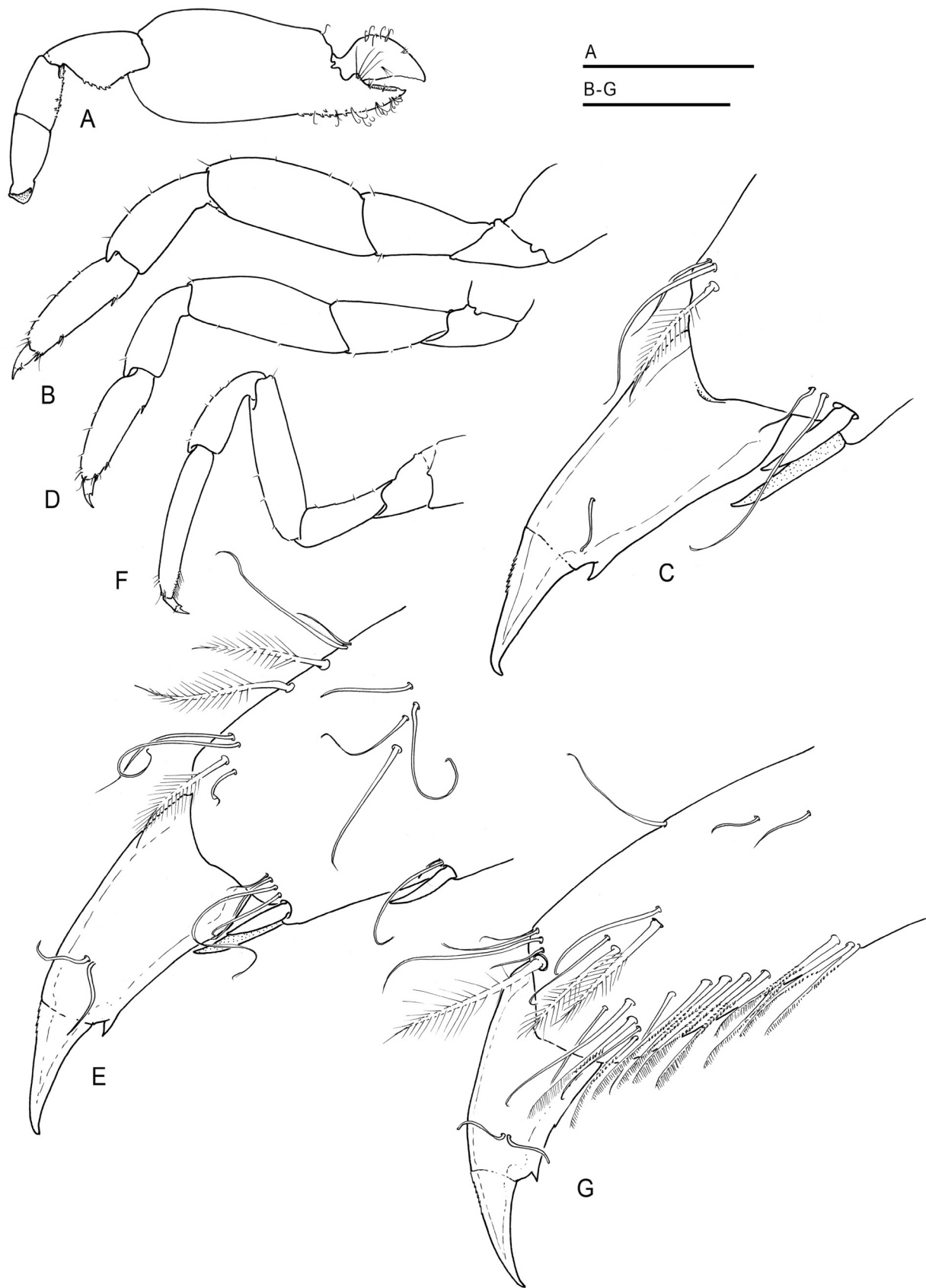


FIGURE 74. *Typton tortugae* McClendon, 1911, ZMA.CRUS.D.103215, ovigerous female, pochl. 2.5 mm. A, right major second pereiopod, lateral view; B, left third pereiopod, mesial view; C, idem, dactylus and distal part propodus; D, left fourth pereiopod, mesial view; E, idem, dactylus and distal part propodus; F, left fifth pereiopod; G, idem, dactylus and distal part propodus. Scale bars: A=2.0 mm; B, D, F=1.25 mm; C, E, G=0.125 mm.

