BRILL

Crustaceana 0 (0) 1-36

CRUSTACEANA

A NEW SPECIES OF *PALAEMON* (DECAPODA, CARIDEA, PALAEMONIDAE) FROM THE TROPICAL EASTERN ATLANTIC

BY

CHARLES H.J.M. FRANSEN[1,3]) and PETER WIRTZ[2])

[1]) Marine Evolution and Ecology Group, Naturalis Biodiversity Center, Darwinweg 2, 2333 CR Leiden, The Netherlands

[2]) Centro de Ciências do Mar do Algarve (CCMAR/CIMAR LA), Campus de Gambelas, Universidade do Algarve, 8005-139 Faro, Portugal

ORCID iDs: Fransen: 0000-0002-7760-2603; Wirtz: 0000-0003-3920-6228

http://zoobank.org/urn:lsid:zoobank.org:pub:B5C08BF1-4CA1-47CF-AD12-427BB2555AAE

ABSTRACT

Fieldwork in the Bijagos Islands, Guinea-Bissau, in 2023, yielded specimens of a species of *Palaemon* new to science. The specimens are herein described, illustrated, and compared with related species. We obtained sequences of the mitochondrial markers 16S and COI, as well as of the nuclear marker H3 of the *Palaemon* specimens from the Bijagos Islands. We used these sequences to analyse the phylogenetic position of the new species within the genus *Palaemon*. The new species is most closely related to *P. floridanus* and *P. northropi* from the tropical western Atlantic.

Key words. — Decapoda, Caridea, *Palaemon*, new species, phylogeny, East Atlantic

INTRODUCTION

Fourteen species of *Palaemon* with a mandibular palp have been reported from marine and brackish waters in the Atlantic: *P. adspersus* Rathke, 1837, *P. elegans* Rathke, 1837, *P. floridanus* Chace, 1942, *P. longirostris* H. Milne-Edwards, 1837, *P. macrodactylus* Rathbun, 1902, *P. maculatus* Thallwitz, 1892, *P. northropi* Rankin,1898, *P. paivai* Filho, 1967, *P. peringueyi* Stebbing 1915, *P. powelli* Ashelby & De Grave, 2009, *P. rosalesi* Rodriguez de la Cruz, 1965 (nomen dubium according to De Grave & Fransen, 2011; DecaNet, 2025), *P. serratus* Pennant, 1777, *P. vicinus* Ashelby, 2009, and *P. xiphias* Risso, 1816 (Ashelby & De Grave, 2009; De Grave & Ashelby, 2013; DecaNet eds, 2025). Of these species,

[3]) Corresponding author; e-mail: Charles.fransen@naturalis.nl

Published with license by Koninklijke Brill BV | DOI: 10.1163/15685403-bja10509

Palaemon maculatus, *P. vicinus* and *P. powelli* have been recorded from the tropical eastern Atlantic along the Gulf of Guinea.

Collecting in the Bijagos Islands, Guinea-Bissau, in 2023, yielded specimens of a species of *Palaemon* new to science. The specimens are herein described, illustrated, and compared with related species.

We obtained sequences of the mitochondrial markers 16S and COI, as well as of the nuclear marker H3 of the *Palaemon* specimens from the Bijagos Islands. We used these sequences to analyse the phylogenetic position of the new species within the genus *Palaemon*.

MATERIAL AND METHODS

Taxon sampling

Material was collected during fieldwork in the Bijagos Islands, Guinea-Bissau, in May 2023. They were sampled from shallow tide-pools in a muddy/rocky platform at Kere Island (approx. 11°32′02″N, 16°13′05″W) and tide pools in a rocky intertidal at Poilão Island (approx. 11°51′44″N 15°43′34″W). Newly obtained sequences as well as sequences obtained from GenBank (table I) representing species of *Palaemon* in clades comprising Atlantic species within the '*Palaemon* senso stricto' clade recognized by Ashelby et al. (2012) and Carvalho et al. (2017) were used for phylogenetic analyses.

Morphological analysis

Specimens were studied with a dissecting stereomicroscope (Zeiss Discovery.V8) and a compound microscope (Olympus BX53) both provided with a drawing tube. All figures were drawn by the first author. Drawings were scanned (Canon CanoScan 9000F) with a resolution of 600 dpi and subsequently mounted into plates using Adobe Photoshop software version 25.1.0 (Adobe Systems). Postorbital carapace length (pocl.) was measured from the posterior margin of the orbit to the posterior margin of the carapace; rostral characters (R) are formulated as R = number of postorbital dorsal teeth + number of dorsal teeth on rostrum proper + number of subdistal teeth/number of ventral rostral teeth. Specimens were deposited in the Naturalis Biodiversity Center (formerly Rijksmuseum van Natuurlijke Historie (RMNH)), Leiden, The Netherlands.

DNA analyses

Total genomic DNA was extracted from the abdominal muscle tissues, pleopods or eggs using the DNeasy Blood and Tissue Kit or Qiamp DNA Micro Kit (Qiagen) following the manufacturer's protocols.

TABLE I

Newly obtioned sequences of *Palaemon bijagosensis* sp. nov. (in bold) and *Palaemon* species represented in clades comprising Atlantic species within the 'Palaemon senso stricto' clade recognized by Ashelby et al. (2012) and Carvalho et al. (2017) obtained from GenBank used for phylogenetic analysis with indication of the habitat as noted in the WoRMS database (b, brackish; f, fresh; m, marine), voucher information, locality data and reference to literature

Species	Habitat WoRMS	Voucher	Locality	Reference	GenBank acession. nos.		
					16S	COI	H3
Palaemon adspersus Rathke, 1836	mb	RMNH.5088195	The Netherlands	Unpublished	NA	PQ739647	NA
	mb	OUMNH-ZC 2004-16-0001	Portugal, Algarve	Ashelby et al., 2012	NA	NA	JN674360
	mb	ICMD-20111108-01	Spain, San Pedro estuary	Cuesta et al., 2012	JQ042293	NA	NA
Palaemon antennarius H. Milne Edwards, 1837	f	OUMNH-ZC 2003-03-0002	Greece, Rhodos Island	Carvalho et al., 2017	KP178973	NA	KP179081
	f	DIZUL Pskod_ASL13_2014_01	Albania, Skadar Lake	Jablonska et al., 2021	NA	MT517458	NA
Palaemon argentinus (Nobili, 1901)	f	CCDB 3312	Argentina, Mar del Plata	Carvalho et al., 2017	KP178997	NA	KP179115
	f	CCDB 3313	Argentina, Mar del Plata	Carvalho et al., 2020	NA	MN413677	NA
Palaemon bijagosensis spec. nov.	m	RMNH.CRUS.D.59522	Guinea-Bissau, Bijagos Islands, Poilão Island	This publication	**PX684075**	**PX681999**	**PX686336**
Palaemon bijagosensis spec. nov.	m	RMNH.CRUS.D.59521	Guinea-Bissau, Bijagos Islands, Kere Island	This publication	NA	**PX682000**	**PX686337**

TABLE I
(Continued)

Species	Habitat WoRMS	Voucher	Locality	Reference	GenBank acession. nos.		
					16S	COI	H3
Palaemon elegans Rathke, 1836	m	CCDB 2749	Portugal, Rio Formosa, Type I	Carvalho et al., 2017	KP178988	NA	KP179102
	m	Unknown	Type III	Reuschel et al., 2010	HE573180	HE573177	NA
	m	Unknown	Type II	Reuschel et al., 2010	HE573179	HE573176	NA
	m	Unknown	Type I	Reuschel et al., 2010	HE573178	HE573175	NA
Palaemon floridanus Chace, 1942	m	OUMNH-ZC 2011-09-0044	U.S.A., Longboat Key, Florida	Carvalho et al., 2017	KP178995	KP179169	KP179112
Palaemon kadiakensis (Rathbun, 1902)	f	CCDB 1600	U.S.A., Convent, Louisiana	Carvalho et al., 2017	NA	NA	KP179106
	f	CCDB 1600	U.S.A., Convent, Louisiana	Carvalho et al., 2014	KF923718	NA	NA
	f	CNCR 26056	Northern Mexico	Alvarez et al., 2014	NA	KJ769066	NA
Palaemon lindsayi (Villalobos Figueroa & Hobbs, 1974)	f	CNCR 7803	Mexico	Carvalho et al., 2017	NA	NA	KP179128
	f	CNCR 25964	Northern Mexico	Alvarez et al., 2014	NA	KJ769084	NA
Palaemon longirostris H. Milne Edwards, 1837	bf	CCDB 2750	Portugal, Rio Guadiana	Carvalho et al., 2017	NA	NA	KP179109
	bf	DZMB MT08564	North Sea, Varel, Hafen	Raupach et al., 2015	NA	KT209275	NA
	bf	CCDB 2750	Portugal, Rio Guadiana	Carvalho et al., 2014	KF923724	NA	NA

TABLE I
(Continued)

Species	Habitat WoRMS	Voucher	Locality	Reference	GenBank acession. nos.		
					16S	COI	H3
Palaemon mesopotamicus (Pesta, 1913)	f	OUMNH-ZC 2012-01-0016	Turkey, Orontes River, Hatay	Carvalho et al., 2017	KP178974	NA	KP179082
Palaemon mexicanus (Strenth, 1976)	f	CNCR 24904	Mexico, San Luis Potosi	Carvalho et al., 2017	KP178990	NA	KP179105
	f	CNCR 24904	Northern Mexico	Alvarez et al., 2014	NA	KJ769087	NA
Palaemon minos Tzomos & Koukouras, 2015	f	DIZUL Pmin_KPM24_2015_35	Greece, Crete, Kournas Lake	Jablonska et al., 2021	NA	MT517794	MT517797
Palaemon mundusnovus De Grave & Ashelby, 2013	bf	UF 14775	U.S.A., Levy County, Florida	Carvalho et al., 2017	KP178998	NA	KP179116
	bf	CH761-C10	Mexico, Quintana Roo	Unpublished	NA	MZ517981	NA
Palaemon northropi (Rankin, 1898)	mb	CCDB 2261	Brazil, Guaratuba, Parana	Carvalho, 2014	KP179140	KP179175	KP179204
Palaemon octaviae (Chace, 1972)	m	CCDB 4103	Brazil, Lagoa de Itaipu, Niteroi, Rio de Janeiro	Carvalho et al., 2017	KP179000	KP179166	KP179119
Palaemon pacificus (Stimpson, 1860)	m	UF 29428	Taiwan, Keelung Ho-Ping Island Park	Carvalho et al., 2017	KP178994	NA	KP179111
	m	CUHK-LMT-CAR0102	China, Hong Kong	Chow et al., 2021	NA	MW817957	NA

TABLE I
(Continued)

Species	Habitat WoRMS	Voucher	Locality	Reference	GenBank acession. nos.		
					16S	COI	H3
Palaemon paivai Fausto Filho, 1967	m	CCDB 4334	Brazil, São Joao de Pirabas, Para	Carvalho et al., 2017	KP179002	NA	KP179121
	m	CCDB 4334	Brazil, São Joao de Pirabas, Para	Carvalho, 2014	NA	KP179178	NA
Palaemon paludosus (Gibbes, 1850)	f	OUMNH-ZC 2004-14-0002	U.S.A., Jefferson County, Florida	Carvalho et al., 2017	KP178989	NA	KP179103
	f	USNM:IZ:1446200	U.S.A., North Carolina, Jones County	Unpublished	NA	MK308273	NA
Palaemon peringueyi (Stebbing, 1915)	m	OUMNH-ZC 2003-09-0001	South Africa, Kariega River estuary	Carvalho et al., 2017	KP178991	NA	KP179107
	m	SAMC-A088831-40	South Africa	Wood et al., 2017	NA	KY660314	NA
Palaemon pugio (Holthuis, 1949)	bf	CCDB 3804	U.S.A., Missisipi	Carvalho et al., 2017	NA	NA	KP179117
	bf	USNM:IZ:1286736	U.S.A., Maryland, Rhode River, Fox Point	Unpublished	KT959474	KT959373	NA
Palaemon ritteri Holmes, 1895	mb	OUMNH-ZC 2009-18-0011	Panama, Coiba	Unpublished	KP179163	KP179188	KP179218
Palaemon schmitti (Holthuis, 1950)	mb	CCDB 4879	Costa Rica, Punta Morales, Puntarenas	Carvalho et al., 2017	KP179001	NA	KP179120
	mb	CCDB<BRA>:3404″	Brazil, São Paulo	Mantelatto et al., 2018	NA	MF490128	NA

TABLE I
(Continued)

Species	Habitat WoRMS	Voucher	Locality	Reference	GenBank acession. nos.		
					16S	COI	H3
Palaemon semmelinkii (De Man, 1881)	mb	OUMNH (solicitor tombo)	Singapore, Lim Chu Kang	Carvalho et al., 2017	KP179003	NA	KP179123
Palaemon serratus (Pennant, 1777)	m	OUMNH-ZC 2012-06-0015	United Kingdom, Saundersfoot	Carvalho et al., 2017	KP178992	NA	KP179108
	m	UB-JSDUK166	United Kingdom, Wales, Anglesey, Amlwch	Matzen da Silva et al., 2011	NA	JQ306034	NA
Palaemon suttkusi (Smalley, 1964)	f	CNCR 25864	Mexico, Rio Salado, Zaragoza	Carvalho et al., 2017	KF923712	NA	KP179104
	f	CNCR 26106	Northern Mexico	Alvarez et al., 2014	NA	KJ769047	NA
Palaemon texanus (Strenth, 1976)	f	SMF-40684	U.S.A., Texas, Riviera	Cuesta et al., 2012	JQ042303	NA	NA
	f	TAMU:53A	U.S.A., Comal River, New Braunfels, TX	Unpublished	NA	PP989519	PP990526
Palaemon turcorum (Holthuis, 1961)	f	RMNH.CRUS.D.13971	Turkey, Ankara	Cuesta et al., 2012	JQ042302	NA	NA
Palaemon varians Leach, 1814	b	RMNH.5013170	The Netherlands	Unpublished	NA	PQ739381	NA
	b	CCDB 2748	Portugal, Rio Formosa	Carvalho et al., 2017	NA	NA	KP179083
	b	ICMD-20111108-07	Spain, Guadalquivir River	Cuesta et al., 2012	JQ042301	NA	NA

TABLE I
(Continued)

Species	Habitat WoRMS	Voucher	Locality	Reference	GenBank acession. nos.		
					16S	COI	H3
Palaemon vulgaris Say, 1818	mb	ULLZ 8584	U.S.A., Cypremort Point, Louisiana	Carvalho et al., 2017	KP178999	NA	KP179118
	mb	USNM-WCH_0318	U.S.A., Virginia, Eastern Shore	Leray & Knowlton, 2015	NA	KP255202	NA
Palaemon xiphias Risso, 1816	m	OUMNH-ZC 2011-09-0019	Italy, Campese, Giglio	Carvalho et al., 2017	KP178993	NA	KP179110
	m	Not specified	France, Mediterranee	Van Wormhoudt (unpublished)	NA	KJ155601	NA
Palaemon zariquieyi (Sollaud, 1938)	bf	OUMNH-ZC 2012-01-0065	Spain, Alicante	Carvalho et al., 2017	KP178975	NA	NA
	bf	University of A Coruña, Spain	Spain, Mar Menor	González-Castellano et al., 2020a	NA	MT340192	NA
Brachycarpus biunguiculatus (Lucas, 1846)	m	RMNH.CRUS.D.58071	Curaçao, Dutch Caribbean	Fransen, 2023	OQ437417	OQ445969	OQ450324

CCDB, Coleção de Crustáceos do Departamento de Biologia da Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo, Brazil; CNCR, Coleccíon de Crustáceos, Instituto de Biología, Departamento de Zoología, Universidad Nacional Autónoma de México, México; DIZUL, Department of Invertebrate Zoology and Hydrobiology, University of Lodz, Łódź, Poland; DZMB, Deutsches Zentrum für Biodiversitätsforschung, Senckenberg am Meer, Wilhelmshaven, Germany; ICMD, Instituto de Ciencias del Mar, Barcelona, Spain; MNHN, Muséum National d'Histoire Naturelle, Paris, France; NTOU, National Taiwan Ocean University, Keelung, Taiwan; OUMNH, Oxford University Museum of Natural History, Oxford, U.K.; RMNH, Naturalis Biodiversity Center, Leiden, the Netherlands (previously Rijksmuseum van Natuurlijke Historie); SAMC, South African Museum, IZIKO Museums of Cape Town South Africa; SMF, Senckenberg Museum, Frankfurt am Main, Germany; TAMU, Texas A&M University at Galveston, TX, U.S.A.; UB, University of Bangor, Wales, U.K.; UF, Florida Museum of Natural History, Gainesville, FL, U.S.A.; ULLZ, University of Louisiana at Lafayette Zoological Collection, Lafayette, LA, U.S.A.; USNM, Smithsonian United States National Museum, Washington DC, U.S.A.

