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Marine Ostracoda (Crustacea) from New Caledonia: taxonomy of lagoonal and shallow-marine hydrothermal communities

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Abstract. This contribution is the first part of a two-part analysis of ostracod assemblages from shallow-water hydrothermal vents through geological time. To establish a robust taxonomic framework for this comparative investigation, we here revisit material from the southern and southwestern parts of New Caledonia, including the Prony Bay Hydrothermal Field, housed in the micropaleontology collections of the Muséum national d'Histoire naturelle (Paris). This material comprises specimens published by Vespasian Apostolescu as well as bulk sediment samples collected by Pierre Laboute that have remained unexamined until now. This analysis documents the occurrence of 63 species, seven of which are recorded from New Caledonia for the first time. We describe six new species: *Auradilus mediumiugum* Forel sp. nov., *Ponticocythereis impressionista* Forel sp. nov., *Callistocythere angelina* Forel sp. nov., *Loxoconcha charbonnieri* Forel sp. nov., *Loxoconcha venenosa* Forel sp. nov., and *Gambiella*? *toxica* Forel & Bergue sp. nov., the latter two currently known only from the Prony Bay Hydrothermal Field. We emend three species originally described at the end of the 19th century, whose illustrations and descriptions left certain taxonomic ambiguities: *Adencythere torticollis* (Brady, 1890) emend., *Loxoconchella honoluliensis* (Brady, 1880) emend. (type species of the genus), and *Lankacythere scotti* (Brady, 1890) emend.

Keywords. Ostracods, collections, taxonomy, revisions, biodiversity.

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Introduction

Shallow-water hydrothermal vents are hybrid environments that combine characteristics of both terrestrial hydrothermal springs and deep-sea vent systems. They are considered as analogues of early Earth environments and other planetary bodies including early Mars, that may have supported prebiotic chemical processes (Barge & Price 2022). Their shallow depth and proximity to coastal areas lead to characteristics that distinguish them from both deep-sea vents and terrestrial hot springs: (1) abundant free gas (i.e., bubble formation), (2) significant terrigenous inputs, (3) influence of waves, storm events and tides, and (4) penetration of sunlight. They are thus high-energy environments in which photosynthetic and chemosynthetic processes can coexist (Price *et al.* 2017) and where the geochemical composition of the fluids emitted may abruptly change (Yücel *et al.* 2013). Only two alkaline shallow-water hydrothermal vent systems have been identified to date: the basalt-hosted Strytan Hydrothermal Field in northern Iceland and the peridotite-hosted Prony Bay Hydrothermal Field (PBHF) in southern New Caledonia (Price *et al.* 2017).

Serpentinization refers to chemical reactions that occur when ultramafic rocks (i.e., iron-rich and silica-poor) such as peridotite undergo hydration, and is accompanied by the formation of high-pH water, hydrogen, and methane. This process has operated throughout Earth's history, may be active on several planets and moons within our solar system, and has been invoked in numerous theories regarding the origin of life (e.g., Sleep *et al.* 2011; Boyd *et al.* 2014; Weiss *et al.* 2016). Ultramafic rocks are common in the Earth's mantle and in rock units obducted onto the crust (ophiolites). The Prony Bay Hydrothermal Field in New Caledonia is an example of a marine serpentinite-hosted ecosystem, where the chemistry of low-temperature fluids has been studied (e.g., Monnin *et al.* 2014) as well as a variety of organisms and microbial activity (e.g., Quémeneur *et al.* 2014; Postec *et al.* 2015; Pisapia *et al.* 2017; Frouin *et al.* 2018). Ostracods have been reported from both continental and marine waters of New Caledonia (Brady 1890; Méhes 1939; Apostolescu 1967; Maddocks *et al.* 1993; Hoibian *et al.* 2000, 2002; Maddocks 2005, 2007; Kornicker 2007; Diamond *et al.* 2008; Martens *et al.* 2019, 2023a, 2023b; Kisseih *et al.* 2020). They have, however, never been studied from the PBHF and Prony Bay in general.

The present analysis is part of a large-scale project of the authors that deals with the evolutionary history of ostracod communities inhabiting chemosynthetic environments through the Mesozoic and Cenozoic (Bergue *et al.* 2023; Forel *et al.* 2024, 2025a, 2025b). In this project, the PBHF holds particular significance, as communities from shallow-water hydrothermal vents, cold seeps, and organic falls are today characterized by the absence of specific taxa or by the rarity of obligate genera or higher taxonomic groups (Tarasov *et al.* 2005; Dando 2010). A similar trend has been reported from the fossil record (Kiel *et al.* 2012; Danise *et al.* 2014; Danise & Dominici 2014; Ryan *et al.* 2020). To date, ostracods from extant and fossil shallow-water seeps, vents and falls have never been investigated, leaving it uncertain whether they also conform to this pattern. Ostracods from the PBHF are here studied for the first time, with the aim of demonstrating that, as with other taxonomic groups, understanding the characteristics and evolutionary history of ostracods specific to marine chemosynthetic communities necessitates a focus on deep-water seeps, vents, and falls. To better characterize the ostracods of the PBHF, a large-scale analysis of communities from lagoonal waters of the Saint-Vincent Bay in the southwestern region of New Caledonia is undertaken. This approach enables a taxonomic reappraisal of this sector of the South Pacific, which has not been thoroughly re-examined since the 2000s. The in-depth comparative analysis of normal marine communities versus those associated with PBHF settings will be performed in the second part of this work.

Geographical and geological context

The New Caledonia islands are situated just north of the Tropic of Capricorn in the south-east Pacific, between latitudes 18° and 23° S and longitudes 158° and 172° E. They are located along the eastern

margin of the Australian plate, bordering the western side of the Vanuatu subduction zone. They comprise two principal landmasses: the main island, referred to as Grande Terre, the Loyalty Islands (Maré, Lifou, Tiga, Ouvéa) and smaller islands, such as Île des Pins and Île Belep (Fig. 1). Grande Terre is the emergent segment of the Norfolk ridge and displays an extensive allochthonous sheet of oceanic lithosphere that was thrust over the continental basement during the late Eocene (Rait *et al.* 1991; Isaac 1996; Maurizot & Mortimer 2020). This thick ophiolitic nappe covers about 7000 km² across the island but is most prominently developed in its southern part (Avias 1967; Cluzel *et al.* 2001; Pirard *et al.* 2013). The humid tropical climate of the region results in the intense weathering of the obducted ultramafic rocks. A significant part of the main island is thus covered by a thick lateritic layer enriched in nickel and cobalt that is actively exploited (Bonvallot *et al.* 2012; Quesnel *et al.* 2013).

Saint-Vincent Bay

The Saint-Vincent Bay is located approximately 60 km northwest of Nouméa, within the western lagoon bordering Grande Terre (Figs 1–2). It is fed by several rivers, the principal one being the Tontouta River, and mangroves flourish at the river mouths as well as in the innermost parts of the bay. The outer reef is located at a maximal distance of approximately 12 km and the bay communicates with the open sea only through the narrow Saint-Vincent Channel. Due to the sedimentary inputs by rivers, water clarity is low between the shoreline and the three main islands (Léprédour, Hugon, Ducos). In contrast, transparency increases moving from the islands toward the barrier reef. Among the bays, the waters of Saint-Vincent Bay are the coldest and least salty, as a consequence of a significant river input in an area of very high evaporation (Rougerie 1986). The depth of the lagoon rarely exceeds 30 m.



Fig. 1. Geographical map of New Caledonia and the Loyalty Islands, with the locations of the studied areas in the west and southwest of Grande Terre: Saint-Vincent Bay (Fig. 2), Prony Bay (Fig. 3).