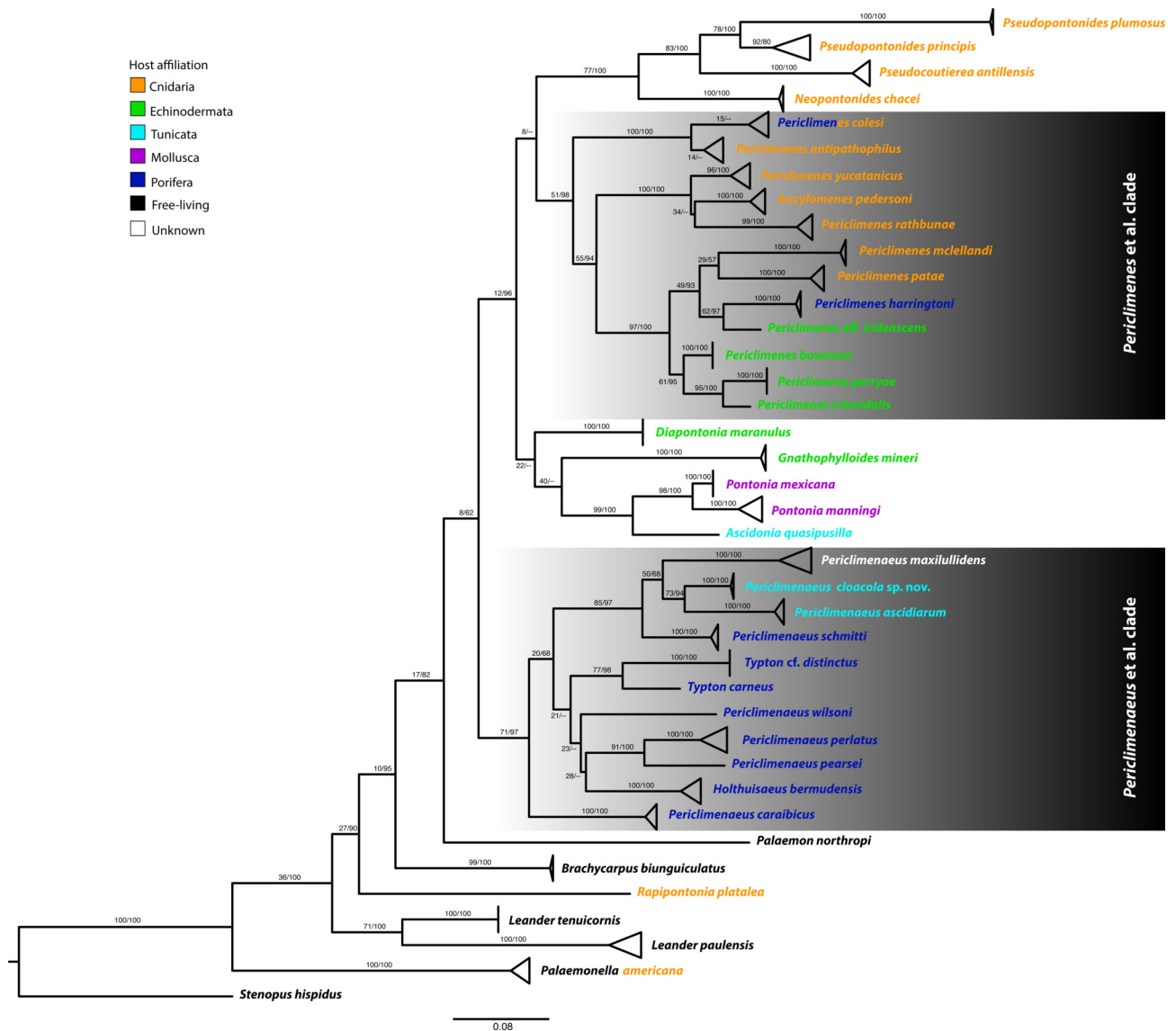


FIGURE 75. Phylogenetic tree of palaemonid shrimp taxa known from the Dutch Caribbean resolved by Maximum Likelihood analysis based on the combined dataset for three genes (COI, 16S, H3). RAXML bootstrap support and Bayesian posterior probabilities expressed as percentages are indicated. Dashes (--) for Bayesian posterior probabilities indicates a polytomy. Multiple sequences per species are collapsed. Host affiliations are highlighted.