For resolving phylogenetic relationships, partial mitochondrial 16S ribosomal RNA (16S; 400 bp), the cytochrome c oxidase subunit I mitochondrial DNA (COI; 657 bp), and nuclear histone 3 (H3; 328 bp) were sequenced. Target gene regions were amplified by polymerase chain reaction (PCR) using primer pairs: 16Sar/16Sbr (Palumbi et al., 1991) for 16S rRNA; LCO1490/HCO2198 (Folmer et al., 1994), LepF1/LepR1 (Hebert et al., 2004), and jgCO1490/jgCO2198 (Geller et al., 2013 for COI; H3-F1/H3-R1 (Colgan et al., 1998) for histone H3.

Polymerase chain reactions of newly sequenced samples followed the protocols used by Brinkmann & Fransen (2016). PCR products were submitted to Macrogen (Amsterdam, The Netherlands) for sequencing using the Sanger sequencing reaction with an ABI3730XL DNA Sequencer.

Aligning was carried out using the software MUSCLE (Edgar, 2004), with default setting, as implemented in MEGA-X (Kumar et al., 2018). Highly variable and divergent positions as well as poorly aligned ones in the 16S gene were detected and eliminated from the alignment using Gblocks v0.91b (Castresana, 2000) with default parameters except for allowing gap positions. This resulted in 521 nucleotides determined to be suitable for phylogenetic analysis. Xia et al.'s (2003) test for saturation in DAMBE 5.3.48 did not indicate significant saturation and analyses were performed on the entire COI and H3 sequences.

The best-fit model for the nucleotide substitution for each of the markers was selected based on the AICc (Akaike Information Criterion, corrected) implemented in MEGA-X (Kumar et al., 2018) (GTR + G + I for the three markers). Phylogenetic analyses were performed on the combined dataset of the 16S, COI and H3 genes. Maximum Likelihood (ML) analysis was conducted with the web server W-IQ-TREE (see http://iqtree.cibiv.univie.ac.at/; Trifinopoulos et al., 2016) using ultrafast bootstrap (UFB) (Minh et al., 2013) with 10,000 replicates to assess branch support. Bayesian Inference (BI) was conducted in MrBayes 3.2.1 (Ronquist et al., 2012). The Markov chain Monte Carlo (MCMC) algorithm was run for 5 million generations and sampled trees every 1000 generations; the burn-in was set to 25%.

The final trees were displayed using FigTree v1.4.4 software (Rambaut, 2018).

RESULTS

Taxonomy

Family Palaemonidae Rafinesque, 1815

Genus *Palaemon* Weber, 1795

Palaemon bijagosensis spec. nov.

(Figs. 1-7, 10, 14)

Type material examined.— Holotype: RMNH.CRUS.D.59520: non-ovigerous female, pocl. 4.9 mm: Guinea-Bissau, Bijagos Islands, Kere Island, approx. 11°32′2″N, 16°13′5″W, 6-8.v.2023, intertidal collecting, collected by Peter Wirtz.

Paratypes — RMNH.CRUS.D.59521: 4 ovigerous females, pocl. 4.7-6.3 mm, $R = (2\text{-}3) + (6\text{-}7) + 1/3$; 2 non ovigerous females, pocl. 2.4, 4.9 mm, $R = 2 + (6\text{-}7) + (1\text{-}2)/3$; 2 males, pocl. 3.2 and 3.3 mm, $R = 2 + (6\text{-}7) + 2/3$; 2 damaged specimens: same locality as holotype.

RMNH.CRUS.D.59522: 1 ovigerous female, pocl. 6.0 mm, rostrum broken; 7 non ovigerous females, pocl. 2.0-4.4 mm, $R = 2 + (6\text{-}7) + (1\text{-}2)/3$: Guinea-Bissau, Bijagos Islands, Poilão Island, 11°51′44″N 15°43′34″W, 30.iv.2023, in tide pools, collected by Peter Wirtz.

RMNH.CRUS.D.59523: 1 male, pocl. 2.3 mm, $R = 2 + 8 + 1/3$; 9 juveniles, pocl. 1.1-2.0 mm, $R = (1\text{-}2) + (7\text{-}8) + 0\text{-}1)/(2\text{-}3)$: Guinea-Bissau, Bijagos Islands, Poilão Island, 11°51′44″N 15°43′34″W, 30.iv.2023, depth 1 m, among macroalgae, collected by Peter Wirtz.

Other material.— RMNH.CRUS.D.49907: 3 ovigerous females, pocl. 5.8-7.1 mm: Nigeria, Niger Delta, creek mouth N of Isaka Seas School, 23.xii.1983, collected by C.B. Powell.

RMNH.CRUS.D.15564: 1 ovigerous female, pocl. 7.4 mm, 1 non-ovigerous female, pocl. 4.9 mm, 1 male, pocl. 5.3 mm: Nigeria, Niger Delta, v-vii.1960, collected by H.J.G. Beets.

RMHN.CRUS.D.38519: 9 ovigerous female, pocl. 5.1-6.8 mm, 1 non-ovigerous female, pocl. 6.5 mm, 13 males, pocl. 4.2-5.3 mm: Nigeria, Bonny River, 1 km N of Alochia, right bank N of entrance to creek, CBP stn. 141, 4°37′30″N 7°9′40″E, CBP stn. 140, 4°37′15″N 7°9′30″E, 13.v.1980, collected by C.B. Powell.

Comparative material of *Palaemon adspersus*.— RMNH.CRUS.D.42979: 2 ovigerous females, pocl. 13.0 and 10.5 mm, 2 non-ovigerous females, pocl. 11.2 and 9.2 mm, 1 male, pocl. 7.4 mm: Ukraine, Sea of Azov, just S of Genichesk, 10.vi.1993, caught with shrimpnet, depth ca. 1 m, sandy bottom, with *Crangon crangon*, *Rhithropanopeus harrissii tridentatus*, *Idotea balthica* and *Sphaeroma pulchellum*, collected by G. Keijl.

RMNH.CRUS.D.21545: 10 specimens: The Netherlands, Zeeland, Schouwen, ‘Gat van Ouwerkerk’, 17.vi.1961, collected by W. Vader.

Comparative material of *Palaemon elegans*.— RMNH.CRUS.D.4100: 1 male, pocl. 7.3 mm: The Netherlands, province of Zeeland, Yerseke, 15.x.1943, collected by P. Korringa.

RMNH.CRUS.D.47801: many specimens: Iran, south coast of Caspian Sea, from breakwater in Port of Bandar Anzali (= Enzeli, = Bandar e Pahlavi); caught with a handnet, early 1997, collected by Sharam Abdolmalaki.

RMNH.CRUS.D.56031: 2 ovigerous females, pocl. 9.6 and 9.7 mm: The Netherlands, province of Noord Holland, Amerikahaven Amsterdam, near entrance of Australiëhaven, 15.vii.2013, collected by M. Melchers. — RMNH. CRUS.D.31361; ovigerous female, pocl. 10.3 mm: Portugal, Azores, Corvo, 4.vi.1976, collected by W. Backhuys.

Comparative material of *Palaemon floridanus*.— RMNH.CRUS.D.8984: 3 non-ovigerous females, pocl. 4.3, 5.8, 6.0 mm: U.S.A., Florida, Cedar Keys, -.i.1884, sand, collected by H. Hemphill.

Comparative material of *Palaemon longirostris*.— RMNH.CRUS.D.55329: 1 ovigerous female, pocl. 7.5 mm (id. by C. Ashelby): Morocco, near Rabat, river delta Bou Regreg, 1965, collected by B. Elkaim.

Comparative material of *Palaemon macrodactylus*.— RMNH.CRUS.D.56152: 30 specimens: The Netherlands, Noord-Holland, Amsterdam, Amerikahaven, km blok 25-23-54, 15.ix.2013, collected by M. Melchers, donated by D. Platvoet.

Comparative material of *Palaemon maculatus*.— RMNH.CRUS.D.15566: 10 specimens: Nigeria, Niger Delta, -.v.1960, collected by H.J.G. Beets.

RMNH.CRUS.D.23745: 1 ovigerous female, pocl. 4.3 mm: Liberia, Junk River, near Marshall, 8.iv.1967, collected by T.C. Rutherford.

Comparative material of *Palaemon northropi*.— RMNH.CRUS.D.8974: Brazil, Sta. Catherina, 1919, don. by Mus. Paulista through H. Luederwaldt.

RMNH.CRUS.D.8975: 4 specimens: U.S.A., Florida, Tortugas, moat of Fort Jefferson, 28.vi.1931, collected by A.S. Pearse and W.L. Schmitt.

RMNH.CRUS.D.8976: 5 specimens: Virgin Island, St. Croix, Fairplain, lagoon, collected by H.A. Beatty.— RMNH.CRUS.D.27912: 4 specimens: Netherlands Antilles, Curaçao, Enoch, 2.ii.1949, collected by P.W. Hummelinck.

RMNH.CRUS.D.54605: 1 ovigerous female, pocl. 7.2 mm: Benner Bay, St. Thomos, U.S. Virgin Islands, lagoon, 0-1 m, *Rhizophora* and mud, 30.iv.1973, collected by Hummelinck, no. 1674.

Comparative material of *Palaemon peringueyi*.— RMNH.CRUS.D.30810: 9 specimens: South Africa, KwaZulu-Natal (= Natal), Mission Rocks, N. of St. Lucia Estuari, 2.xii.1974, collected by L.B. Holthuis.

Comparative material of *Palaemon powelli*.— RMNH.CRUS.D.49892: paratypes, 4 males, pocl. 3.6-4.8 mm; 5 ovigerous females, pocl. 5.9-7.6 mm: Nigeria,

Niger Delta, medium salinity mangrove creeks, 1976-1998, collected by C. B. Powell no. 134.

Comparative material of *Palaemon serratus*.— RMNH.CRUS.D.41818: 1 male, pocl. 11.7 mm: The Netherlands, province of Noord Holland, IJmuiden, Spuisluis, 15.ix.1984, collected by T. de Groot and J.P.H.M. Adema.

Comparative material of *Palaemon vicinus*.— RMNH.CRUS.D.53109: holotype ovigerous female, pocl. 6.8 mm: "Tydeman" Cancap VII, Cape Verde Islands Exp. Sta.7.K 15, Boa Vista, W coast, NW coast of Iihé de Sal Rei, 16°10′N 22°58′W, intertidal (rockpool) and shallow sublittoral, protected area with sandy bottom, stones, boulders, corals, 27/28.viii.1986. Paratypes: RMNH.CRUS.D. 53110: male, pocl. 5.1 mm: data as for holotype.

RMNH.CRUS.D.53111: 11 ovigerous females, pocl. 5.9-7.5 mm, 9 non-ovigerous females, pocl. 3.9-5.2 mm, 15 males, pocl. 3.4-5.6 mm: data as for holotype.

RMNH.CRUS.D.53112: ovigerous female, pocl. 6.5 mm: data as for holotype.

RMNH.CRUS.D.51055: 11 ovigerous females, pocl. 5.9-7.5 mm, 9 non-ovigerous females, pocl. 3.9-5.2 mm, 15 males, pocl. 3.4-5.6 mm: data as for holotype.

RMNH.CRUS.D.51003: 7 ovigerous females, pocl. 6.4-7.7 mm, 2 non-ovigerous females, pocl. 7.3-7.8 mm, 7 males: "Tydeman" Cancap VII, Cape Verde Islands Esp. Sta.D.15, São Vicente, W. Coast, Baia da Ribeirinha, 16°50′N 25°5′E, 07.vii.1986.

Non-type material: RMNH.CRUS.D.21010: 1 non-ovigerous female, pocl. 6.9 mm, 1 male, pocl. 6.0 mm: Cape Verde Islands, São Vicente, Bahia do Norte, 14.iii.1954, collected by Panelius.

Comparative material of *Palaemon xiphias*.— RMNH.CRUS.D.34622: many specimens: France, Alpes-Maritimes, Baies des Anges, Nice, 22.iii.1951, collected by H. Nouvel.

Comparative material of *Palaemon* spec. — RMNH.CRUS.D.21732: 1 ovigerous female, pocl. 7.2 mm, 5 non-ovigerous females, pocl. 3.4-5.5 mm, 15 males, pocl. 4.0-5.5 mm, 35 individuals, pocl 2.1-3.3 mm: Cameroon, Kribi, 10.iii.1964, collected by B. de Wilde-Duyfjes. — RMNH.CRUS.D.10391: 1 heavily damaged ovigerous female, pocl. 6.9 mm: Sierra Leone, Kissy, 11.viii.1955, by handnet, collected by. A.R. Longhurst.