The 1960s were marked by the French Expedition to the Coral Reefs of New Caledonia (1960–1963), sponsored by the Singer-Polignac Foundation (e.g., Doumenge & Doumenge 1991). The first phase of this campaign was primarily focused on morphological, sedimentological, and geological aspects of New Caledonia (e.g., Chevalier 1968; Baltzer 1970; Coudray 1976). The second phase was devoted to biological studies and primarily focused on Saint-Vincent Bay, which was sampled from 11 to 19 November and from 5 to 11 December 1961. The survey targeted a range of habitats, including beach rock, rocky intertidal zones, sandy intertidal areas, coral biocenoses, endocoralline fauna, dead coral flats, and coral-derived detrital substrates (see details in Salvat 1964). It led to numerous publications



Sample numbers					
Salvat (1964)	Apostolescu (1967)	Latitude	Longitude	Depth (m)	Sediment bottom
7	7-12-61x	22°02'54"S	165°59'16"E	7-8	detrital soft coral
8	8-12-61A	22°02'50"S	165°59'24"E	13-14	detrital soft coral
9	9-12-61A	22°02'41"S	165°59'48"E	18	detrital soft coral
4	9-12-61B	na	na	4-5	detrital soft coral
11	10-12-61B	22°02'36"S	166°01'00"E	15-17	muddy-sandy

Fig. 2. Locations and details of samples studied for ostracods within Saint-Vincent Bay (Apostolescu collection) (Google Maps 2026).

describing for instance the biodiversity and distribution of corals, algae, ascidians, and foraminifera, ostracods (e.g., Denizot 1963, 1965; Salvat 1964; Apostolescu 1967; Vasseur 1967; Chevalier 1971; Coudray & Margerel 1974; Margerel 1981). The material studied here was collected in 1961 during the second phase of research on New Caledonia's coral reefs.

Prony Bay and Prony Bay Hydrothermal Field

The Prony Bay is situated in the southwest of Grande Terre, deeply enclosed within the mining massif of southern New Caledonia (Fig. 1). It is a relatively deep bay (>40 m) comprising a western bay (known as the Carénage), an eastern bay and several smaller embayments (Fig. 3). It is located near a wide passage between Grande Terre and Île des Pins, characterized by strong currents and localized upwellings. Trade winds funnel into this passage, but the inner part of the western bay is sheltered from the swells, allowing slender coral colonies to flourish (e.g., *Acropora* Oken, 1815, *Turbinaria* Oken, 1815) (Rougerie 1986). Two rivers discharge in the western bay, the Rivière Bleue to the west and the Rivière des Kaoris to the east, whose combined average flow of ~5 m³/s can exceed 100 m³/s during cyclonic rains. The western bay is characterized by an estuarine circulation, in which the outflow of desalinated surface waters is hydrodynamically compensated by a substantial inflow of shallow lagoon waters (Fig. 4; Rougerie 1986). The eastern bay, conversely, does not receive any river flow and has a hydrological regime close to that of the open part of the lagoon. Overall, the waters of the Prony Bay have a temperature higher than the lagoon average, but a much lower salinity (Rougerie 1986). Because of mining activities and heavy rainfall over the reliefs, the Prony Bay is subject to a microclimate characterized by a predominance of rainfall over evaporation, leading to intense rain-induced erosion and discharge of sediment-rich freshwater. It is therefore infilled with 'red muds' (lutite), characteristic of lateritic mining terrains, that



Samples	Site	Depth (m)	Sediment bottom
A	Nouméa lagoon, beacon La Prévoyante	20	detrital soft coral
B	Aiguille de Prony	35	lutite

Fig. 3. Locations and details of samples studied for ostracods within the southwestern lagoon and Prony Bay (Laboute collection) (Google Maps, 2026).

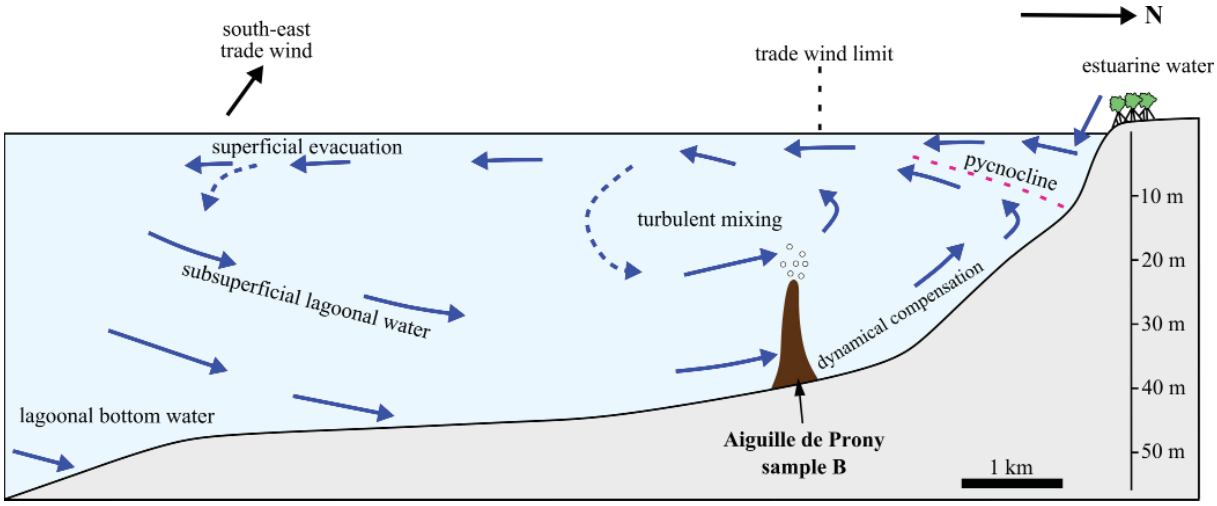


Fig. 4. Estuarine circulation system within Prony Bay, including Aiguille de Prony (PBHF, sample B) (modified from Rougerie 1986).

are very poor in fauna (e.g., Dugas *et al.* 1981; Chevillon & Richer de Forges 1988; Richer de Forges 1991; Jadot & Boulvain 2015).

The Prony Bay is characterized by hyperalkaline springs that discharge gas-rich, high-pH (up to pH 11) waters of low salinity and relatively low temperature (32–42°C) compared to other hydrothermal systems, a phenomenon known since the 19th century (Garnier 1871). The venting gases are mainly composed of H_2, CH_4, N_2 with trace amounts of CO_2, ethane (C_2H_6) and propane (C_3H_8) (Monnin *et al.* 2014, 2021). These springs constitute the PBHF, where the mixing of hydrothermal fluids with lagoonal waters induces the precipitation of brucite and Ca-carbonates, which accumulate as platforms exposed at low tide or as submarine masses (Maurizot & Mortimer 2020). Among these submarine hydrothermal formations, the Aiguille de Prony (Needle of Prony) is well known by scuba divers. It is a high carbonate pinnacle located in the middle of the bay, towering 35 m above the seafloor, with its summit 2 m below the surface (Figs 3–4; Launay & Fontes 1985). Several other domes and pinnacles, ranging from 2 to 10 m in height, occur on the bay floor at water depths of 30 to 50 m (Pelletier & Chevillon 2006; Pelletier *et al.* 2006).