Genus *Urocaris* Stimpson, 1860

Urocaris longicaudatus Stimpson, 1860

Urocaris longicaudata—Poupin 2018: 112 (Sint Maarten).

Ecology. Commonly found among submerged aquatic vegetation (Martínez-Mayén & Romero-Rodríguez 2017).

Distribution. Widely distributed throughout the western Atlantic from the Bahamas, Cape Hatteras, North Carolina, Gulf of Mexico, Trinidad, Tobago, Guadeloupe, to Santa Catarina, Brazil, from the intertidal to 72 m depth (Holthuis 1951b; Chace 1972; Williams 1984; Ramos-Porto & Coelho 1990; Machado *et al.* 2010; Román-Contreras & Martínez-Mayén 2010; Martínez-Mayén & Romero-Rodríguez 2017; Poupin 2018).

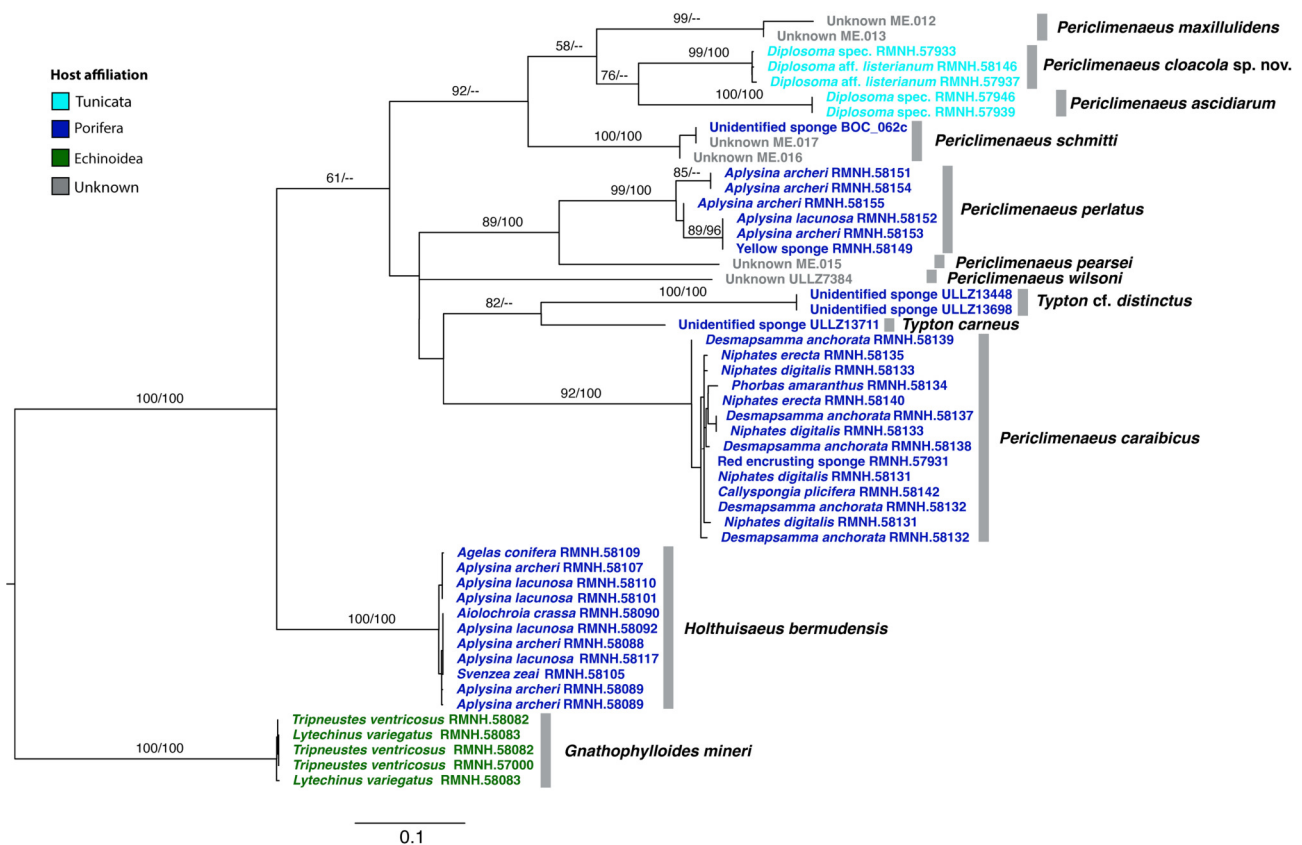


FIGURE 76. Phylogenetic tree of *Periclimentaenus* et al. clade with host species indicated resolved by Maximum Likelihood analysis based on the combined dataset for three genes (COI, 16S, H3). RAxML bootstrap support and Bayesian posterior probabilities expressed as percentages are indicated: bootstrap support below 50% and Bayesian posterior probabilities below 95% not indicated. Host affiliations are highlighted.

Results and Discussion

In total, 46 species have herein been listed for the Dutch Caribbean including one new to science. Twelve species were recorded for the first time for Curaçao, eleven for Bonaire and one each for Sint Maarten and Sint Eustatius.

The topology of the phylogeny reconstruction based on the complete combined dataset for three markers (Fig. 75) is largely in concordance with previous studies (Horká *et al.* 2016; Chow *et al.* 2021). In these studies, however, a much smaller number of Caribbean species was analyzed. In general, the deeper nodes have lower support values than nodes shallower in the tree. Most genera are monophyletic except for *Periclimentaenus* in which both *Typton* and *Holthuisaenus* are nested (but see separate analysis of the *Periclimentaenus* et al. clade) and *Periclimenes* with *Ancylomenes* nested inside. The basal palaemonid species are mostly free living whereas the others are symbionts of various invertebrate phyla.