Description.— A small sized *Palaemon* species (fig. 1). Carapace glabrous. Rostrum (figs. 1, 2A, 7) deep, straight or slightly ascendant distally; about as long as carapace, just overreaching scaphocerite; armed with 10-11 dorsal teeth and 3 ventral teeth; posterior 6-7 dorsal teeth weakly constricted at bases, posterior 2-3 teeth situated behind orbit; spacing between teeth roughly equal, although proximal one slightly more distant; tip bifid, sometimes trifid; double row of

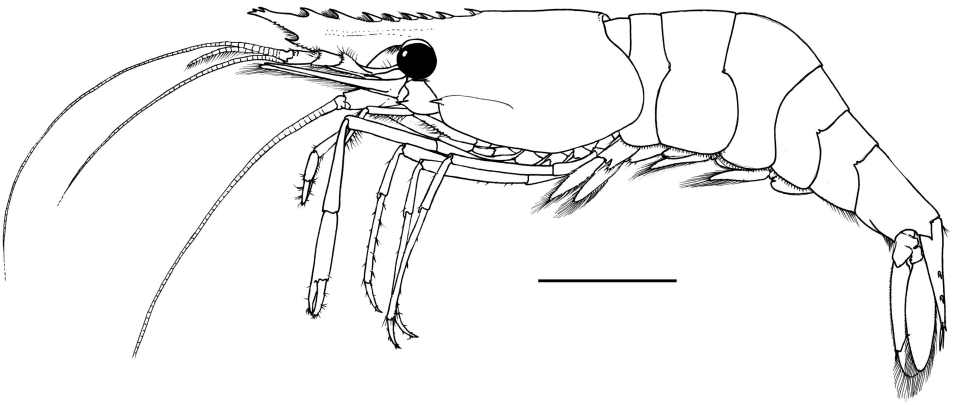

Fig. 1. *Palaemon bijagosensis* spec. nov., non-ovigerous female holotype, pocl. 4.9 mm (fcn. 12), habitus, lateral (RMNH.CRUS.D.59520). Scale = 4 mm.

setae present in unarmed ventral portion, single row of setae present between the teeth. Antennal and branchiostegal teeth present, marginal. Antennal tooth slightly larger than branchiostegal tooth. Branchiostegal groove originating dorsal to branchiostegal tooth, trending downwards, finishing just in front of the mid-point of the carapace, slightly lower than at its origin. Sub-orbital lobe and pterygostomial angle rounded. Béc ocellaire (fig. 2B) with strongly concave anterior margin, pronounced upwardly directed beak, dorsal surface with strong concavity.

Abdominal pleura furnished with plumose setae on ventral margin (fig. 1, 2C, 10); fifth pleuron with distinct distoventral tooth; sixth segment approximately 1.7 times length of fifth; posterolateral margin with tooth, without distoventral notch; median lobe acute, with rounded ventral submedian process.

Thoracic sternal armature sexually dimorphic. Fourth thoracic sternite of females armed with a sharp tooth with a strong, incomplete posterior ridge, remainder with low transverse ridge; ovigerous females eighth sternite with a flattened plate anteriorly fringed with row of setae. Fourth thoracic sternite of males as in females, fifth to seventh thoracic sternites with low, rounded bosses and partial transverse ridges, eighth sternite with flattened tooth with an emarginated tip.

First three abdominal sternites with medial teeth, fourth sternite unarmed, fifth with longitudinal ridge in both sexes. Pre-anal plate (fig. 2D) unarmed in both sexes.

Eye (fig. 2E) well developed with pigmented cornea; cornea slightly wider than stalk but approximately equal in length; ocellus present on dorsomesial side.

Antennular peduncle (fig. 2F) extending to level of base of tooth of scaphocerite; basal segment 2.2 times as long as wide, slightly convex outer margin, stylocerite

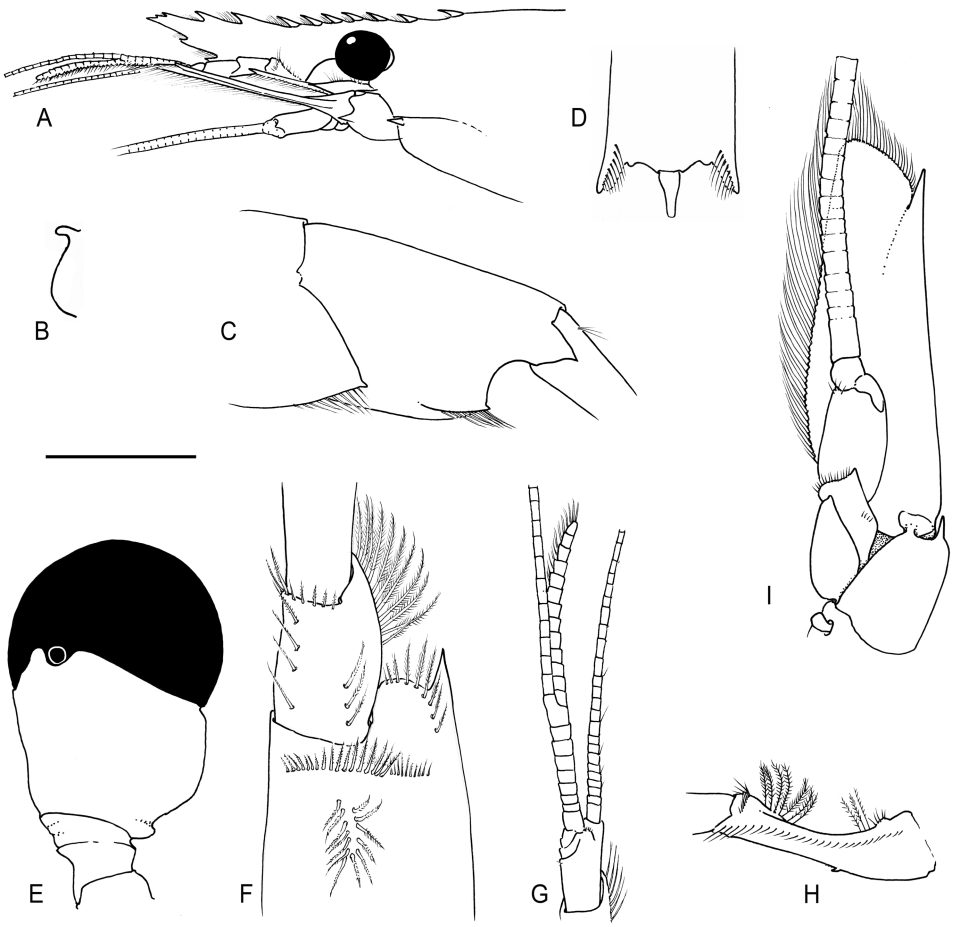

Fig. 2. *Palaemon bijagosensis* spec. nov., ovigerous female, pocl. 6.3 mm (RMNH.CRUS.D.59521). A, Anterior appendages and anterior part of carapace, lateral view; B, béc ocellaire, lateral view; C, fifth and sixth abdominal pleura, lateral view; D, sixth abdominal sternite, pre-anal plate; E, left eye, dorsal view; F, antennular peduncle, distal part basal segment and intermediate segment, dorsal view; G, distal segment of antennular peduncle and flagella, dorsal view; H, right antennular peduncle, basal segment, medial view; I, antenna, ventral view. Scale bar: A = 4 mm; B-D, G, H = 2 mm; E, F = 1 mm.

acute; statocyst with statolith; distolateral tooth of basal segment far exceeding laminar portion, almost extending to level of distal margin of penultimate segment; inner ventromesial tooth present at about 2/5 of length (fig. 2H); ultimate segment 1.4 times as long as penultimate, their combined length about than 0.8 times that of the basal segment; dorsal flagellum of antennula fused for slightly less than half its length with 8-10 segments fused and 11-14 free in larger specimens, decreasing in number in smaller specimens; free portion with two aesthetascs on each segment (fig. 2G).

Scaphocerite (fig. 2I) slender, laminar, 4 times as long as broad; outer margin slightly concave, terminating in a tooth, falling short of distal margin of lamina; basal segment of antenna with large lateral tooth. Flagellum of antenna about twice length of body.

Epistome triangular with a rounded anterior angle and strong anteromedial carina; labrum narrow, rectangular, flanked by triangular lobes on each side. Paragnaths covering about half the mandibles; alae formed by broad, transverse more or less oval, distal lobes, ventromesial lobes triangular. Corpus short, narrowly separated; base with two carinae.

Mandible (fig. 3A) with two-segmented palp; terminal segment distinctly longer than proximal segment; terminal segment with 4 minutely serrate, apical setae and few lateral setae; basal segment bearing 3 lateral setae. Incisor process of mandible with 3 teeth on right mandible, central tooth smallest; 4 teeth on left mandible, inner 3 teeth smaller than outer one; molar process with 6 teeth of varying sizes. Maxillula (fig. 3B) with lower lacinia, smaller and narrower than upper lacinia, bearing stout, plumose setae distally; upper lacinia provided with several distal cuspidate and stout setae; with few simple setae on its upper margin; palp with a bifid tip; upper process naked, lower process broad with 2 median setiform process and a further setiform process on ventral tubercle. Maxilla (fig. 3C) with upper lacinia deeply cleft, medial margin with rows plumose and serrulate setae, long finely serrulate setae proximally on upper margin; palp well developed, broad, with few plumose setae proximally on its inner margin and row of plumose setae proximally on its outer margin; scaphognathite large, fringed with plumose setae; lower lobe slightly broader than upper lobe. First maxilliped (fig. 3D) with endites separated by a distinct notch; palp slender and slightly twisted, with a single terminal simple seta and row of short setae proximally on the medial margin; exopod well developed, slender and furnished with plumose setae distally; caridean lobe well developed, broad; epipod large, bilobed. Second maxilliped (fig. 3E) with broad rectangular ultimate segment with short serrulate setae; penultimate segment broadly triangular, with a convex, semicircular upper margin with row of robust spiniform setae, and slender setae; exopod much longer than endopod, with distal fourth with long plumose setae; oval epipod and well developed podobranch present. Third maxilliped (fig. 3F) pediform; ultimate segment 0.7 times length of penultimate; ischiomerus with strongly curved dorsal margin; a single spine subdistally; exopod slightly shorter than antepenultimate segment; epipodal plate ear shaped; well-developed arthrobranch and a second, reduced arthrobranch present.

Well-developed pleurobranchs present on all pereiopods. First pereiopod (fig. 4A) reaching tip of distolateral tooth of scaphocerite; coxa with median protuberance with long setae; basis approximately 0.6 length of ischium, with two broad

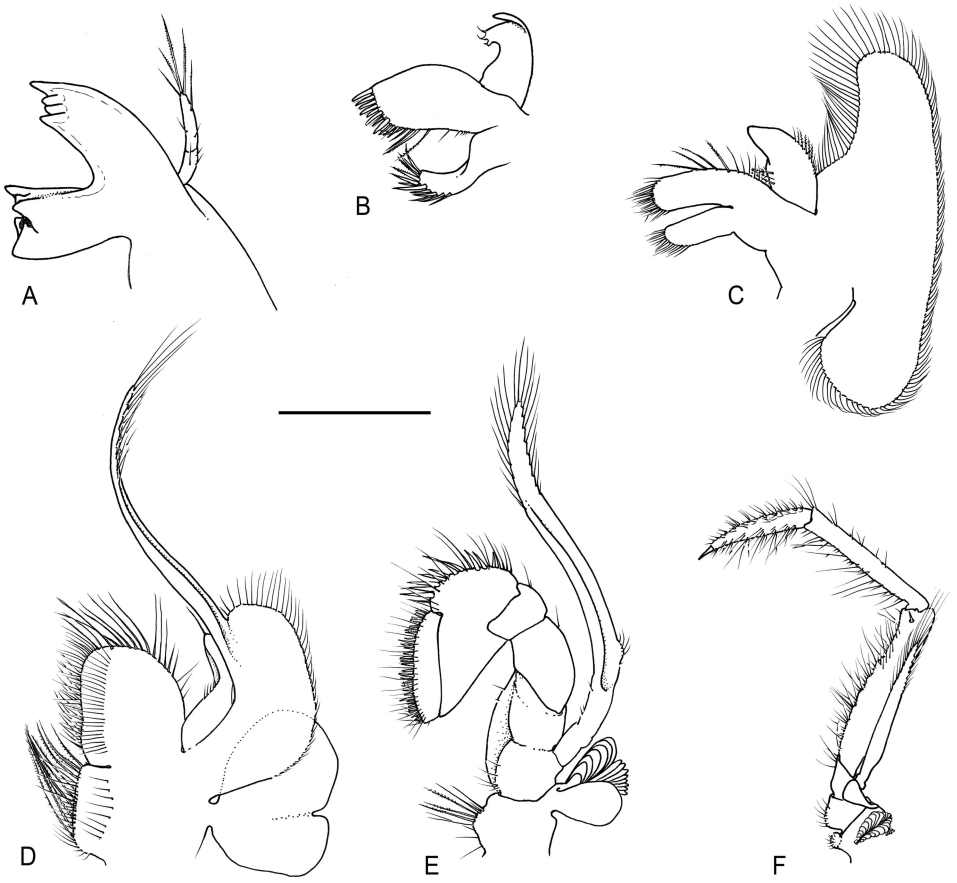

Fig. 3. *Palaemon bijagosensis* spec. nov., ovigerous female, pocl. 6.3 mm (RMNH.CRUS.D.59521). A, left mandible, posterior view; B, left maxillula, posterior view; C, left maxilla, posterior view; D, left first maxilliped, posterior view; E, left second maxilliped, posterior view; F, left third maxilliped, posterior view. Scale bar: A-E = 1 mm; F = 2 mm.

median crests with setae; ischium approximately 0.6 of merus length, medially expanded, expansion fringed with broad curved setae; merus straight, unarmed; carpus 1.1 times longer than merus, slightly expanded distally; chela 0.6 length of carpus, fingers slightly shorter than palm, with tufts of setae; carpal-propodal brush well developed. Second pereiopod (fig. 4B) extending beyond scaphocerite by chela; ischium about 3 times length of basis; merus 1.4 times length of ischium; carpus elongate, almost as long as merus, expanded distally; chela (fig. 4C) about 1.4 times length of carpus; fingers approximately half length of palm, covered by stout setae; dactylus with small tooth in proximal part cutting edge; fixed finger with small tooth in proximal part of cutting edge just proximally from tooth on dactylus. Ambulatory pereiopods similar, slender, slightly increasing in length

from third to fifth. Third pereiopod (fig. 5A, B) reaching tip of distolateral tooth of scaphocerite; ischium about twice length of basis; merus slightly more than twice length of ischium; carpus half-length of merus; propodus twice length of carpus, as long as merus, ventral margin armed with 6 cuspidate setae, distal most of which paired, median margin with 4 cuspidate setae; dactylus simple, slender, feebly curved, 0.3 times length of propodus. Fourth pereiopod (fig. 5C, D) reaching tip of distolateral tooth of scaphocerite; ratios between joints similar to that of third pereiopod; propodus ventral margin provided with 5 cuspidate setae, distalmost of which paired, median margin with 4 cuspidate setae; dactylus simple, slender, feebly curved. Fifth pereiopod (fig. 5E, F) reaching tip of distolateral tooth of scaphocerite; ratios between joints similar to that of third pereiopod; propodus ventral margin armed with 5 cuspidate setae, the distal most not paired, median margin with 5 cuspidate setae, grooming brush (fig. 5F) comprises 3 rows of serrulate setae and extends for about 0.15-0.2 times length of propodus; dactylus simple, slender, feebly curved. All pereiopods without fine pubescence at carpomeral joint.