Material and methods

The Apostolescu collection

Relatively few biographic information is available on Vespasian Apostolescu. He was born in 1925 in Romania and arrived in France before 1955, where he was employed at the *Institut Français du Pétrole* (French Institute of Petroleum). He examined the ostracods collected during the 1961 Singer-Polignac expedition (Fig. 2), from 7 to 10 December, identifying 32 species from Saint-Vincent Bay (Apostolescu 1967), most of which were left in open nomenclature. They were obtained from five sediment samples alternatively labelled 4, 7, 8, 9, 11 and 7-12-61x (= 7), 8-12-61A (= 8), 9-12-61A (= 9), 9-12-61B (= 4) and 10-12-61B (=11) (Salvat 1964; Apostolescu 1967). For the sake of simplicity, we will here be terming them 4, 7, 8, 9, 11. Their characteristics are summarized in Fig. 2.

The Apostolescu collection stored in the micropaleontology section of the Muséum national d'Histoire naturelle (MNHN), Paris, includes:

- specimens figured in Apostolescu (1967) glued in a micropaleontological slide, without indication of their provenance or identification, accompanied by a few unfigured specimens. Most of the specimens figured have been recognized, as detailed below, and they have been assigned a provenance sample based on associated documents.
- unidentified picked specimens from the Saint-Vincent Bay placed in four different micropaleontological slides. They correspond to samples 4, 9 and 11 (Fig. 2).

In a summary of ostracod taxa reported from New Caledonia, Maddocks (2007) noted that the very small illustrations in Apostolescu (1967) show insufficient detail for identification. Maddocks (2025) further discussed the uncertain attribution of Bairdiidae Sars, 1888 species from New Caledonia reported in Apostolescu (1967), Cabioch *et al*. (1986), Babinot & Degaugue-Michalski (1996) and Hoibian *et al.* (2002). All specimens of Apostolescu (1967) are here re-illustrated using Scanning Electron Microscopy (SEM), together with new and previously unfigured specimens from the same samples for a full taxonomic comprehension of the communities at each station.

The Laboute collection

Pierre Laboute was born in 1942 in Mer (Loir-et-Cher, France) and worked as a professional diver and oceanographer at the ORSTOM Centre (*Office de la Recherche Scientifique et Technique d'Outre-Mer*) in Nosy Be, Madagascar, and later in Nouméa, New Caledonia, between 1971 and 1982 and again from 1986 to 1990. He returned to Nouméa in 1996 and is now retired (Morat 2010).

The Laboute collection stored in the MNHN consists of (Fig. 3):
- bulk sediments collected in the Nouméa lagoon at a water depth of 20 m near the La Prévoyante beacon on 14 April 1981 (here termed station A).
- bulk sediments collected on 15 April 1981 from the Aiguille de Prony within the PBHF at a water depth of 35 m (here termed station B).

Ostracods were picked from both samples for the present analysis. All types and figured specimens are deposited in the Micropaleontology collections of the MNHN, Paris.

Methods

Specimens were gold-coated and imaged using a JEOL JCM-600 SEM at the Centre de Recherche en Paléontologie-Paris (CR2P). Light optical microscope images were acquired using a Zeiss AXIO ZOOM microscope, also at the CR2P. With the exception of one species, all identifications were performed uniquely based on carapace and valve characters as most specimens lack appendages. A complete taxonomic list with the number of specimens per species per site is provided in Table 1. Supp. file 1 summarizes the original identifications of Apostolescu (1967), updated identifications in this work, as well as missing specimens and additional notes where needed. Interpretative sketches of the adductor muscle scars of the new and revised species are summarized in Fig. 18.

Terminology and abbreviations used for ostracod descriptions

In the following:
- we consider that the dorsal margin is subdivided into antero-dorsal (in front of the anterior cardinal angle), dorsal (between the posterior and anterior cardinal angles) and postero-dorsal (behind the posterior cardinal angle) borders. In the same manner, the ventral margin is subdivided into antero-ventral (in front of the anterior slope break), ventral (between the anterior and posterior slope breaks) and postero-ventral (behind the posterior slope break) borders.
- we follow Sylvester-Bradley & Benson (1971) and Liebau (1991) for the terminology of ornamental features on the surface of the valves. The terminology of the structure and ornamentation of Hemicytheridae Puri, 1953 follows Jellinek (1995).

Table 1 (continued on next page). Abundance of species per station.

Species	Station 4	Station 7	Station 8	Station 9	Station 11	Station A	Station B
Parapolycope sp.	2 C						
Anscottiella sp.	no data	1 C					
Cytherella hemipuncta Swanson, 1969							1 RV, 2 LV
Cytherella sp.					1 RV		1 LV
Cytherella aff. *ponderosa* Witte, 1993							1 C
Cytherella sp. a in Apostolescu, 1967					1 RV		
Bairdoppilata sp. 1						1 RV	
Bairdoppilata sp. 2				1 RV			
Neonesidea schulzi (Hartmann, 1964)						1 C, 1 RV	
Neonesidea tenera (Brady, 1886)			1 C				
Paranesidea conulifera (Bonaduce *et al*., 1976)		1 C, 1 RV		1 C, 1 RV, 1 LV		3 RV, 3 C, 1 LV	
Paranesidea sp.				2 RV, 1 LV			
Triebelina sertata Triebel, 1948							1 RV, 3 LV
Paracypris bradyi McKenzie, 1967					1 C, 1 RV, 3 LV		1 LV
Bythocytheridae gen. et sp. indet. 1							3 LV
Bythocytheridae gen. et sp. indet. 2							1 LV
Neocyprideis spinulosa (Brady, 1868)					1 RV, 4 LV		
Paracytheroma arenicola Hartmann, 1978					4 RV, 1 LV		
Cytheropteron sp.							1 LV, 1 RV
Oculocytheropteron sp. 1				1 RV			
Oculocytheropteron sp. 2					1 LV		
Kangarina? sp. A in Titterton & Whatley, 2006			no data		3 LV		
Semicytherura sp.						1 RV	
Auradilus mediumiugum Forel sp. nov.				2 RV	2 C, 5 RV, 7 LV		
Auradilus packardi (Brady, 1880)						1 C	
Caudites javana Kingma, 1948						1 C	
Parakrithella flavescens (Brady, 1890)					3 C, 1 RV, 1 LV	1 C, 1 RV, 3 LV	
Callistocythere angelina Forel sp. nov.				1 C, 2 LV	3 C, 1 RV, 1 LV		
Callistocythere parakeiji Titterton & Whatley, 2007				1 C	3 C, 2 RV, 1 LV	11 C, 1 LV	2 C, 1 RV, 2 LV
Callistocythere punctatuberculata Titterton & Whatley, 2007						1 C, 1 LV	1 C, 4 LV
Leptocythere pulchra Zhao & Whatley, 1989						1 LV	
Gambiella? *toxica* Forel & Bergue sp. nov.							2 C, 5 RV, 7 LV

Table 1 (continued). Abundance of species per station.