The separate phylogenetic reconstruction of the *Periclimentaenus* et al. clade (Fig. 76) with *Gnathophylloides mineri* as outgroup resulted in a slightly different topology compared to that of the complete dataset, with *Holthuisaenus* now sister of the *Periclimentaenus*/*Typton* clade. Within this clade a host switch from Porifera to didemnid compound ascidians of the genus *Diplosoma* can be observed. Sequences from multiple hosts were obtained for *Holthuisaenus bermudensis*, *Periclimentaenus caraibicus* and *P. perlatus*. There is no genetic structuring within these shrimp taxa with regard to host species.

The separate phylogenetic reconstruction of the *Periclimenes* et al. clade (Fig. 77) with *Gnathophylloides mineri* as outgroup resulted in an almost identical species topology as in that of the complete dataset, except for the positions of *P. yucatanicus* and *A. pedersoni* being interchanged. Basal is a clade with *Periclimenes colesi* and *P. antipathophilus*. Sequences from multiple hosts were obtained for *P. colesi* and *P. antipathophilus* which did not show genetic structuring with regard to host species. Both species show a wide host range with *P. colesi* living in

association with various sponge species and the scleractinian coral *Madracis pharensis* whereas *P. antipathophilus* associates with both antipatharians and branching octocorals. A second clade comprises *Ancylomenes pedersoni*, *Periclimes yucatanicus* and *P. rathbunae*, all symbionts of Cnidaria. *P. yucatanicus* seems most strict in its host choice with *Condylactis gigantea* as its preferred host. *Ancylomenes pedersoni* has a wide host range without specific preferred host. The preferred host of *P. rathbunae* is *Stichodactyla helianthus* but the species also associates with other sea anemones and several scleractinian corals. Sequences of multiple hosts obtained for *P. rathbunae* did not show genetic structuring with regard to host species. A third clade comprises the sister species *Periclimes mcllellandi* and *P. patae* associated with octocorals, *P. harringtoni* as obligatory symbiont of the poriferan *Neofibularia nolintangere*, *P. aff. iridescens* which seems to be associated with *Nemaster grandis*, and a clade with three species associated with comatulid and gorgonocephalid echinoderms.