First pleopod sexually dimorphic in proportions, lacking appendix interna in both sexes; endopod in males (fig. 6A) 0.6 times length of exopod, both exo- and endopods fringed with plumose setae but mesial portion of the inner margin of endopod devoid of plumose setae, with series of about 8 spiniform short setae; in females, endopod approximately 0.3 length of the exopod. Second to fifth pleopods broadly similar with the endopod being slightly shorter than the exopod, bearing an appendix interna. Second pleopod of males (fig. 6B) with appendix masculina slightly overreaching appendix interna, furnished with series of lateral and apical straight setae; apical setae with minute setules.

Telson (fig. 6C-F) 1.25 times length of sixth pleonite; length:width ratio = 3.3:1 proximally narrowing to 7.0:1 distally; dorsal surface with two pairs of cuspidate setae and 1 pair of simple setae subdistally on median process; proximal dorsal tuft of setae present, consisting of about 5 simple setae; proximal pair of cuspidate setae situated at about 0.45-0.50 of telson length, distal pair at about 0.65-0.70 of telson length; posterior margin prolonged into acute median process, with 1 pair of plumose setae and 2 pairs of stout setae, inner pair about 4 times longer than outer pair; median process exceeding outer pair of stout setae.

Uropods broadly ovate, overreaching telson by 0.25 times length of endopod; exopod slightly longer than endopod, weak diaeresis present; mobile distolateral seta of exopod overreaching fixed tooth by length of tip. Eggs with eye spots numerous; 0.50 × 0.65 mm.

Colour pattern (fig. 14).— Generally transparent with pattern of brown lines and dots. Rostrum transparent. Carapace with conspicuous lines of brown dots

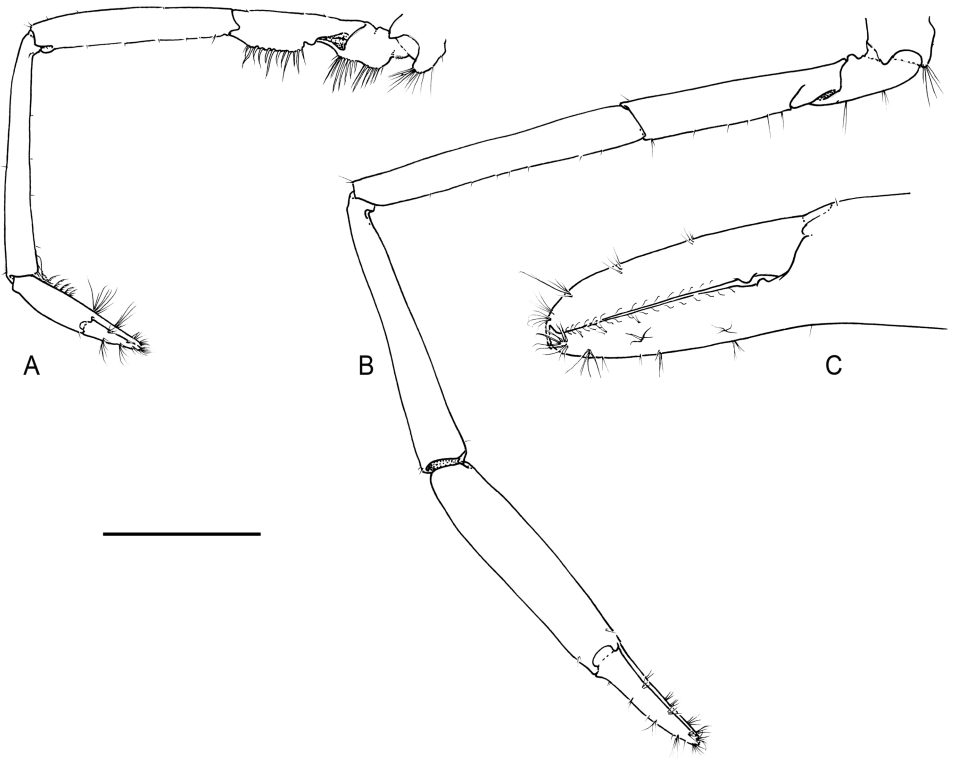

Fig. 4. *Palaemon bijagosensis* spec. nov., ovigerous female, pocl. 6.3 mm (RMNH.CRUS.D.59521). A, Left first pereiopod, lateral view; B, left second pereiopod, lateral view; C, idem distal part chela, medial view. Scale bar: A, B = 2 mm; C = 1 mm.

obliquely across branchiostegite from postorbital region, antennal tooth and branchiostegal tooth; cardiac region with short lines of brown dots and scattered white spots between brown lines. Pleon with transverse brown lines and dots on each pleomere, transverse line along posterior margin most distinct; just in front of these lines some white spots present. Cornea greenish grey. Antennular and antennal flagella translucent to slightly brownish. Pereopods largely translucent with yellow band in distal part of joints, with bluish tinge in remaining parts; proximal part of fingers of second pereiopod bluish tinge. Exopod of uropod with subdistal red spot; endopod with subdistal reddish spot. Tip of telson white. Eggs greenish translucent.

Etymology.— The specific name is after the archipelago where the type material was collected.

Remarks.— Fourteen species of *Palaemon* with a mandibular palp have been reported from marine and brackish waters in the Atlantic: *P. adspersus* Rathke 1836, *P. elegans* Rahtke, 1836; *P. floridanus* Chace 1942, *P. longirostris* H. Milne

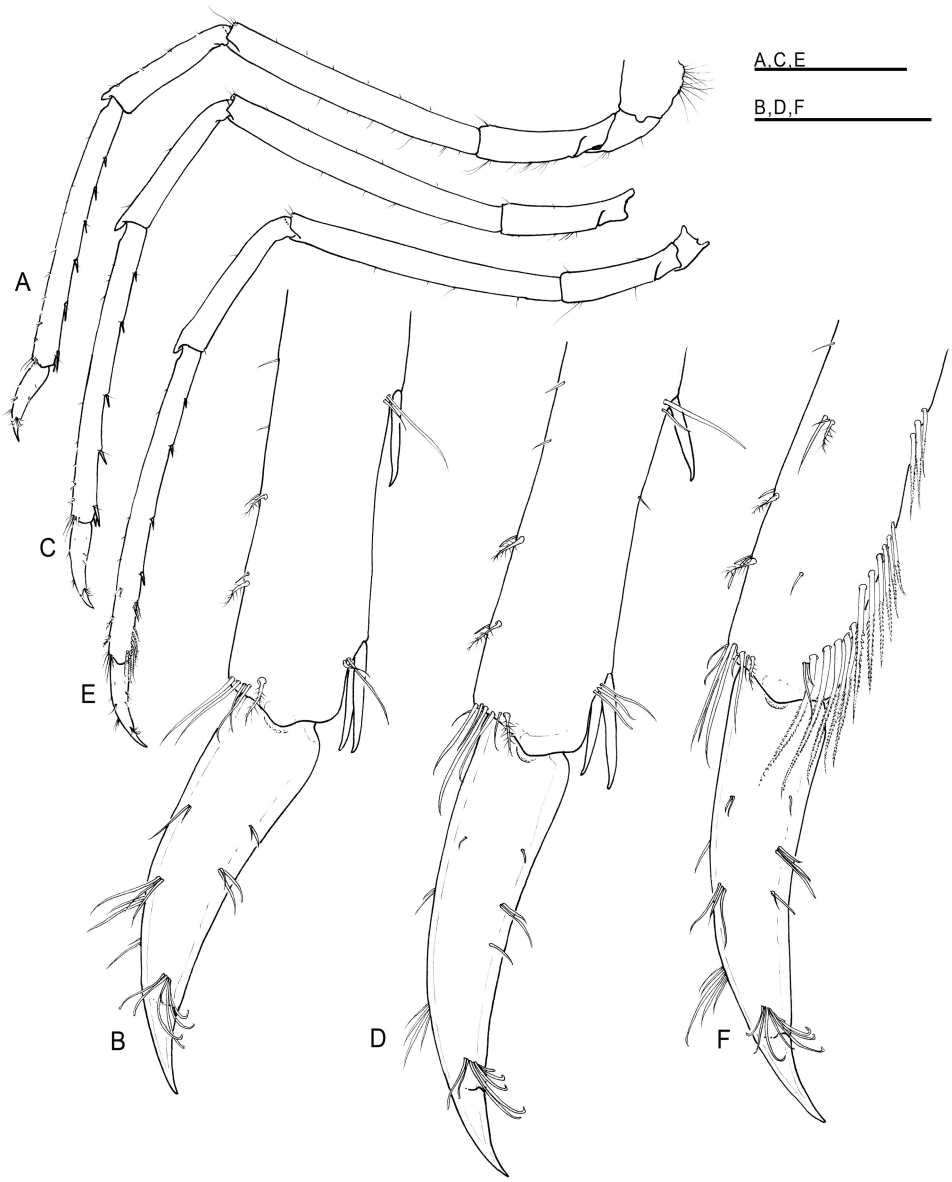

Fig. 5. *Palaemon bijagosensis* spec. nov., ovigerous female, pocl. 6.3 mm (RMNH.CRUS.D.59521). A, left third pereiopod, lateral view; B, idem, distal part propodus and dactylus, lateral view; C, left fourth pereiopod, lateral view; D, idem, distal part propodus and dactylus, lateral view; E, left fifth pereiopod, lateral view; F, idem, distal part propodus and dactylus, lateral view. Scale bars: A, C, E = 2 mm; B, D, F = 0.5 mm.

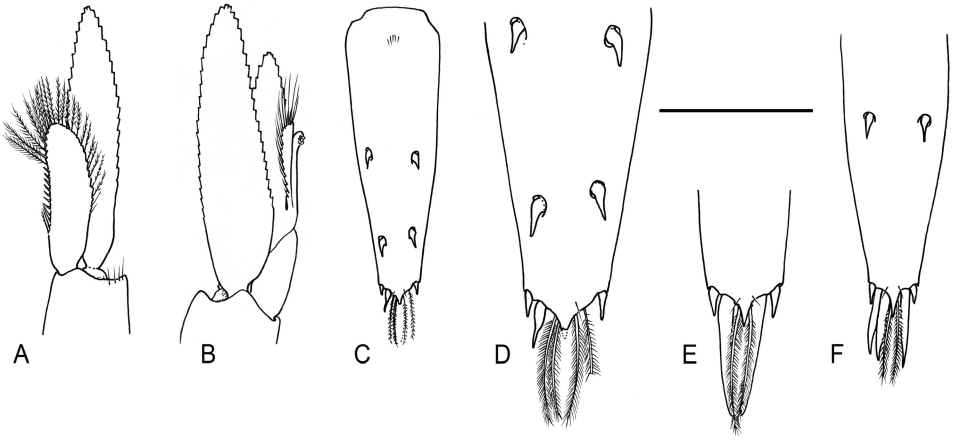

Fig. 6. *Palaemon bijagosensis* spec. nov. (RMNH.CRUS.D.59521). A, B, F, Male, pocl. 3.3 mm; C, D, ovigerous female, pocl. 6.3 mm; E, ovigerous female, pocl. 5.5 mm. A, first left pleopod, ventroanterior view, setae exopod omitted; B, second left pleopod, ventroposterior view, setae endopod and exopod omitted; C-F, distal part telson, dorsal view. Scale bar: A, B, D-F = 0 mm; C = 2 mm.

Edwards, 1837, *P. macrodactylus* Rathbun 1902, *P. maculatus* (Thallwitz, 1891), *P. northropi* (Rankin, 1898), *P. paivai* Filho 1967, *P. peringueyi* Stebbing 1915, *P. powelli* Ashelby & De Grave, 2009, *P. rosalesi* Rodriguez de la Cruz, 1965 (nomen dubium according to De Grave & Fransen, 2011; DecaNet, 2025), *P. serratus* (Pennant, 1777), *P. vicinus* Ashelby, 2009, *P. xiphias* Risso, 1816, (De Grave & Ashelby, 2013; DecaNet eds, 2025).

The new species differs from *P. adspersus*: (1) in having 8-9 dorsal rostral teeth (figs. 1, 2A, 7) whereas *P. adspersus* has 5-7 dorsal rostral teeth (fig. 8A); (2) in having usually 2 (seldom 1 or 3) postorbital rostral teeth (figs. 1, 2A, 7) whereas *P. adspersus* has only 1 postorbital rostra tooth (fig. 8A); (3) in having the rostrum transparent (fig. 14) whereas *P. adspersus* has red blotches or a red line in the lower half of the rostrum (González-Ortegón et al., 2015, fig. 2); (4) in having a two-articulated mandibular palp whereas the palp in *P. adspersus* is three-articulated; (5) in having 2-3 rows of grooming brushes on the fifth propodus (fig. 5F) whereas *P. adspersus* has seven rows of grooming brushes on the fifth propodus (fig. 13A); (6) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus with a distinct protuberance in *P. adspersus* (fig. 11A); 7, in the presence of dark brown lines on the carapace and abdomen (fig. 14) versus the absence of lines on carapace and abdomen in *P. adspersus* (González-Ortegón et al., 2015, fig. 2).