Species	Station 4	Station 7	Station 8	Station 9	Station 11	Station A	Station B
Loxoconcha australis Brady, 1880	1 C	1 C, 2 LV	1 RV	1RV, 2 LV	1 RV	1 C, 2 RV, 2 LV	
Loxoconcha charbonnieri Forel sp. nov.				2RV, 1 LV	1 LV	2 C, 8 RV, 5 LV	
Loxoconcha venenosa Forel sp. nov.							4 C, 18 RV, 20 LV
Loxoconcha georgei Hartmann, 1978					1 RV		
Loxoconcha pumicosa (Brady, 1880)	2 RV	1 LV	1 LV		1 RV		
Loxoconcha parahuahineensis Behrens, 1991			1 RV	1 LV	1 LV	1 RV	
Loxoconchella honoluliensis (Brady, 1880) emend.		1RV, 1 LV	1C, 1RV, 1 LV				
Paracytheridea remanei Hartmann, 1964						3 RV	4 RV, 1 LV
Paracytheridea trilobites (Brady, 1890)					2 RV, 4 LV	5 RV, 2 LV	
Cytherois sp.						1 C	
Paradoxostoma novaecaledoniae Brady, 1890			1 LV				
Paradoxostoma sp.					1 C		
Keijia demissa (Brady, 1868)					4 C		
Kotoracythere inconspicua (Brady, 1880)					1 LV	1 C, 1 RV	
Pectocythere? sp.						1 RV	
Neobuntonia cf. *guttata* (Brady, 1890)						1 C	
Neobuntonia sp. 1		1 RV					
Neobuntonia sp. 2				1 RV, 1 LV			
Neohornibrookella sp.							2 RV, 1 LV
Bosasella elongata (Hu, 1979)	1 C			1 C			1 RV
Bosasella cf. *gigas* (Jellinek, 1993)	1 RV						
Adencythere torticollis (Brady, 1890) emend.				1 C, 6 RV, 5 LV	1 RV, 1 LV	1 LV	
Lankacythere scotti (Brady, 1890) emend.						6 RV, 3 LV	
Pistocythereis sp.							1 C
Ponticocythereis impressionista Forel sp. nov.				1 C, 1 RV, 1 LV	2 C, 8 RV, 6 LV		
Ponticocythereis costata (Hartmann, 1978)							1 LV
Ponticocythereis quadriserialis (Brady, 1890)							5 C, 1 RV
Xestoleberis granulosa Brady, 1880	1 C						
Xestoleberis tumefacta Brady, 1880	1 C	1 C	2 C, 1 LV				
Xestoleberis variegata Brady, 1880	1 LV	1 C, 1 RV	1 RV		1 LV	1 C	
Xestoleberis sp.						2 C	

- we use 'mural ridges' to designate thin and smooth ridges on top of muri of reticulate species.
- we use 'islet' to designate a small area bounded by ridges.
- the length convention of carapaces and valves is as follows: < 400 μm very small, 400–500 μm small, 500–700 μm medium, 700–1000 μm large, > 1000 μm very large.

Abbreviations and morphological characters of the carapaces used in the text are:

A-1 to A-4	=	juvenile stages prior to adult stage, from Adult-1 to Adult-4
AB	=	anterior border
ACA	=	anterior cardinal angle
ADB	=	antero-dorsal border
AMS	=	adductor muscle scars
AVB	=	antero-ventral border
C	=	carapace
DB	=	dorsal border
H	=	height
Hmax	=	maximum of height
L	=	length
Lmax	=	maximum of length
LV	=	left valve
mid-H	=	mid-height
mid-L	=	mid-length
mid-W	=	mid-width
PB	=	posterior border
PCA	=	posterior cardinal angle
PDB	=	postero-dorsal border
PVB	=	postero-ventral border
RV	=	right valve
VB	=	ventral border
W	=	width
Wmax	=	maximum of width

Results

Class Ostracoda Latreille, 1806
Subclass Myodocopa G.W. Müller, 1894
Order Halocyprida Dana, 1853
Suborder Cladocopina Sars, 1866
Superfamily Polycopoidea Sars, 1866
Family Polycopidae Sars, 1866

Genus ***Parapolycope*** Klie, 1936

Type species

Parapolycope germanica Klie, 1936, by monotypy.

Parapolycope sp.
Figs 2, 5A–C

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 2 C; geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral; MNHN MNHN.F.F73344 (Fig. 5A), MNHN.F.F73345 (Fig. 5B–C).

Dimensions (illustrated specimens)

Fig. 5A. LV: L=350 µm; H=287 µm. RV: L=361 µm; H=297 µm.

Fig. 5B (slightly tilted ventrally). LV: L=344 µm; H=277 µm. RV: L=355 µm; H=292 µm.

Stratigraphical and geographical distribution

Station 4, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2).

Remarks

Members of the subfamily Polycopinae Sars, 1866 are characterized by an antenna with three or four segments delimited by sutures, against five or six in Polycopsininae Chavtur, 1983 (Kornicker & Iliffe 1989). Although such diagnostic features on appendages are not preserved here, a few genera can be discarded, such as *Polycopetta* Chavtur, 1981 that is concave anteriorly, *Pontopolycope* Chavtur, 1981 that is rostrate, and *Metapolycope* Kornicker & von Morkhoven, 1976 that has AMS composed of nine individual scars organized in a half rosette (against three here; Fig. 5C). The present specimens are attributed to *Parapolycope* Klie, 1936 based on their thin, oval carapaces and punctate surface. Although appendage characters are not preserved in the present material and would confirm this attribution (e.g., antennula with four podomeres; exopodite of antenna with nine podomeres), these features have been used to reassign several species originally placed in *Polycope* Sars, 1866 to *Parapolycope* (e.g., Tanaka *et al.* 2010; Tanaka & Tsukagoshi 2010, 2013; Karanovic *et al.* 2016).

This species was not mentioned in Apostolescu (1967), but the re-observation of unidentified specimens picked in his collection reveals its presence at station 4.

Order Myodocopida Sars, 1866
Suborder Myodocopina Sars, 1866
Superfamily Sarsielloidea Brady & Norman, 1896
Family Sarsiellidae Brady & Norman, 1896

Genus ***Anscottiella*** Kornicker, 1975

Type species

Scottiella crispata Scott, 1905, by monotypy [*Scottiella* Poulsen, 1965 being pre-occupied, *Anscottiella* was introduced by Kornicker (1975)].

Anscottiella sp.
Figs 2, 5D–G

Polycope? sp. a – Apostolescu 1967: pl. 1 fig. 6, table 1 (noted as *Polycope* sp. a).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73312 (Apostolescu 1967: pl. 1 fig. 6, re-illustrated as Fig. 5D–G).

Dimensions (illustrated specimen)

Fig. 5D–G. C: L = 919 μm; H = 762 μm.

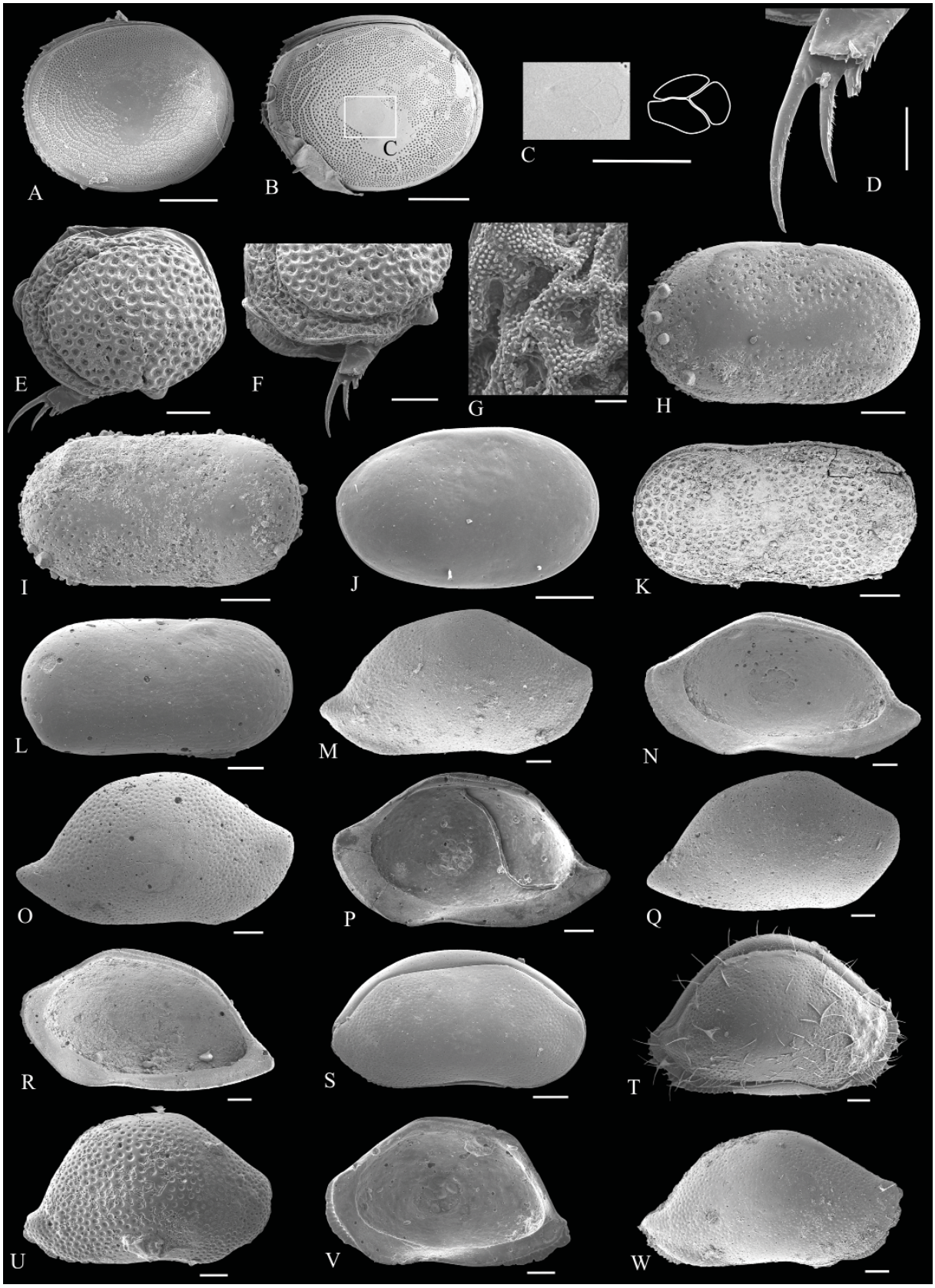
Stratigraphical and geographical distribution