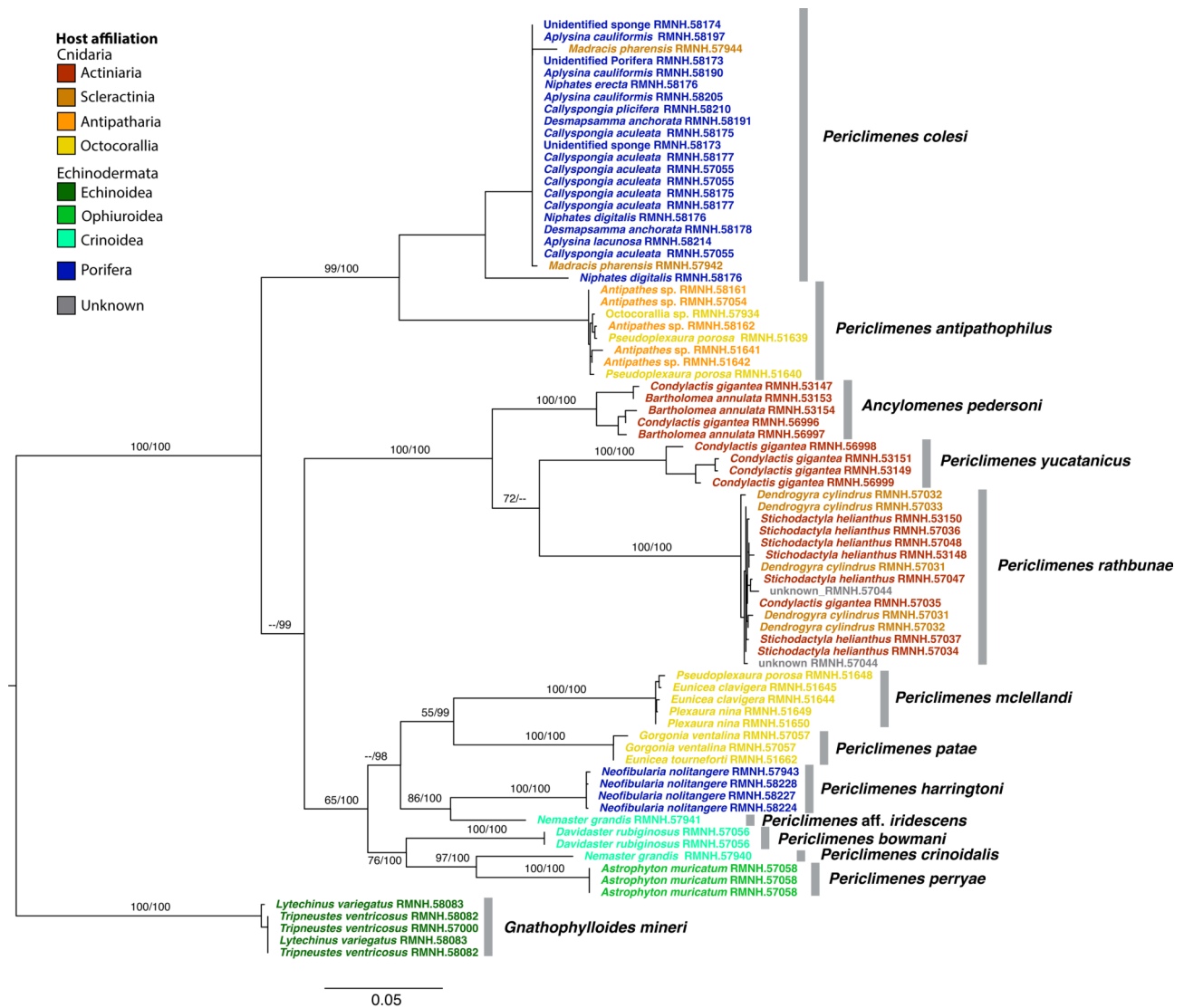


FIGURE 77. Phylogenetic tree of *Periclimes et al.* clade with host species indicated resolved by Maximum Likelihood analysis based on the combined dataset for three genes (COI, 16S, H3). RAxML bootstrap support and Bayesian posterior probabilities expressed as percentages are indicated: bootstrap support below 50% and Bayesian posterior probabilities below 95% not indicated. Host affiliations are highlighted.