The new species differs from *P. elegans*: (1) in having the rostrum usually with 2 postorbital teeth, seldom 1 or 3 (figs. 1, 2A, 7) versus usually 3 in *P. elegans* (fig. 8B); (2) in having the distance between the posteriormost dorsal rostral tooth and

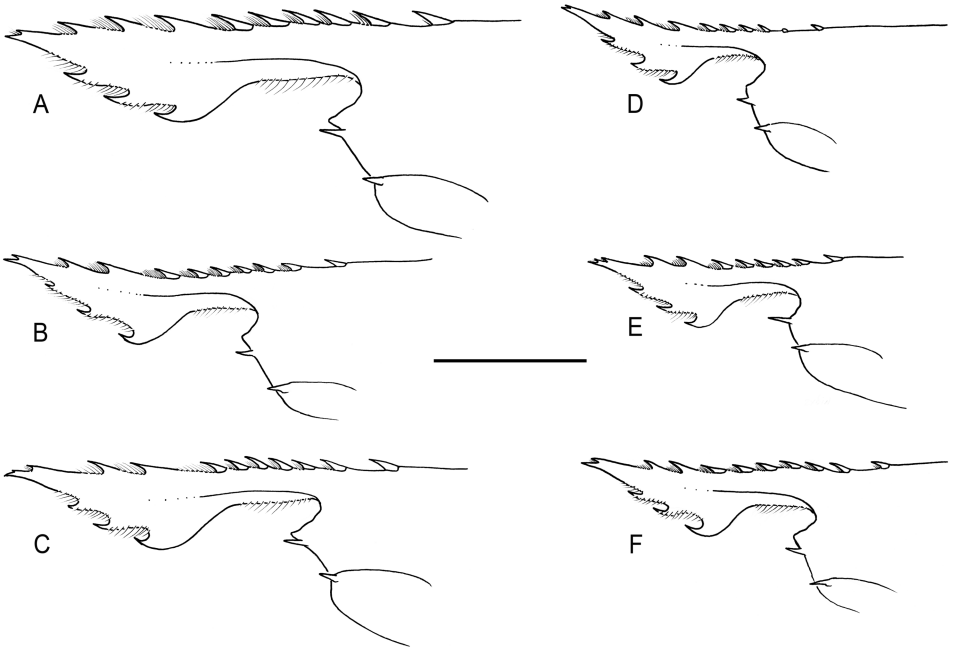

Fig. 7. *Palaemon bijagosensis* spec. nov., (RMNH.CRUS.D.59521), rostrum and anterior part carapace, lateral view. A, non-ovigerous female, pocl. 4.4 mm; B, ovigerous female, pocl. 6.1 mm; C, male, pocl. 3.3 mm; D, ovigerous female, pocl. 4.7 mm; E, ovigerous female, pocl. 4.9 mm; F, ovigerous female, pocl. 5.7 mm. Scale bar: A, C, E = 2 mm; B, D, F = 4 mm.

the second tooth clearly larger than between the second and third tooth in (figs. 1, 2A, 7) versus equal distances between the posteriormost tooth and the second and between the second and third tooth in *P. elegans* (fig. 8B); (3) in having the palm of the chelae of the second pereiopods 1.5 times longer than the fingers (fig. 4B) versus 2 times longer than the fingers in *P. elegans* (see González-Ortegón & Cuesta, 2006, fig. 1K); (4) in having two or three rows of grooming brushes on the fifth pereiopod propodus (fig. 5F) versus four or five rows in *P. elegans* (see Ashelby, 2009, fig. 42); (5) in having the posterolateral margin of the pleura of the fifth abdominal somite with a tooth (figs. 2C, 10) versus bluntly quadrate in *P. elegans* (see Ashelby, 2009, fig. 41); (6) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus with a distinct protuberance in *P. elegans* (see González-Ortegón & Cuesta, 2006, fig. 4A).

The new species differs from *P. floridanus*: (1) in having the rostrum straight, just overreaching the scaphocerite and bearing 8-9 dorsal teeth (figs. 1, 2A, 7) versus having the rostrum is distally ascending, far overreaching the scaphocerite and bearing 9-12 dorsal teeth in *P. floridanus* (fig. 8C; Chace, 1942: 80, pl. XXIII, fig. A); (2) in having 3 (2 in some cases) ventral rostral teeth (fig. 7) versus 5-7 in

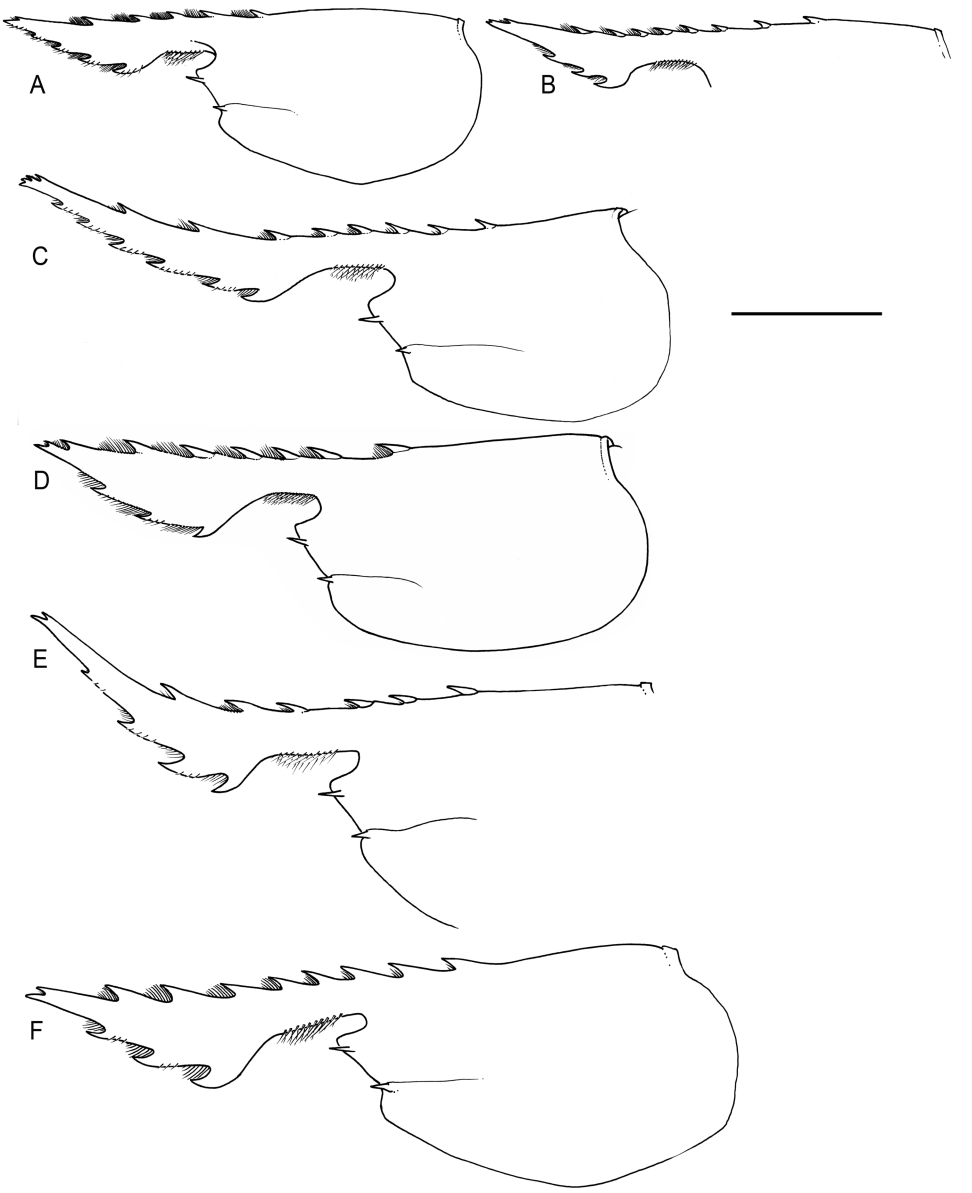

Fig. 8. Rostrum and anterior part carapace, lateral view. A, *P. adspersus* Rathke 1837, ovigerous female, pocl. 13.0 mm (RMNH.CRUS.D.42979); B, *P. elegans* Rathke, 1837, ovigerous female, pocl. 10.3 mm (RMNH.CRUS.D.31361); C, *P. floridanus* Chace 1942, non-ovigerous female, pocl. 6.0 mm (RMNH.CRUS.D.8984); D, *P. longirostris* H. Milne-Edwards, 1837, ovigerous female, pocl. 7.5 mm (RMNH.CRUS.D.55329); E, *P. northropi* Rankin,1898, non-ovigerous female, pocl. 3.5 mm (RMNH.CRUS.D.27912); F, *P. peringueyi* Stebbing 1915, non-ovigerous female, pocl. 8.1 mm (RMNH.CRUS.D.30816);. Scale bar: A, B = 8 mm; C-F = 4 mm.

P. floridanus (fig. 8C; Chace, 1942: 80, pl. XXIII, fig. A); (3) in having 2-3 rows of grooming brushes on the fifth pereiopod propodus (fig. 5F) versus 3-4 rows in *P. floridanus* (fig. 13B). The color pattern of *P. floridanus* seems to have more brown lines on carapace and abdomen (iNaturalist, 2025) than that of the new species.

The new species differs from *P. longirostris*: (1) in having a 2-articulated mandibular palp versus a 3-articulated palp in *P. longirostris*; (2) in having 2-3 rows of grooming brushes on the fifth propodus (fig. 5F) versus 9-14 in *P. longirostris* (13C); (3) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus the presence of a protuberance in *P. longirostris* (fig. 11C).

The new species differs from *P. macrodactylus*: (1) in having 8-9 dorsal rostral teeth (figs. 1, 2A, 7) versus 9-15 (usually 10-13) in *P. macrodactylus* (see González-Ortegón & Cuesta, 2006, fig. 2D); (2) in having a single row of long plumose setae in front of the ventral rostral teeth (figs. 1, 2A, 7) versus a double row of long plumose setae along the entire ventral rostral margin in *P. macrodactylus* (see González-Ortegón & Cuesta, 2006, fig. 2D); (3) in having a two-articulated mandibular palp versus a usually three-articulated palp in *P. macrodactylus*; (4) in having 2-3 rows of grooming brushes on the fifth pereiopod propodus (fig. 5F) versus 7-9 rows in *P. macrodactylus* (fig. 13D); (5) in having the posterolateral margin of the pleura of the fifth abdominal somite with a tooth (figs. 2C, 10) versus bluntly quadrate in *P. macrodactylus* (see Micu & Niţă, 2009, fig. 3).

The new species differs from *P. maculatus*: (1) in having a two-articulated mandibular palp (fig. 3A) versus a three-articulated palp in *P. maculatus* (see Ashelby & De Grave, 2009, fig. 1G); (2) in having the carpus and merus of the second pereiopods of equal lengths (fig. 4B) versus having the carpus 1.5 times the length of the merus in *P. maculatus* (see Ashelby & De Grave, 2009, fig. 2B); (3) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus with a distinct protuberance in *P. maculatus* (fig. 11D; Ashelby & De Grave, 2009, fig. 1D).

The new species differs from *P. northropi*: (1) in having the rostrum straight without a distal part devoid of dorsal teeth (figs. 1, 2A, 7) versus having the rostrum distally ascending with the distal part of the rostrum without dorsal teeth in *P. northropi* (fig. 8E); (2) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus with a protuberance in *P. northropi* (fig. 11E, F). The color patterns of the new species and *P. northropi* are similar; the white spots on carapace and abdomen seem to be more prominent in *P. northropi* (see iNaturalist, 2025).

The new species differs from *P. peringueyi*: (1) in having the posterior 5-6 dorsal rostral teeth with a basal suture (figs. 1, 2A, 7) versus all dorsal teeth without basal suture in *P. peringueyi* (fig. 8F); 2) in having the ventral rostral lamina usually with

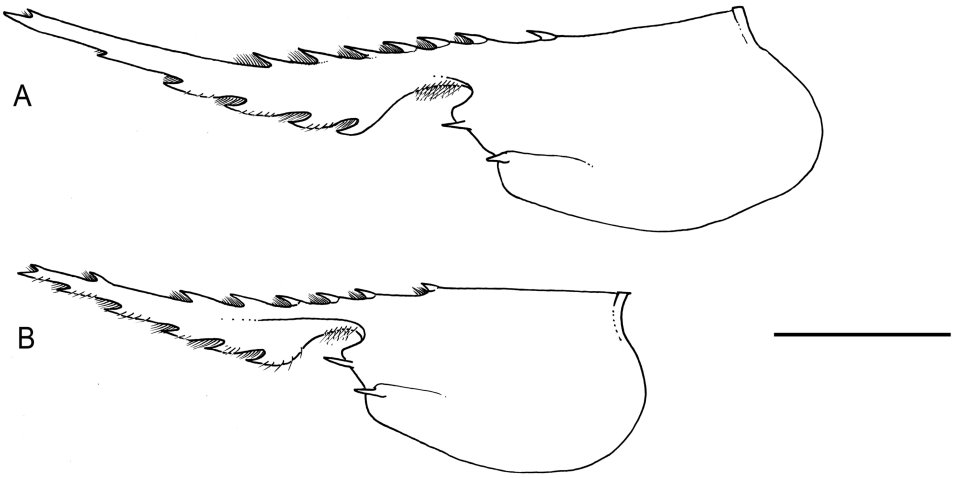

Fig. 9. Rostrum and anterior part carapace, lateral view. A, *P. serratus* Pennant, 1777, male, pocl. 11.7 mm (RMNH.CRUS.D.41818); B, *P. xiphias* Risso, 1816, ovigerous female, pocl. 11.2 mm (RMNH.CRUS.D.34622). Scale bar = 8 mm.

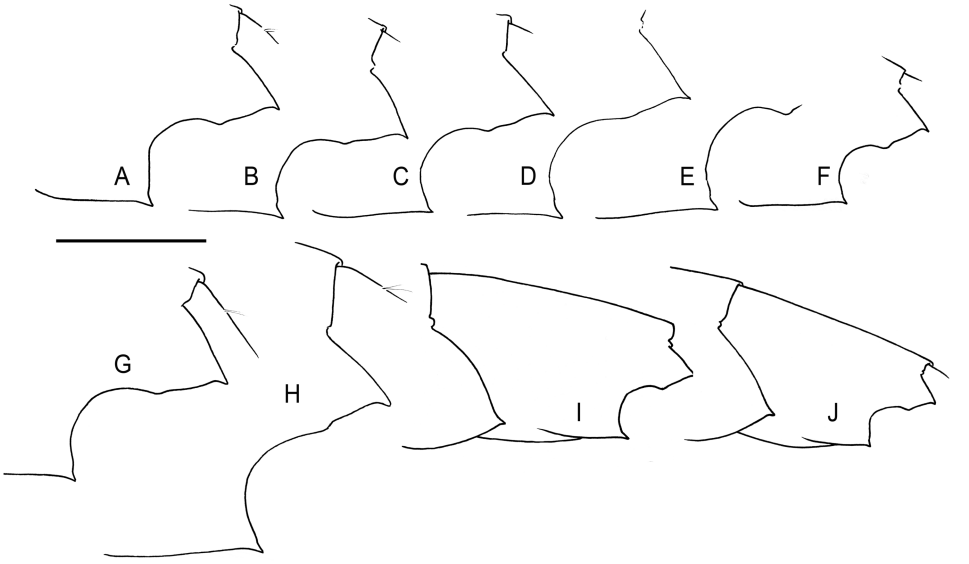

Fig. 10. *Palaemon bijagosensis* spec. nov., posterior margin sixth abdominal pleura, lateral view. A, RMNH.CRUS.D.59522; B-F, RMNH.CRUS.D.59521; G, H, RMNH.CRUS.D.49907; I, RMNH.CRUS.D.15564; J, RMNH.CRUS.D.38519. A, ovigerous female, pocl. 6.0 mm; B, ovigerous female, pocl. 4.7 mm; C, non-ovigerous female, pocl. 4.9 mm; D, ovigerous female, pocl. 5.7 mm; E, ovigerous female, pocl. 6.1 mm; F, male, pocl. 3.3 mm; G, ovigerous female, pocl. 5.5 mm; H, ovigerous female, pocl. 5.9 mm; I, ovigerous female, pocl. 7.4 mm; J, male, pocl. 4.3 mm. Scale bar: A-H = 1 mm; I, J = 2 mm.