Stations ?4 and 7, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

This specimen is of peculiar interest as it is a carapace with slightly shrunk valves and a protruding caudal ramus (Fig. 5E–F). In the original illustration in Apostolescu (1967), the caudal ramus was cropped and the specimen illustrated upside-down was attributed with doubt to *Polycope*, without discussion. It is here excluded from Cladocopina Sars, 1866 based on its large size and morphology of the caudal ramus, which differs from that of Cladocopina, whose members bear a short conical projection between the claws (Kornicker & Sohn 1976). It is re-attributed to Sarsiellidae Brady & Norman, 1896 based on its strongly calcified, subcircular, heavily ornamented carapace, without pronounced caudal process, rostrum or incisure (Moore 1961), and to Sarsiellinae Brady & Norman, 1896 by the absence of a rostrum (Kornicker & Thomassin 1998). The characters of the caudal ramus have been shown to be of capital significance in the generic classification of Sarsiellinae, particularly the number of non-articulate claws, i.e., those united with the lamella of the caudal ramus (Kornicker 1991). The caudal ramus of the present specimen has claws 1 and 2 non-articulate (Fig. 5D), which is a diagnostic character of *Anscottiella*. As a matter of comparison, *Adelta* Kornicker, 1975, *Parasarsiella* Poulsen, 1965 and *Sarsiella* Norman, 1869 have only one non-articulate claw while *Ancohenia* Kornicker, 1976, *Chelicopia* Kornicker, 1958 and *Spinacopia* Kornicker, 1969 have secondary claws between primary claws. *Junctichela* Kornicker & Caraion, 1978 lacks secondary claws but has claws 1, 2, and 3 non-articulate (Kornicker 1991). The retractation of the valves of the specimen at hand precludes a clear understanding of its lateral outline (Fig. 5E–F).

Fig. 5 (next page). SEM photos of ostracods from New Caledonia. **A–C**. *Parapolycope* sp., station 4. **A**. C, left view (MNHN.F.F73344). **B–C**. C (MNHN.F.F73345). **B**. Left view. **C**. Details of AMS on outer surface and interpretative sketch. **D–G**. *Anscottiella* sp., station 7, C (Apostolescu 1967: pl. 1 fig. 6) (MNHN.F.F73312). **D**. Details of caudal ramus. **E**. Right view. **F**. Details of the valve contact. **G**. Details of ornamentation. **H–I**. *Cytherella hemipuncta* Swanson, 1969, station B. **H**. ♀, LV, outer view (MNHN.F.F73346). **I**. ♂, LV, outer view (MNHN.F.F73347). **J**. *Cytherella* sp., station 11, RV, outer view (MNHN.F.F73348). **K**. *Cytherella* aff. *ponderosa* Witte, 1993, station B, C, outer left view (MNHN.F.F73349). **L**. *Cytherella* sp. a in Apostolescu (1967), station 11, RV, outer view (Apostolescu 1967: pl. 1 fig. 22) (MNHN.F.F73318). **M–N**. *Bairdoppilata* sp. 1, station A, RV (MNHN.F.F73350). **M**. Outer view. **N**. Inner view. **O–P**. *Bairdoppilata* sp. 2, station 9, RV (Apostolescu 1967: pl. 1 fig. 7) (MNHN.F.F73343). **O**. Outer view. **P**. Inner view. **Q–R**. *Neonesidea schulzi* (Hartmann, 1964), station A, RV (MNHN.F.F73351). **Q**. Outer view. **R**. Inner view. **S**. *Neonesidea tenera* (Brady, 1886), station 8, C, right view (Apostolescu 1967: pl. 1 fig. 11) (MNHN.F.F73329). **T–V**. *Paranesidea conulifera* (Bonaduce *et al.*, 1976). **T**. C, station 7, outer right view (Apostolescu 1967: pl. 1 figs 4–5) (MNHN.F.F73339). **U–V**. RV, station 11 (Apostolescu 1967: pl. 1 fig. 8) (MNHN.F.F73340). **U**. Outer view. **V**. Inner view. **W**. *Paranesidea* sp., station 9, RV, outer view (MNHN.F.F73352). Scale bars: A–B, D, H–W = 100 μm; C = 50 μm; E–F = 200 μm; G = 20 μm.


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This species is very close to *Anscottiella tumidicosta* Hall, 1987 from Coconut Beach (Lizard Island, northwestern Australia; Hall 1987), but differs by its narrower fossae that are not separated by bulge-like muri, and by its papillate rather than foveolate second-order ornamentation (Fig. 5G). It is also close to *Anscottiella vertex* Kornicker, 1991 from the Enewetak atoll (Marshall Islands, Micronesia; Kornicker 1991) but *Anscottiella* sp. lacks the thickened ribs.

Apostolescu (1967) mentioned *Polycope*? sp. a from stations 4 and 7, without indication of the precise origin of the illustrated carapace. Only the figured carapace was present in the collection, associated notes indicating that it was collected at station 7. The presence of this species at station 4 is thus unverified.

Subclass Podocopa Sars, 1866
Order Platycopida Sars, 1866
Suborder Platycopina Sars, 1866
Superfamily Cytherelloidea Sars, 1866
Family Cytherellidae Sars, 1866

Genus ***Cytherella*** Jones, 1849

Type species

Cytherina ovata Roemer, 1841, subsequently designated by Ulrich (1894).

Cytherella hemipuncta Swanson, 1969
Figs 3, 5H–I

Cytherella hemipuncta Swanson, 1969: 37, pl. 1 figs 4–6.