Acknowledgements

Bastian Rijnen, Sancia van der Meij, Bert Hoeksema, Nicolette Snijders, Werner de Gier, and Peter Wirtz are thanked for the collection of specimens. Thanks to all members of the Magnificent 7 for underwater logistics and support during fieldwork at Curaçao in 2017 and Bonaire in 2019 (Hoeksema 2022), with special thanks to

Bert Hoeksema for organizing the fieldwork. Jaaziel Garcia-Hernandez is acknowledged for the identification of host sponges during fieldwork in 2017 (Curaçao) and Bonaire (2019), Rob van Soest for the identification of sponges collected during fieldwork on Curaçao in 2014, and Leen van Ofwegen who identified most of the host Octocorallia. Sequences were obtained by Nicolette Snijders, Bastian Reijnen, Bregje Brinkman, Cessa Rauch, and Werner de Gier. Hanco Bakker (Naturalis Biodiversity Center) is acknowledged for providing assistance with the handling and registration of specimens. Sammy De Grave identified material collected by Peter Wirtz deposited in the Oxford University Museum of Natural History, made material available for DNA sequencing, and provided constructive comments on an earlier draft of the manuscript. Jaap de Vries is thanked as dive buddy, for providing under water footage, and for his enthusiastic company in the field. CARMABI is acknowledged for their hospitality and logistic support during fieldwork on Curaçao. Nicolette Snijders (2005) and Cessa Rauch (2014) received grants for fieldwork on Curaçao from the Jan Joost ter Pelkwijkfonds. Cessa Rauch (2014) received a grant from the L.B. Holthuis Fonds for fieldwork on Curaçao. Research on Curaçao (2017) was sponsored by the Treub Maatschappij—Society for the Advancement of Research in the Tropics. Research at Bonaire (2019) was funded by grants from the WWF Netherlands Biodiversity Fund, the Treub Maatschappij—Society for the Advancement of Research in the Tropics, and the Naturalis program “Nature of the Netherlands”. Jin-Ho Park and Cedric d’Udekem d’Acoz are acknowledged for their meticulous reviews which improved the manuscript considerably.

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[https://doi.org/10.1016/S1055-7903\(02\)00326-3](https://doi.org/10.1016/S1055-7903(02)00326-3)

The videos are also available upon request to the author.

- Video 01 *Ancylomenes pedersoni* <https://youtu.be/oG6XZb8iMKQ>
- Video 02 *Brachycarpus biunguiculatus* <https://youtu.be/eDM8CpvLDbe>
- Video 03 *Palaemonella americana* <https://youtu.be/u93U2nGjb3A>
- Video 04 *Gnathophylloides mineri* <https://youtu.be/yG9NcLi3osI>
- Video 05 *Neopontonides chacei* <https://youtu.be/shGFJPNXHPg>
- Video 06 *Periclimenaeus ascidiarum* <https://youtu.be/ljZtwZA8tQ4>
- Video 07 *Periclimenaeus caraibicus* https://youtu.be/GWmEnc_wgSY
- Video 08 *Periclimenaeus cloacola* spec. nov. <https://youtu.be/WH9aYxeMh5s>
- Video 09 *Periclimenes antipathophilus* <https://youtu.be/77T0ahRuqNc>
- Video 10 *Periclimenes colesi* <https://youtu.be/pOGNOxpuMeE>
- Video 11 *Periclimenes crinoidalis* <https://youtu.be/OoP7C7JOuQk>
- Video 12 *Periclimenes harringtoni* https://youtu.be/_zINpvXw5rQ
- Video 13 *Periclimenes perryae* <https://youtu.be/knqjjz5745s>
- Video 14 *Periclimenes rathbunae* <https://youtu.be/--yDwKwdaew>
- Video 15 *Periclimenes yucatanicus* <https://youtu.be/0P71oJkdnmU>

Video 16 *Pontonia mexicana* <https://youtu.be/PvNZWmnuwK4>
Video 17 *Pseudocoutierea antillensis* <https://youtu.be/bj0EiOTfYic>
Video 18 *Pseudocoutierea principis* <https://youtu.be/rYndcoru2qk>