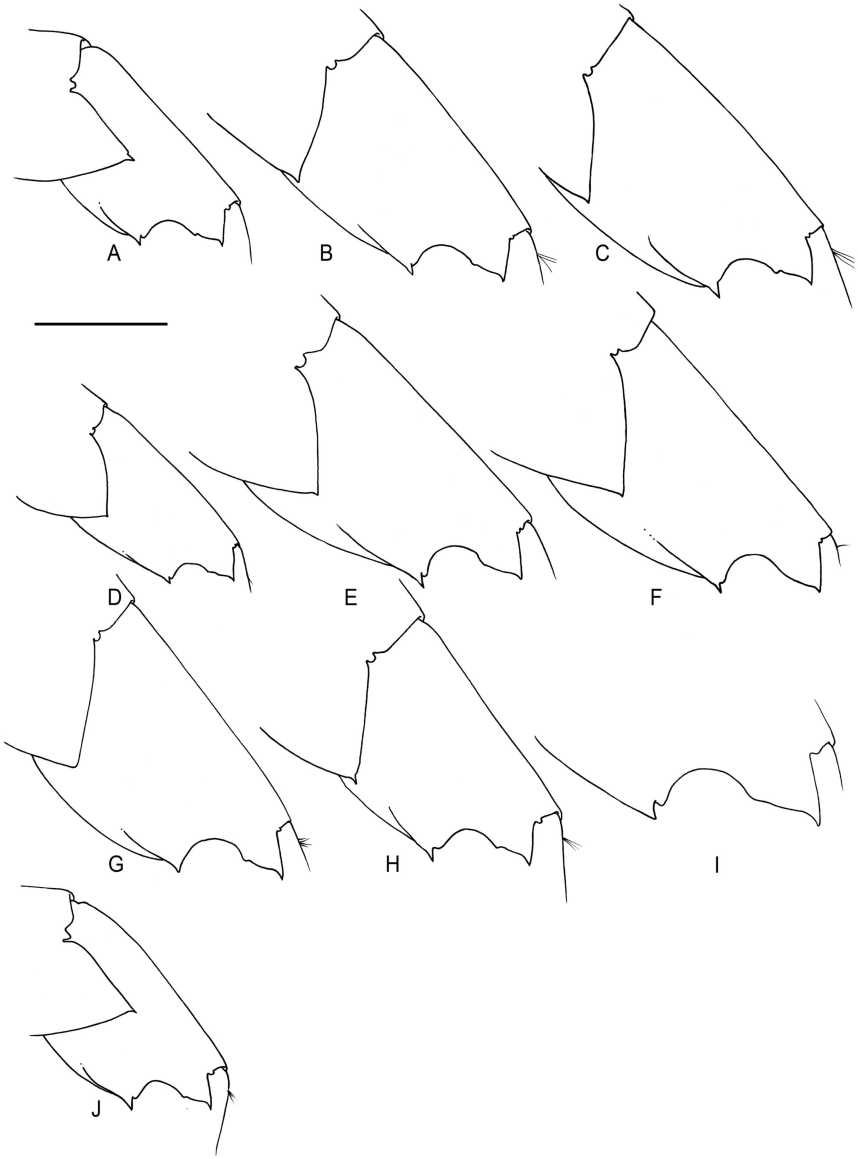

Fig. 11. Posterior margin sixth abdominal pleura, lateral view. A, *P. adspersus* Rathke 1837, ovigerous female, pocl. 13.0 mm (RMNH.CRUS.D.42979); B, *P. floridanus* Chace 1942, non-ovigerous female, pocl. 6.0 mm (RMNH.CRUS.D.8984); C, *P. longirostris* H. Milne-Edwards, 1837, ovigerous female, pocl. 7.5 mm (RMNH.CRUS.D.55329); D, *P. maculatus* Thallwitz, 1892, ovigerous female, pocl. 4.3 mm (RMNH.CRUS.D.23745); E, *P. northropi* Rankin,1898, non-ovigerous female, pocl. 7.2 mm (RMNH.CRUS.D.54605); F, idem, non-ovigerous female, pocl. 7.0 mm; G, *P. peringueyi* Stebbing 1915, non-ovigerous female, pocl. 8.1 mm (RMNH.CRUS.D.30816); H, *P. serratus* Pennant, 1777, male, pocl. 11.7 mm (RMNH.CRUS.D.41818); I, *P. vicinus* Ashelby, 2009, ovigerous female, pocl. 5.4 mm (RMNH.CRUS.D.51055); J, *P. xiphias* Risso, 1816, ovigerous female, pocl. 11.2 mm (RMNH.CRUS.D.34622). Scale bar: A, G, H, J = 4 mm; B-F = 2 mm; I = 1 mm.

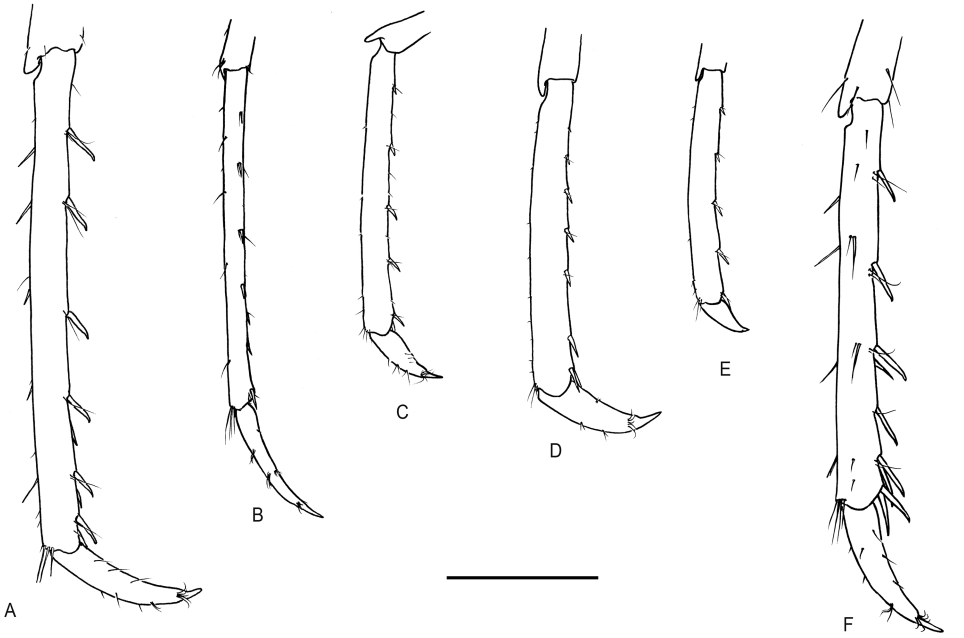

Fig. 12. Third or fourth pereiopod, dactylus and distal part propodus. A, *P. adspersus* Rathke 1837, ovigerous female P3, pocl. 13.0 mm (RMNH.CRUS.D.42979); B, *P. longirostris* H. Milne-Edwards, 1837, ovigerous female P4, pocl. 7.5 mm (RMNH.CRUS.D.55329); C, *P. northropi* Rankin,1898, non-ovigerous female P3, pocl. 7.0 mm (RMNH.CRUS.D.54605); D, *P. peringueyi* Stebbing 1915, non-ovigerous female P3, pocl. 8.1 mm (RMNH.CRUS.D.30816); E, *P. vicinus* Ashelby, 2009, sex and pocl. unknown (RMNH.CRUS.D.10391); F, *P. xiphias* Risso, 1816, ovigerous female P3, pocl. 11.2 mm (RMNH.CRUS.D.34622). Scale bar = 2 mm.

3 (2 in some cases) teeth (fig. 7) versus 4 (3 in some cases) in *P. peringueyi* (fig. 8F); (3) in having a two-articulated mandibular palp versus a three-articulated palp in *P. peringueyi*; (4) in having the propodus of the third pereiopod slender, about 10 times as long as wide (fig. 5A) versus more robust, about 8 times as long as wide in *P. peringueyi* (fig. 12D); (5) in having the posterolateral margin of the pleura of the fifth abdominal somite with a tooth (figs. 2C, 10) versus bluntly quadrate in *P. peringueyi* (fig. 11G).

The new species differs from *P. powelli*: (1) in having 8-9 dorsal rostral teeth (fig. 1, 2A, 7) whereas *P. powelli* has 6-8 dorsal rostral teeth (see Ashelby & De Grave, 2009, fig. 3A, B, 8); (2) in having the rostrum straight (fig. 1, 2A, 7) versus distally ascending in *P. powelli* (see Ashelby & De Grave, 2009, fig. 3A, B); (3) in having the branchiostegal spine being marginal (figs. 1, 2A, 7) versus submarginal in *P. powelli* (see Ashelby & De Grave, 2009, fig. 3A-C); (4) in having the palm of the chelae of the second pereiopods being 1.5 times as long as the fingers (fig. 4B) versus having the palm shorter than the fingers in *P. powelli* (see Ashelby & De Grave, 2009, fig. 5B, C); (5) in the absence of a protuberance just above the tooth

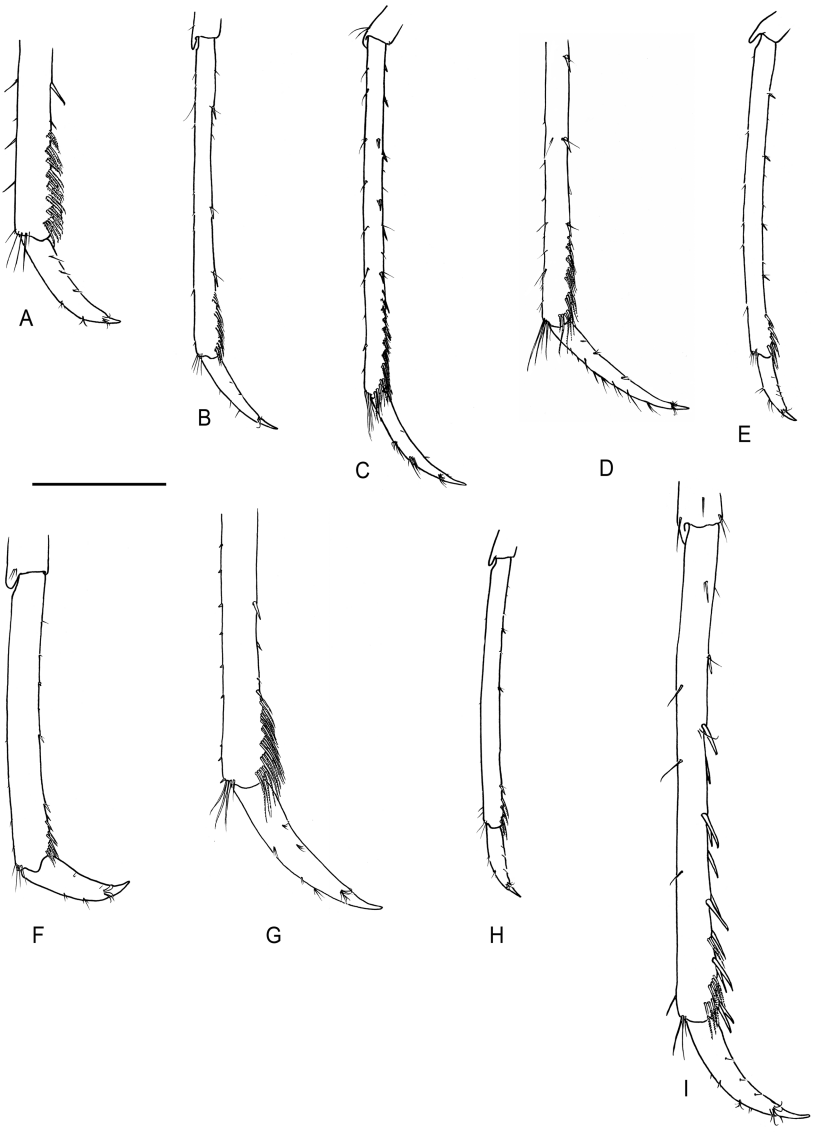

Fig. 13. Fifth pereiopod, dactylus and distal part propodus. A, *P. adspersus* Rathke 1837, ovigerous female, pocl. 13.0 mm (RMNH.CRUS.D.42979); B, *P. floridanus* Chace 1942, non-ovigerous female, pocl. 6.0 mm (RMNH.CRUS.D.8984); C, *P. longirostris* H. Milne-Edwards, 1837,, ovigerous female, pocl. 7.5 mm (RMNH.CRUS.D.55329); D, *P. macrodactylus* Rathbun, 1902, ovigerous female, pocl. 9.5 mm, (RMNH.CRUS.D.56152); E, *P. northropi* Rankin,1898, non-ovigerous female, pocl. 7.0 mm (RMNH.CRUS.D.54605); F, *P. peringueyi* Stebbing 1915, non-ovigerous female, pocl. 8.1 mm (RMNH.CRUS.D.30816); G, *P. serratus* Pennant, 1777, male, pocl. 11.7 mm (RMNH.CRUS.D.41818); H, *P. vicinus* Ashelby, 2009, sex and pocl. unknown (RMNH.CRUS.D.10391); I, *P. xiphias* Risso, 1816, ovigerous female, pocl. 11.2 mm (RMNH.CRUS.D.34622). Scale bar = 2 mm.

Fig. 14. *Palaemon bijagosensis* spec. nov., live specimen. Photo credit Peter Wirtz.

on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus with a protuberance in *P. powelli* (see fig. Ashelby & De Grave, 2009, fig. 3E).