Cytherella hemipuncta – Swanson 1979: 8, fig. 4. — Whatley & Zhao 1987: 333, pl. 1 figs 2–4. — Mohan *et al.* 2001: pl. 1 fig. 1. — Montenegro *et al.* 2004: pl. 1 fig. 3. — Pugliese *et al.* 2006: table 1 (not illustrated). — Morley & Hayward 2012: fig. 8g; 2016: appendix 1 (not illustrated).

non *Cytherella hemipuncta* – Dewi 1997: 54, fig. 6. — Fauzielly *et al.* 2012: fig. 3.15. [Both likely *Cytherella javaseaense* Dewi, 1997.]

? *Cytherella hemipuncta* – Fauzielly 2013: table 2 (not illustrated). — Fauzielly *et al.* 2013: table 2 (not illustrated). — Rajkumar *et al.* 2020: table 1 (not illustrated).

Selected material examined

NEW CALEDONIA – **Prony Bay** • 2 LV, 1 RV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73346 (Fig. 5H), MNHN.F.F73347 (Fig. 5I).

Dimensions (illustrated specimens)

Fig. 5H. ♀ LV: L = 619 μm; H = 364 μm.

Fig. 5I. ♂ LV: L = 566 μm; H = 302 μm.

Stratigraphical and geographical distribution

Lower Miocene (Huntchinsonian to Awamoan), Waipara District, New Zealand (Swanson 1969). Otago Shelf, New Zealand (Swanson 1979). Malacca Strait (Whatley & Zhao 1987). Bay of Bengal,

off Karikkattukuppam, southeastern India (Mohan *et al.* 2001). Mae Khlong river mouth, northwestern Gulf of Thailand (Montenegro *et al.* 2004). Petchaburi, northwestern Gulf of Thailand (Pugliese *et al.* 2006). Hauraki Gulf, New Zealand (Morley & Hayward 2012, 2016). ?Gulf of Mannar, southeastern India (Rajkumar *et al.* 2020). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Cytherella hemipuncta Swanson, 1969 has a longitudinal inornate central area as in *Cytherella semitalis* Brady, 1868, but the punctae around it are much denser and smaller. The present specimens are smaller than the holotype of *Cytherella hemipuncta* (L = 840 µm; H = 470 µm) from New Zealand (Swanson 1969) and are closer to specimens reported from the Malacca Strait (Whatley & Zhao 1987). Two morphotypes are observed here: one with a short, ovoid carapace, interpreted as female (Fig. 5H), and another with an elongate, subrectangular carapace, interpreted as male (Fig. 5I).

The specimens attributed to *Cytherella hemipuncta* from Indonesia by Dewi (1997) are removed from that species as their inornate area is not longitudinal but narrow and subcircular, reticulae are much larger and do not reach the margins. The carapace from the Jakarta Bay identified as *Cytherella hemipuncta* by Fauzielly *et al.* (2012), notably illustrated upside-down, is conspecific with the material illustrated by Dewi (1997), which may have to be re-attributed to *Cytherella javaseaense* Dewi, 1997, a species characterized by two large ovoid inornate areas located antero- and postero-medially. The mention of *Cytherella hemipuncta* from the Jakarta Bay without illustrations by Fauzielly (2013) and Fauzielly *et al.* (2013) are considered uncertain and the specimens require re-examination. A revision of the Indonesian specimens is thus needed for their formal specific identification and at this stage we consider that *Cytherella hemipuncta* does not occur around Indonesia. Although the drawing of a valve from the Hauraki Gulf, New Zealand (Morley & Hayward 2012, 2016), does not display details of its inornate area, it is considered as belonging to *Cytherella hemipuncta* owing to the density and distribution of punctae. The occurrence in the Gulf of Mannar, India (Rajkumar *et al.* 2020) is questionable as no specimen was illustrated.

Cytherella sp.
Figs 2–3, 5J

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73450. – **Saint-Vincent Bay** • 1 RV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73348 (Fig. 5J).

Dimensions (illustrated specimen)

Fig. 5J. RV: L = 451 µm; H = 277 µm.

Stratigraphical and geographical distribution

Station 11, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

This species was not mentioned in Apostolescu (1967), but the re-observation of unidentified picked specimens in his collection reveals its presence at station 11.

Cytherella aff. ***ponderosa*** Witte, 1993
Figs 3, 5K

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 C; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73349 (Fig. 5K).

Dimensions (illustrated specimen)

Fig. 5K. RV: L = 703 μm; H = 351 μm. LV: L = 689 μm; H = 334 μm.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Cytherella ponderosa Witte, 1993 was described from Joal beach, Senegal (Witte 1993) and is known from the type locality only. The present carapace from the PBHF differs by lacking a narrow smooth marginal area. It is also noticeable that punctae on the present specimen are larger than on the holotype of *Cytherella ponderosa*, but illustrations in Witte (1993) display variability in their size.

Cytherella sp. a in Apostolescu, 1967
Figs 2, 5L

Cytherella sp. a – Apostolescu 1967: pl. 1 fig. 22, table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73318 (Apostolescu 1967: pl. 1 fig. 22, re-illustrated as Fig. 5L).

Dimensions (illustrated specimen)

Fig. 5L. RV: L = 759 μm; H = 380 μm.

Stratigraphical and geographical distribution

Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

The RV at hand displays interesting similarities with *Cytherella bermaguiensis* Yassini & Jones, 1995 described from the Bermagui continental shelf, off Sydney, southeastern Australia (Yassini & Jones 1995). This species is diagnosed by a "carapace medium to large size, subrectangular, strongly calcified, left valve larger than right valve, with straight dorsal margin and well-rounded anterior margin and smooth surface" (Yassini & Jones 1995: 302). Two specimens from Lord Howe Island and Middleton Reef, southeastern Australia, were later attributed to this species (Yassini & Jones 2023: pl. 137 figs 6–8). They nonetheless drastically differ from the type-material in their outline and surface with a very shallow and large reticulation, implying that this species might need revision. The surface ornamentation of the specimens in Yassini & Jones (2023) is reminiscent of that visible on the specimen from New Caledonia, which is, however, much more rectangular in lateral outline. This species is kept in open nomenclature until more material is found and *Cytherella bermaguiensis* revised.

Order Podocopida Sars, 1866
Suborder Bairdiocopina Gründel, 1967
Superfamily Bairdioidea Sars, 1866
Family Bairdiidae Sars, 1888

Genus ***Bairdoppilata*** Coryell, Sample & Jennings, 1935

Type species

Bairdoppilata martyni Coryell, Sample & Jennings, 1935, by original designation.

Bairdoppilata sp. 1
Figs 3, 5M–N

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 RV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73350 (Fig. 5M–N).

Dimensions (illustrated specimen)

Fig. 5M–N. RV: L = 1103 µm; H = 583 µm.

Stratigraphical and geographical distribution

Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Bairdoppilata sp. 2
Figs 2, 5O–P

Bairdia sp. a – Apostolescu 1967: pl. 1 fig. 7, table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73343 (Apostolescu 1967: pl. 1 fig. 7, here re-illustrated as Fig. 5O–P).

Dimensions (illustrated specimen)

Fig. 5O–P. RV: L = 940 µm; H = 514 µm.

Stratigraphical and geographical distribution

Station 9, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

This RV was identified as *Bairdia* sp. a in Apostolescu (1967). Its re-examination reveals a very finely crenulate median hinge socket, the presence of auxiliary dentition, particularly visible posteriorly, as well as the absence of marginal spines or frills. These features lead us to re-assign it to the genus *Bairdoppilata* Coryell, Sample & Jennings, 1935.

Genus ***Neonesidea*** Maddocks, 1969

Type species

Triebelina schulzi Hartmann, 1964, by original designation.

Neonesidea schulzi (Hartmann, 1964)
Figs 3, 5Q–R

Triebelina schulzi Hartmann, 1964: 44, pl. 4 figs 14–18, pl. 5 figs 20–22.