The new species differs from *P. serratus*: (1) in having 8-9 dorsal rostral teeth (figs. 1, 2A, 7) whereas *P. serratus* has 6-8 (usually 7) dorsal rostral teeth (fig. 9A; González-Ortegón & Cuesta, 2006, fig. 2I); (2) in having the rostrum straight (figs. 1, 2A, 7) versus distally ascending in *P. serratus* (fig. 9A; González-Ortegón &

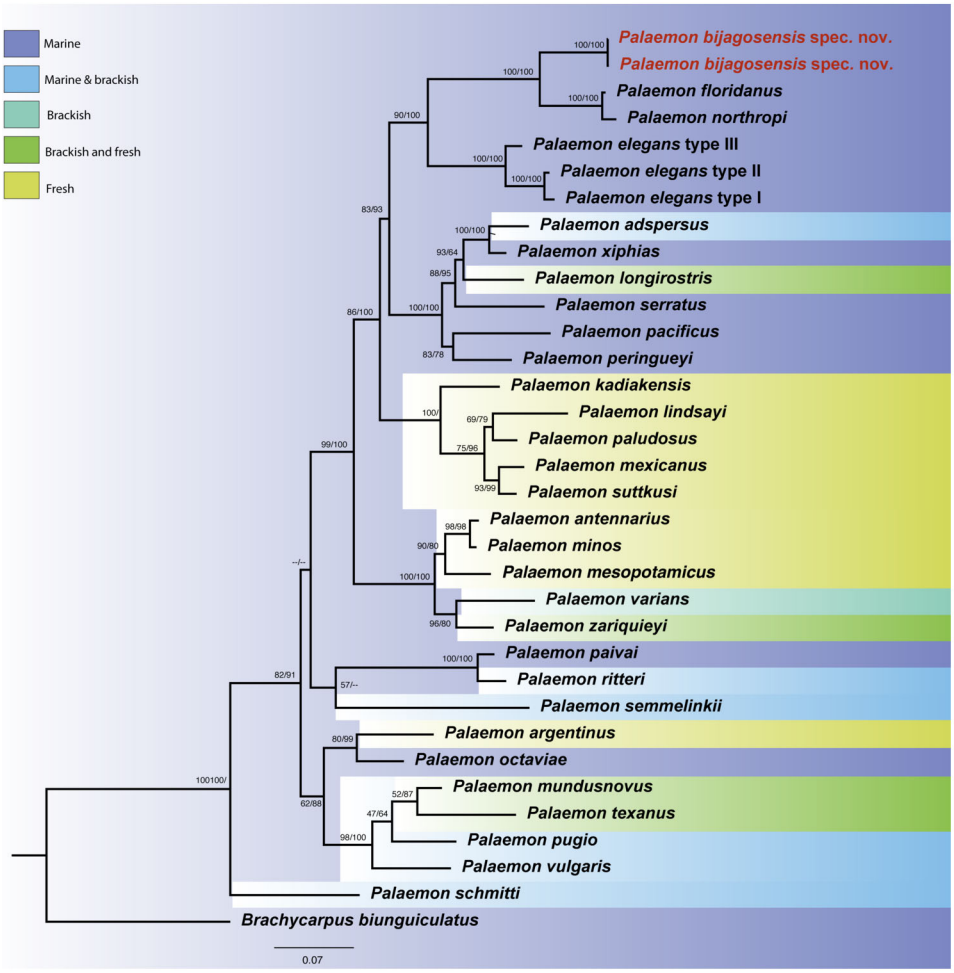

Fig. 15. Maximum likelihood phylogram of *Palaemon* species represented in clades comprising Atlantic species within the '*Palaemon* senso stricto' clade recognized by Ashelby et al. (2012) and Carvalho et al. (2017) based on the combined dataset of 16S, COI and H3 markers. Maximum likelihood (ML) and Bayesian Inference (BI) support values are given in percentages as ML/BI; only support values >50% are shown.

Cuesta, 2006, fig. 2I); (3) in having 3 (2 in some cases) ventral rostral teeth (fig. 7) versus 5 in *P. serratus* (fig. 9A; González-Ortegón & Cuesta, 2006, fig. 2I); (4) in having the rostrum about as long as the carapace with the distal dorsal margin armed with teeth (fig. 1) versus distinctly larger than the carapace with the distal half unarmed except for the subdistal tooth in *P. serratus* (fig. 9A; Smaldon et al., 1993, fig. 11A); (5) in having a two-articulated mandibular palp versus a three-articulated palp in *P. serratus*; (6) in having the palm of the second pereiopod 1.5 times as long as the fingers (fig. 4B) versus as long as the fingers in *P. serratus* (see

González-Ortegón & Cuesta, 2006, fig. 1I); (7) in having 2-3 rows of grooming brushes on the fifth pereiopod propodus (fig. 5F) versus 7-8 rows in *P. serratus* (fig. 13G); (8) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus with a protuberance in *P. serratus* (fig. 11H).

The new species differs from the type material from the Cape Verde of *P. vicinus*: (1) in having the distance between the two posterior dorsal rostral teeth distinctly larger than between the second and third dorsal rostral teeth (figs. 1, 2A, 7) versus having the distance between the posterior two dorsal rostral teeth and the second and third dorsal rostral teeth usually equal (see Ashelby, 2009: figs. 32-40); (2) in having the ambulatory pereiopods long and slender (about 10 times longer than distal width) (fig. 5A, C, E) versus short and robust (about 7-8 times as long as distal width) in the Cape Verde specimens of *P. vicinus* (fig. 12E; Ashelby, 2009, fig. 24, 25, 27); (3) in having the P5 merus distal margin reaching the anterior margin of the carapace and the P5 propodus distal margin reaching the distal margin of the scaphocerite (fig. 1) versus the P5 carpus distal margin reaching the anterior margin of the carapace and the P5 propodus distal margin reaching halfway the scaphocerite in the Cape Verde islands specimens of *P. vicinus* (Ashelby, 2009, fig. 1); (4) the meral-carpal joint of the ambulatory pereiopods is without pubescence whereas this pubescense is present in *P. vicinus* (see Ashelby, 2009, 26); (5) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (fig. 2C, 10) versus with a distinct protuberance in *P. vicinus* (fig. 11I; Ashelby, 2009, fig. 7).

The juvenile specimens have the fifth abdominal pleura without a small posterolateral tooth but are quadrate or rounded. It seems to be a morphological character that changes with the size of the specimen.

The colour pattern of *P. vicinus* as described by Ashelby (2009) is based on a description of Powell (1983) of specimens from Nigeria (RMNH.CRUS.D.38519 and RMNH.CRUS.D.49907) which Powell identified as *P. elegans* and Ashelby as being conspecific with *P. vicinus*. This material from Nigeria however, is morphologically different from the Cape Verde material of *P. vicinus* and more similar to that of the new species from the Bijagos. Also, the colour description by Powell matches the colour pattern of the new species. Specimens of *P. vicinus* from the Cape Verdes have been photographed by the second author (Neves & Wirtz, 2023). Their colour pattern is similar to that of the new species, *P. elegans* and *P. northropi*.

Specimens identified as *P. vicinus* by Ashelby (2009) from Nigeria (RMNH.CRUS.D.15564, RMNH.CRUS.D.38519 and RMNH.CRUS.D.49907) all seem to belong to the new species. The material identified by Ashelby (2009) as *P. vicinus* from Sierra Leone (RMNH.CRUS.D.10391) is damaged. From the morphological

features visible it cannot be concluded that this specimen belongs to either *P. vicinus* or the new species.

The material identified as *P. vicinus* by Ashelby (2009) from Cameroon (RMNH. CRUS.D.21732) does not seem to belong to either *P. vicinus* or the new species. It differs from *P. vicinus* in the absence of a distinct protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite. It differs from the new species in having the fingers of the second pereiopod chelae slightly shorter than the palm versus about half the length of the palm in the new species.

The new species differs from *P. xiphias*: (1) in having 8-9 dorsal rostral teeth (figs. 1, 2A, 7) whereas *P. xiphias* has 6-8 (usually 7) dorsal rostral teeth (fig. 9B); (2) in having the rostrum straight (figs. 1, 2A, 7) versus distally ascending in *P. xiphias* (fig. 9B); (3) in having 3 (2 in some cases) ventral rostral teeth (fig. 7) versus 5 in *P. xiphias* (fig. 9B); (4) in having the branchiostegal tooth marginal (fig. 1, 2A, 7) versus distinctly behind the anterior margin (fig. 9B); (5) in having a two-articulated mandibular palp versus a three-articulated palp in *P. xiphias*; (6) in the absence of a protuberance just above the tooth on the posterolateral margin of the sixth abdominal somite (figs. 2C, 10) versus with a protuberance in *P. xiphias* (fig. 11J).

DNA analyses

The Maximum Likelihood topology was selected as the basis for discussion with Ultrafast bootstrap (ML) values and posterior probabilities (BI) included (fig. 15). The resulting phylogeny is largely congruent with phylogenies presented by Ashelby et al. (2012) and Carvalho et al. (2017). The new species is most closely related to, but clearly separated (support values 100/100), from a clade with the marine tropical West Atlantic *P. northropi* and *P. floridanus*. The three of them form a well-supported clade with the Northeast Atlantic marine *Palaemon elegans* species complex.

DISCUSSION

The new species can be morphologically distinguished from each of the 14 marine and brackish water *Palaemon* species in the Atlantic with a mandibular palp.

The molecular phylogenetic analyses of the '*Palaemon* senso stricto' clade recognized by Ashelby et al. (2011) and Carvalho et al. (2017) based on the combined dataset of 16S, COI and H3 markers, clearly shows the specimens from the Bijagos Islands, Guinea-Bissau, to belong to a new species. Its sister group consists of *P. floridanus* and *P. northropi* which are both distributed in the

tropical western Atlantic. *P. floridanus* has a range restricted to Florida, whereas *P. northropi* has a much wider distribution ranging from Florida, the Caribbean, south to populations along the Brazilian coast (Mantelatto et al., 2018, 2022). Although the morphological differences and differences in colouration between *P. floridanus* and *P. northropi* seem rather distinct (Holthuis, 1952), their larval development is almost identical (Knowlton & Vargo, 2004) and molecular analyses do not show a clear genetic distinction as discussed by Carvalho et al. (2020). Carvalho et al. (2020) did find some genetic structuring between specimens from the northern part of the western Atlantic and the southern part which could be an indication that the southern populations might represent a distinct species for which the name *Palaemon brachylabis* Rathbun, 1900 would be available. At present this nominal species is regarded synonymous with *P. northropi*. The new species, together with *P. northropi* / *P. floridanus*, is sister to the *Palaemon elegans* species complex with representatives in the Baltic Sea, NE Atlantic, Mediterranean Sea, Black Sea and Caspian Sea (Reuschel et al., 2010; González-Castellano et al., 2020a, b).

ACKNOWLEDGEMENTS

We thank Laura van Hoek for carrying out the DNA extractions and Polymerase Chain Reactions. The specimens were collected during the Bijagos Expedition in May 2023 led by Ester Serrao (CCMAR-CIMAR (Centre of Marine Sciences), University of Algarve, Faro, Portugal; CIBIO-INBIO, BIOPOLIS, Vairão, Portugal), with participants being Filipe Nhanque (INIPO (National Institute for Fisheries and Oceanographic Research), Bissau, Guinea-Bissau); Castro Barbosa (IBAP (Institute for Biodiversity and Protected Areas), Bissau, Guinea-Bissau); Carlos Moura (CCMAR-CIMAR (Centre of Marine Sciences), University of Algarve, Faro, Portugal); and the second author; supported by Sylvie Dias (photography and filming) and Nuno Fernandes (diving, health, security). The expedition to the Bijagos archipelago was funded by FCT (Foundation for Science and Technology) and the Aga-Khan Foundation through project MARAFRICA (AGA-KHAN/540316524/2019), and UIDB/04326/2020, UIDP/04326/2020, LA/P/0101/2020, and EU-H20202 854248 (Tropibio). Both authors have accepted responsibility for the entire content of this manuscript and approved its submission. Both authors state no conflict of interest. All data generated or analysed during this study are included in this published article. CHJM Fransen is an editor for Crustaceana but did not at any stage have editor-level access to this manuscript while in peer review, as is standard practice when handling manuscripts submitted by an editor. Crustaceana encourages its editors to publish in the journal and they are kept totally separate from the decision-making processes for their manuscripts.

REFERENCES

ÁLVAREZ, F., C. PEDRAZA-LARA & J. L. VILLALOBOS, 2014. Identity of freshwater shrimp populations (*Palaemon* Weber, 1795) from northern Mexico: genetic variation at local and regional scales. Journal of Crustacean Biology, **34**(4): 481-493. DOI:10.1163/1937240X-00002248.

ASHELBY, C. W., 2009. *Palaemon vicinus* spec. nov, Crustacea: Decapoda: Palaemonidae): a new species of caridean shrimp from the tropical eastern Atlantic. Zoologische Mededelingen, **83**: 825-839.

ASHELBY, C. W. & S. DE GRAVE, 2009. A new species of *Palaemon* (Crustacea, Decapoda, Palaemonidae) from West Africa, with a re-description of *Palaemon maculatus* (Thallwitz, 1892). Zootaxa, **2085**: 27-44. DOI:10.11646/zootaxa.2085.1.3.

ASHELBY, C. W., T. J. PAGE, S. DE GRAVE, J. M. HUGHES & M. L. JOHNSON, 2012. Regional scale speciation reveals multiple invasions of freshwater in Palaemoninae (Decapoda). Zoologica Scripta, **4**: 293-306. DOI:10.1111/j.1463-6409.2012.00535.x.

BRINKMANN, B. W. & C. H. J. M. FRANSEN, 2016. Identification of a new stony coral host for the anemone shrimp *Periclimenes rathbunae* Schmitt, 1924 with notes on the host-use pattern. Contributions to Zoology, **85**(4): 437-456. DOI:10.1163/18759866-08504004.

CARVALHO, F. L., 2014. *Sistemática do gênero Palaemon Weber, 1795* (*Decapoda, Palaemonidae*)*: uma abordagem molecular e morfológica de padrões filogeográficos, evolução de características ecológicas e status taxonômico das espécies no Brasil*. São Paulo, PhD Thesis, FFCLRP, Universidade de São Paulo.

CARVALHO, F. L., S. DE GRAVE & F. L. MANTELATTO, 2017. An integrative approach to the evolution of shrimps of the genus *Palaemon* (Decapoda, Palaemonidae). Zoologica Scripta, **46**: 473-485. DOI:10.1111/zsc.12228.

CARVALHO, F. L., C. MAGALHÃES & F. L. MANTELATTO, 2014. Molecular and morphological differentiation between two Miocene-divergent lineages of Amazonian shrimps, with the description of a new species (Decapoda, Palaemonidae), *Palaemon*. ZooKeys, **457**: 79-108. DOI:10.3897/zookeys.457.6771.

CARVALHO, F. L., C. MAGALHÃES & F. L. MANTELATTO, 2020. A molecular and morphological approach on the taxonomic status of the Brazilian species of *Palaemon* (Decapoda, Palaemonidae). Zoologica Scripta, **49**: 101-116. DOI:10.1111/zsc.12394.

CASTRESANA, J., 2000. Selection of conserved blocks from multiple alignments for their use in phylogenetic analysis. Molecular Biology and Evolution, **17**: 540-552. DOI:10.1093/oxfordjournals.molbev.a026334.

CHACE, F. A., 1942. Six new species of decapod and stomatopod Crustacea from the Gulf of Mexico. Proceedings of the New England Zoölogical Club, **19**: 79-92.

CHOW, L. H., S. DE GRAVE & L. M. TSANG, 2021. Evolution of protective symbiosis in palaemonid shrimps (Decapoda: Caridea) with emphases on host spectrum and morphological adaptations. Molecular Phylogenetics and Evolution, **162**: 107201. DOI:10.1016/j.ympev.2021.107201.

COLGAN, D. J., A. MCLAUCHLAN, G. D. F. WILSON, S. P. LIVINGSTON, G. D. EDGECOMBE, J. MACARANAS, G. CASSIS & M. R. GRAY, 1998. Histone H3 and U2 snRNA DNA sequences and arthropod molecular evolution. Australian Journal of Zoology, **46**: 419-437.

CUESTA, J. A., P. DRAKE, G. MARTÍNEZ-RODRÍGUEZ, A. RODRÍGUEZ & C. D. SCHUBART, 2012. Molecular phylogeny of the genera *Palaemon* and *Palaemonetes* (Decapoda, Caridea, Palaemonidae) from a European perspective. Crustaceana, **85**: 877-888. DOI:10.1163/156854012X650197.

DE GRAVE, S. & W. ASHELBY, 2013. A re-appraisal of the systematic status of selected genera in Palaemoninae (Crustacea: Decapoda: Palaemonidae. Zootaxa, **3734**: 331-344. DOI:10.11646/zootaxa.3734.3.3.

DE GRAVE, S. & C. H. J. M. FRANSEN, 2011. Carideorum catalogus: the recent species of the dendrobranchiate, stenopodidean, procaridideanand caridean shrimps (Crustacea: Decapoda). Zoologische Mededelingen, **85**: 195-589.

DECANET, 2025. DecaNet. Available online at https://www.decanet.info (accseed 15 September 2025). DOI:10.14284/600.

EDGAR, R. C., 2004. MUSCLE: multiple sequence alignment with high accuracy and high throughput. Nucleic Acids Research, **32**: 1792-1797. DOI:10.1093/nar/gkh340.

FAUSTO FILHO, J., 1967. *Palaemon* (*Palaemon*) *paivai*, nova espécie de Crustáceo do Brasil (Decapoda Palaemonidae). Archivos da Estação de Biologiá Marinha da Universidade Federal do Ceará, **7**: 19-22.

FOLMER, O., M. BLACK, W. HOEH, R. LUTZ & R. VRIJENHOEK, 1994. DNA primers for amplification of mitochondrial cytochrome c oxidase subunit I from diverse metazoan invertebrates. Molecular Marine Biology and Biotechnology, **3**: 294-299.

FRANSEN, C. H. J. M., 2023. The marine palaemonid shrimps (Crustacea, Decapoda, Caridea) of the Dutch Caribbean. Zootaxa, **5387**(1): 1-127. DOI:10.11646/zootaxa.5387.1.1.

GELLER, J., C. MEYER, M. PARKER & H. HAWK, 2013. Redesign of PCR primers for mitochondrial cytochrome c oxidase subunit I for marine invertebrates and application in all-taxa biotic surveys. Molecular Ecology Resources, **13**: 851-861. DOI:10.1111/1755-0998.12138.

GONZÁLEZ-CASTELLANO, I., J. PONS, E. GONZÁLEZ-ORTEGÓN & A. MARTÍNEZ-LAGE, 2020a. Mitogenome phylogenetics in the genus *Palaemon* (Crustacea: Decapoda) sheds light on species crypticism in the rockpool shrimp *P. elegans*. PLoS ONE, **15**(8): e0237037. DOI:10.1371/journal.pone.0237037.

GONZÁLEZ-CASTELLANO, I., J. GONZÁLEZ-LÓPES, A. M. GONZÁLEZ-TIZÓN & A. MARTÍNEZ-LAGE, 2020b. Genetic diversity and population structure of the rockpool shrimp *Palaemon elegans* based on microsatellites: evidence for a cryptic species and differentiation across the Atlantic-Mediterranean transition. Scientific Reports, **10**: 10784. DOI:10.1038/s41598-020-67824-7.

GONZÁLEZ-ORTEGÓN, E. & J. A. CUESTA, 2006. An illustrated key to species of *Palaemon* and *Palaemonetes* (Crustacea: Decapoda: Caridea) from European waters, including the alien species *Palaemon macrodactylus*. Journal of the Marine Biology Association of the UK, **86**: 93-102. DOI:10.1017/S0025315406012896.

GONZÁLEZ-ORTEGÓN, E., P. S. SARGENT, G. POHLE & A. MARTINEZ-LAGE, 2015. The Baltic prawn *Palaemon adspersus* Rathke, 1837 (Decapoda, Caridea, Palaemonidae): first record, possible establishment, and illustrated key of the subfamily Palaemoninae in northwest Atlantic waters. Aquatic Invasions, **10**(3): 299-312. DOI:10.3391/ai.2015.10.3.05.

HEBERT, P. D. N., E. H. PENTON, J. M. BURNS, D. H. JANZEN & W. HALLWACHS, 2004. Ten species in one: DNA barcoding reveals cryptic species in the neotropical skipper butterfly *Astraptes fulgerator*. Proceedings of the National Academy of Science of the United States of America, **101**: 14812-14817. DOI:10.1073/pnas.0406166101.

HOLTHUIS, L. B., 1952. A general revision of the Palaemonidae (Crustacea: Decapoda: Natantia) of the Americas, II: The subfamily Palaemoninae. Allan Hancock Foundation Publications, **12**: 1-396.

INATURALIST, 2025. Observations of *Palaemon floridanus* and *P. northropi*. Available online at https://www.inaturalist.org (accessed 11 September 2025).

JABŁOŃSKA, A., N. NAVARRO, R. LAFFONT, R. WATTIER, V. PEŠIĆ, A. ZAWAL, J. VUKIĆ & M. GRABOWSKI, 2021. An integrative approach challenges species hypotheses and provides hints for evolutionary history of two Mediterranean freshwater palaemonid shrimps (Decapoda: Caridea). The European Zoological Journal, **88**(1): 900-924. DOI:10.1080/24750263.2021.1953624.

KNOWLTON, R. E. & C. K. VARGO, 2004. The larval morphology of *Palaemon floridanus* Chace, 1942 (Decapoda, Palaemonidae) compared with other species of *Palaemon* and *Palaemonetes*. Crustaceana, **77**(6): 683-715. DOI:10.1163/1568540041958563.

KUMAR, S., G. STECHER, M. LI, C. KNYAZ & K. TAMURA, 2018. MEGA X: Molecular evolutionary genetics analysis across computing platforms. Molecular Biology and Evolution, **35**: 1547-1549. DOI:10.1093/molbev/msy096.

LERAY, M. & N. KNOWLTON, 2015. DNA barcoding and metabarcoding of standardized samples reveal patterns of marine benthic diversity. Proceedings of the National Academy of Science of the United States of America, **112**: 2076-2081. DOI:10.1073/pnas.1424997112.

MANTELATTO, F. L., A. F. TAMBURUS, A. CARVALHO-BATISTA, N. ROSSI, R. C. BURANELLI, J. A. F. PANTALEÃO, J. N. TELES, F. J. ZARA, F. L. CARVALHO, G. L. BOCHINI, M. TEROSSI, R. ROBLES, A. L. CASTILHO & R. C. COSTA, 2022. Checklist of decapod crustaceans from the coast of the São Paulo state (Brazil) supported by integrative molecular and morphological data: V. Dendrobranchiata and Pleocyemata [Achelata, Astacidea, Axiidea, Caridea (Alpheoidea and Processoidea excluded): Gebiidea, Stenopodidea]. Zootaxa, **5121**: 1-74. DOI:10.11646/zootaxa.5121.1.1.

MANTELATTO, F. L., M. TEROSSI, M. NEGRI, R. C. BURANELLI, R. ROBLES, T. MAGALHÃES, A. F. TAMBURUS, N. ROSSI & M. J. MIYAZAKI, 2018. DNA sequence database as a tool to identify decapod crustaceans on the São Paulo coastline. Mitochondrial DNA Part A: DNA Mapping. Sequencing and Analysis, **29**(5): 805-815. DOI:10.1080/24701394.2017.1365848.

MATZEN DA SILVA, J., S. CREER, A. SANTOS, A. C. COSTA, M. R. CUNHA, F. O. COSTA & G. R. CARVALHO, 2011. Systematic and evolutionary insights derived from mtDNA COI barcode diversity in the Decapoda (Crustacea: Malacostraca). PLoS ONE, **6**(5): e19449. DOI:10.1371/journal.pone.0019449.

MICU, D. & V. NIŢĂ, 2009. First record of the Asian prawn *Palaemon macrodactylus* Rathbun, 1902 (Caridea: Palaemonoidea: Palaemonidae) from the Black Sea. Aquatic Invasions, **4**(4): 597-604. DOI:10.3391/ai.2009.4.4.5.

MILNE EDWARDS, H., 1834-1840. *Histoire Naturelle des Crustacés, Comprenant l´Anatomie, la Physiologie et la Classification de ces Animaux*. Paris, Encyclopédique Roret: vol **I** (1834): i-xxxv + 1-468, vol. **II** (1837): 2: 1-532, vol. **III** (1840): 1-638, pls. 1-42.

MINH, B. Q., M. A. T. NGUYEN & A. VON HAESELER, 2013. Ultrafast approximation for phylogenetic bootstrap. Molecular Biology and Evolution, **30**: 1188-1195. DOI:10.1093/molbev/mst024.

NEVES, K. & P. WIRTZ, 2023. A pictorial catalogue of the shallow water Palaemonidae (Crustacea Decapoda) of the Cabo Verde islands. *ResearchGate*. DOI:10.13140/RG.2.2.29260.08324.

PALUMBI, S. R., A. MARTIN, S. ROMANO, W. O. MCMILLAN, L. STICE & G. GRABOWSKI, 1991. The Simple Fool's Guide to PCR, version 2. (University of Hawaii Press, Honolulu, HI).

PENNANT, T., 1777. British Zoology, vol. IV. Crustacea. Mollusca. (Testacea, London).

POWELL, C. B., 1983. Fresh and brackish water shrimps of economic importance in the Niger Delta. In: Proceedings of Second Annual Conference of the Fisheries Society of Nigeria: 254-285. (University of Port Harcourt, Port Harcourt).

RAFINESQUE, C. S., 1815. Analyse de la nature ou tableau de l'univers et des corps organisés. (Palermo).

RAMBAUT, A., 2018. *Figtree v*.1.4.4. Available at http://tree.bio.ed.ac.uk/software/figtree/ (accessed: 15 September 2025).

RANKIN, W. M., 1898. The Northrop collection of Crustacea from the Bahamas. Annals of the New York Academy of Science, **11**: 225-258.

RATHBUN, M. J., 1902. Japanese stalk-eyed crustaceans. Proceedings of the United States National Museum, **26**: 23-55.

RATHKE, H., 1836. Zur Fauna der Krym. *Mémoires de l'Académie Impériale des Sciences de Saint Pétersbourg*, **3**(3-4): 291-454, pls. 1-10 [imprint 1837; preprint dated 1836].

RAUPACH, M. J., A. BARCO, D. STEINKE, J. BEERMANN, S. LAAKMANN, I. MOHRBECK, H. NEUMANN, T. C. KIHARA, K. POINTNER, A. RADULOVICI, A. SEGELKEN-VOIGT, C. WESSE, T. KNEBELSBERGER & R. CIMMARUTA, 2015. The application of DNA barcodes for the identification of marine crustaceans from the North Sea and adjacent regions. PLOS ONE, **10**(9): e0139421. DOI:10.1371/journal.pone.0139421.

REUSCHEL, S., J. A. CUESTA & C. D. SCHUBART, 2010. Marine biogeographic boundaries and human introduction along the European coast revealed by phylogeography of the prawn *Palaemon elegans*. Molecular Phylogenetics and Evolution, **55**: 765-775. DOI:10.1016/j.ympev.2010.03.021.

RISSO, A., 1816. Histoire Naturelle des Crustacés des Environs de Nice. (Librairie Grecque-Latine-Allemande, Paris).

RONQUIST, F., M. TESLENKO, P. VAN DER MARK, D. L. AYRES, A. DARLING, S. HÖHNA, B. LARGET, L. LIU, M. A. SUCHARD & J. P. HUELSENBECK, 2012. MrBayes 3.2: efficient Bayesian phylogenetic inference and model choice across a large model space. Systematic Biology, **61**: 539-542. DOI:10.1093/sysbio/sys029.

SMALDON, G., L. B. HOLTHUIS & C. H. J. M. FRANSEN, 1993. Coastal shrimps and prawns. *Synopses of the British Fauna* (*new series*), **15** (second edition): i-vii, 1-142.

STEBBING, T. R. R., 1915. South African Crustacea (Part VIII of S. A. Crustacea, for the Marine Investigations in South Africa. Annals of the South African Museum, **15**): 57-103.

THALLWITZ, J., 1891. Decapoden-Studien, insbesondere basirt auf A.B. Meyer's Sammlungen im Ostindischen Archipel, nebst einer Aufzählung der Decapoden und Stomatopoden des Dresdener Museums. Abhandlungen und Berichte des Königlichen Zoologischen und Anthropologisch-Etnographischen Museums zu Dresden, **3**(3): 1-56.

TRIFINOPOULOS, J., L. T. NGUYEN, A. VON HAESELER & B. Q. MINH, 2016. W-IQ-TREE: a fast online phylogenetic tool for maximum likelihood analysis. Nucleic Acids Research, **44**: W232-W235. DOI:10.1093/nar/gkw256.

WEBER, F., 1795. *Nomenclator entomologicus secundum Entomologiam systematicum ill. Fabricii adjectis speciebus recens detectis et varietatibus*. Chilonii et Hamburgii.

WOOD, L. E., S. DE GRAVE & S. R. DANIELS, 2017. Phylogeographic patterning among two codistributed shrimp species (Crustacea: Decapoda: Palaemonidae) reveals high levels of connectivity across biogeographic regions along the South African coast. PLoS ONE, **12**(3): e0173356. DOI:10.1371/journal.pone.0173356.

XIA, X., Z. XIE, M. SALEMI, L. CHEN & Y. WANG, 2003. An index of substitution saturation and its application. Molecular Phylogenetics and Evolution, **26**: 1-7.

First received 30 October 2025.
Final version accepted 9 January 2026. Published online 30 January 2026.