Species BA – Maddocks 1966: 47, fig. 22.
Neonesidea schulzi – Maddocks 1969: 22, figs 4a–d, 5a–f, 6a–c; 1995: 202–204, pl. 1 figs 1–4, pl. 8 figs 1–6, 8; 2007: 271 (not illustrated). — Bate 1971: pl. 1 fig. 1i, pl. 2 fig. 3i. — Bonaduce *et al.* 1976: 376, pl. 4 fig. 6. — Basha 1983: pl. 4 fig. 2. — Weissleader *et al.* 1989: appendix 1 (not illustrated). — Babinot & Kouyoumontzakis 1995: 22, pl. 1 figs 2–3. —Mohammed 2004: 31, pl. 1 fig. 3. — Mostafawi *et al.* 2005: 127, pl. 1 figs 2–3. — Mohammed *et al.* 2012: 153, pl. 1 figs 4–6. — Mohammed & Keyser 2012: 251, fig. 2.9. — Keyser & Mohammed 2021: 4, pl. 1 fig. 3.
Neonesidea schulzi sensu lato – Titterton & Whatley 1988: 114, fig. 5.5–7, pl. 2 figs 1–10.

? *Neonesidea schulzi* – Holden 1976: 12, pl. 7 figs 9–11.

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 C, 1 RV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73351 (Fig. 5Q–R).

Dimensions (illustrated specimen)

Fig. 5Q–R. RV: L = 1046 μm; H = 571 μm.

Stratigraphical and geographical distribution

?Miocene, Midway Island (Holden 1976). Red Sea (Hartmann 1964). Nosy Be, Madagascar (Maddocks 1966, 1969, 1995). Abu Dhabi Lagoon (Bate 1971). Gulf of Aqaba, Red Sea (Bonaduce *et al.* 1976; Basha 1983). Solomon Islands (Titterton & Whatley 1988). Micronesian lagoons (Weissleader *et al.* 1989). Mayotte lagoon, Indian Ocean (Babinot & Kouyoumontzakis 1995). Southwest Yemen (Mohammed 2004). New Caledonia (Maddocks 2007). Northern Socotra Island, Indian Ocean (Mohammed *et al.* 2012). Aden City, Yemen (Mohammed & Keyser 2012). Al-Hudeida City, Yemen, Red Sea (Keyser & Mohammed 2021). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Neonesidea tenera (Brady, 1886)
Figs 2, 5S

Bairdia tenera Brady, 1886: 304, pl. 39 figs 13–15.
Bairdia inornata A. Scott, 1905: 372, pl. 1 figs 11–12.

Bairdia tenera – Brady 1890: 493, pl. 1 figs 11–12.
Bairdia cf. *fortificata* – Apostolescu 1967: pl. 1 fig. 11, table 1.
Neonesidea tenera – Maddocks 1969: 33, pl. 2 fig. 4; 2013: 477, figs 5a–d, 6–17. — Whatley & Jones 1999: pl. 1 fig. 10. — Whatley 2000: table 1 (not illustrated). — Whatley *et al.* 2000: 85, pl. 2 figs 1–2, 4 (not fig. 3). — Maddocks 2013: 477, figs 5a–d, 6–17.

? *Bairdia tenera* – Chapman 1902: 422 (not illustrated).
? *Neonesidea* n. sp. 1 – Bonaduce *et al.* 1983: 478, fig. 4.6–9.
? *Neonesidea*? *tenera* – Bonaduce *et al.* 1983: 481.
? *Neonesidea tenera* – Whatley & Roberts 1995: fig. 1–1.
? *Neonesidea* gr. *tenera* – Hoibian *et al.* 2002: 183 (not illustrated).

non *Bairdia inornata* T. Scott, 1894: 136, pl. 14 figs 40–41 [= senior homonym of *Bairdia inornata* A. Scott].
non *Neonesidea tenera*? – Antonietto *et al.* 2012: 35, fig. 4.16–22 [= *Neonesidea* sp. according to Coimbra *et al.* (2013)].

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral; MNHN MNHN.F.F73329 (Apostolescu 1967: pl. 1 fig. 11, here re-illustrated as Fig. 5S).

Dimensions (illustrated specimen)

Fig. 5S. RV: L = 709 μm; H = 345 μm. LV: L = 714 μm; H = 386 μm.

Stratigraphical and geographical distribution

Gulf of Mannar (Brady 1886). Samoa (Brady 1890). ?Funafuti, Tuvalu (Chapman 1902). Ceylon (Scott 1905). Nosy Be, Madagascar (Maddocks 1969). ?Gulf of Aqaba, Red Sea (Bonaduce *et al.* 1983). ?Pitcairn, Oeno and Henderson Islands (Whatley & Roberts 1995). Easter Island (Whatley & Jones 1999; Whatley 2000; Whatley *et al.* 2000). ?Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). French Frigate Shoals, Hawaiian Islands (Maddocks 2013). Station 8, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

This carapace was identified as *Bairdia* cf. *fortificata* Brady, 1880 in Apostolescu (1967). It is re-attributed to *Neonesidea tenera* (Brady, 1886) following the detailed discussion of this species in Maddocks (2013), who clarified that it is diagnosed by its slightly caudate lateral outline, nearly straight ventral margin, delicately punctate surface, minutely denticulate PVB in LV and gently curved contours in dorsal view.

Genus ***Paranesidea*** Maddocks, 1969

Type species

Paranesidea fracticorallicola Maddocks, 1969, by original designation.

Paranesidea conulifera (Bonaduce, Masoli & Pugliese, 1976)
Figs 2–3, 5T–V

Neonesidea conulifera Bonaduce, Masoli & Pugliese, 1976: 374, pl. 2 figs 1–6.
Neonesidea obtusa Hu, 1979: 75, pl. 3 figs 20, 23–28.
Paranesidea bipustulosa Titterton & Whatley, 1988: 128, fig. 7: 3–4, pl. 6 figs 10–17. — Gou 1990: 24, pl. 1 fig. 15.

Bairdia aff. *victrix* – Apostolescu 1967: pl. 1 figs 4–5, table 1.
Bairdia attenuata – Apostolescu 1967: pl. 1 figs 8, ?9, ?10, table 1.

Paranesidea fracticorallicola – Hartmann 1981: 99, pl. 1 figs 6–9.
Paranesidea conulifera – Maddocks 1995: 210–212, pl. 4 figs 1–9, pl. 12 figs 1–8; 2007: 271 (not illustrated). — Hoibian *et al.* 2002: pl. 1 fig. 14. — Mostafawi *et al.* 2005: 127, pl. 1 figs 4–5.
Paranesidea stricta – Eagar 1999: pl. 1 figs 1–2.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C, 1 RV; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73339 (Apostolescu 1967: pl. 1 figs 4–5 (C), re-illustrated as Fig. 5T) • 1 C, 1 RV, 1 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73340 (Apostolescu 1967: pl. 1 fig. 8 (RV), re-illustrated as Fig. 5U–V). – **Nouméa lagoon** • 3 C, 3 RV, 1 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute sample A; detrital soft coral; MNHN MNHN.F.F73451–MNHN.F.F73457.

Dimensions (illustrated specimens)

Fig. 5T. RV: L = 1082 μm; H = 598 μm. LV: L = 1093 μm; H = 703 μm.

Fig. 5U–V. Juvenile RV: L = 861 μm; H = 526 μm.

Stratigraphical and geographical distribution

Pleistocene, Hengchun Formation, southern Taiwan (Hu 1979). Gulf of Aqaba, Red Sea (Bonaduce *et al.* 1976). Eastern Australia (Hartmann 1981). Solomon Islands (Titterton & Whatley 1988). Hainan Island, South China Sea (Gou 1990). Nosy Be, Madagascar (Maddocks 1995). Gilbert Islands, Kiribati (Eagar 1999). Roche Percée Bay, western New Caledonia (Hoibian *et al.* 2002). Bali, Indonesia (Mostafawi *et al.* 2005). New Caledonia (Maddocks 2007). Stations 7 and 9, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

Despite the difficulty of distinguishing morphological features in the original illustrations of Apostolescu (1967), Maddocks (2025) noted that the specimen identified as *Bairdia* aff. *victrix* (Brady, 1869), here re-illustrated as Fig. 5T, displays a high-domed carapace with conspicuous postero-ventral spines. The re-observation of this carapace reveals that it is robust with a coarsely punctate surface, particularly on the anterior and posterior regions, and bears antero-ventral and postero-ventral marginal frills on the RV, and antero-ventral and postero-ventral marginal spines on the LV. These characters are diagnostic of *Paranesidea* (Maddocks 1969). This carapace is re-attributed to *Paranesidea conulifera* (Bonaduce, Masoli & Pugliese, 1976), which is characterized by the presence of pustules anteriorly and posteriorly, with surface ornamentation being notably variable (Maddocks 1995; Mostafawi *et al.* 2005). We follow the synonymy and chresonymy proposed by Maddocks (1995) and Mostafawi *et al.* (2005) in considering that a number of species introduced subsequently should be subsumed within *Paranesidea conulifera*. Notably, *Paranesidea nodulifera* (Brady, 1890), described from Fiji (Brady 1890), exhibits similar pustules. The lectotype illustrated by McKenzie (1986) is, however, slightly tilted dorsally and should be thoroughly re-examined to assess potential conspecificity. Following Maddocks (1995), *Paranesidea bipustulosa* Titterton & Whatley, 1988 described from the Solomon Islands is today considered as representing a morphotype of *Paranesidea conulifera*. Similar variability in ornamentation has been observed in specimens of *Paranesidea parabipustulosa* Coimbra & Carreño, 2002 from Recent sediments of the Brazilian Equatorial Shelf, and subsequently from Ilha da Trindade (Coimbra *et al.* 2009) and the Vitória-Trindade Chain (Luz & Coimbra 2023), Brazil. This observation led Luz & Coimbra (2023) to suggest a possible synonymy with *Paranesidea conulifera*. However, owing to differences in the marginal fringe and punctation pattern, they identified these specimens as *Paranesidea* cf. *conulifera*.

Apostolescu (1967) reported this species, identified as *Bairdia* aff. *victrix*, from station 7 within the Saint-Vincent Bay. The re-observation of unidentified picked specimens in his collection reveals its presence also at station 9. Apostolescu also mentioned *Bairdia attenuata* Brady, 1880 at stations 8, 9 and 11, illustrating 1 RV and 1 C (Apostolescu 1967: pl. 1 figs 8–10). The carapace shown in Apostolescu (1967: pl. 1 figs 9–10) was not found in the collection. *Bairdia attenuata* has since been re-attributed to *Neonesidea* (Maddocks 1969) and the re-analysis of the RV (Apostolescu 1967: pl. 1 fig. 8; Fig. 5U–V) documents characters that drive us to a *Paranesidea* attribution: carapace robust with coarse punctation, rotund outline, anterior and posterior margins frilled, AMS composed of subcircular scars. Its outer surface is slightly encrusted and shows heavy signs of bioerosion but nodules are visible on the anterior and posterior surface, leading us to also re-attribute it to *Paranesidea conulifera*. The specimen is smaller than that in Fig. 5T, has punctae larger and more abundant centrally, the posterior end is lower and the anterior frill is broken. We here consider it as a submature stage of *Paranesidea conulifera*, corresponding to other smaller specimens with similar morphology that are also regarded as juveniles of this species.

Paranesidea sp.
Figs 2, 5W

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 2 RV, 1 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73352 (Fig. 5W).

Dimensions (illustrated specimen)

Fig. 5W. RV: L = 820 µm; H = 421 µm.

Stratigraphical and geographical distribution

Station 9, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2).

Remarks

This species was not mentioned in Apostolescu (1967), but the re-observation of picked material associated with that publication yielded the specimens at hand, all from station 9.

Genus ***Triebelina*** van den Bold, 1946

Type species

Triebelina indopacifica van den Bold, 1946, by original designation.

Triebelina sertata Triebel, 1948
Figs 3, 6A

Triebelina sertata Triebel, 1948: 19, figs 1–2.
Triebelina sp. cf. *Triebelina cubensis* – Kingma 1948: 69, pl. 7 fig. 4.

Triebelina sertata – Keij 1953: 158, pl. 1 fig. 5; 1974: 356, pl. 2 figs 6–12. — Puri 1960: 132, pl. 6 figs 3–4. — Benson 1964: 18 (not illustrated). — Guha 1968: 59, pl. 5 fig. 1. — Maddocks 1969: pl. 61 figs 31, 32b−e; 1995: 214, pl. 7 figs 1–2, pl. 11 figs 1–4; 2007: 271 (not illustrated). — Allison & Holden 1971: 178, fig. 8. — Bonaduce *et al.* 1980: 147, pl. 1 fig. 13. — Jain 1981: 108, pl. 1 fig. 3. — Cabioch *et al.* 1986: 25, pl. 8 figs 1–2. — Titterton & Whatley 1988: 140, pl. 9 figs 9−14. — Cabioch 1988: 285, pl. 22 figs 1–2. — Malz & Lord 1988: 66, pl. 1 figs 1–7. —

Weissleader *et al.* 1989: appendix 1 (not illustrated). — Whatley & Keeler 1989: 66, pl. 1 fig. 3. — Tabuki & Nohara 1990: 369, pl. 1 fig. 4. — Coimbra *et al.* 1992: 103, pl. 3 fig. 9; 2009: fig. 5.1j, table 5.3; 2013: 294, figs 21–24. — Jellinek 1993: 169, pl. 2 figs 34−36. — Whatley & Roberts 1995: fig. 1.6. — Hoibian *et al.* 2002: pl. 1 fig. 13. — Whatley *et al.* 2004: 501, pl. 2 figs 9–10. — Mostafawi *et al.* 2005: 129, pl. 1 fig. 7. — Faiz & Omar 2009: 14, pl. 1 figs 7–8; 2016: 142, pl. 1 figs 5–6. — Antonietto *et al.* 2012: 37, fig. 5.1–6. — Coimbra & Carreño 2012: tables 2, 3. — Mohammed *et al.* 2012: 155, pl. 1 fig. 17. — Dewi *et al.* 2016: pl. 2 fig. 4. — Omar *et al.* 2018: fig. 3.1. — Wang *et al.* 2019: appendix 1 (not illustrated). — Keyser & Mohammed 2021: 4, pl. 1 fig. 2. — Luz & Coimbra 2023: 436, fig. 5.5–6. — Luz *et al.* 2025: figs 10.6, 11.7.

Triebelina cf. *T. sertata* – Krutak 1982: 287, pl. 7 figs 1−5.

Triebelina sp. – Mostafawi 1992: 135, pl. 1 fig. 15. — Dewi 2000: pl. 1 fig. 4. — Gopalakrishna *et al.* 2007: pl. 1 fig. 4.

? *Triebelina sertata* – Teeter 1973: 49, fig. 1a−f; 1975: 422, fig. 3.l.

non *Triebelina sertata* – Hartmann 1984: 125, pl. 4 figs 6–7 [= *Triebelina indopacifica* van den Bold, 1946, see Forel 2024].

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 RV, 3 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73353 (Fig. 6A).

Dimensions (illustrated specimen)

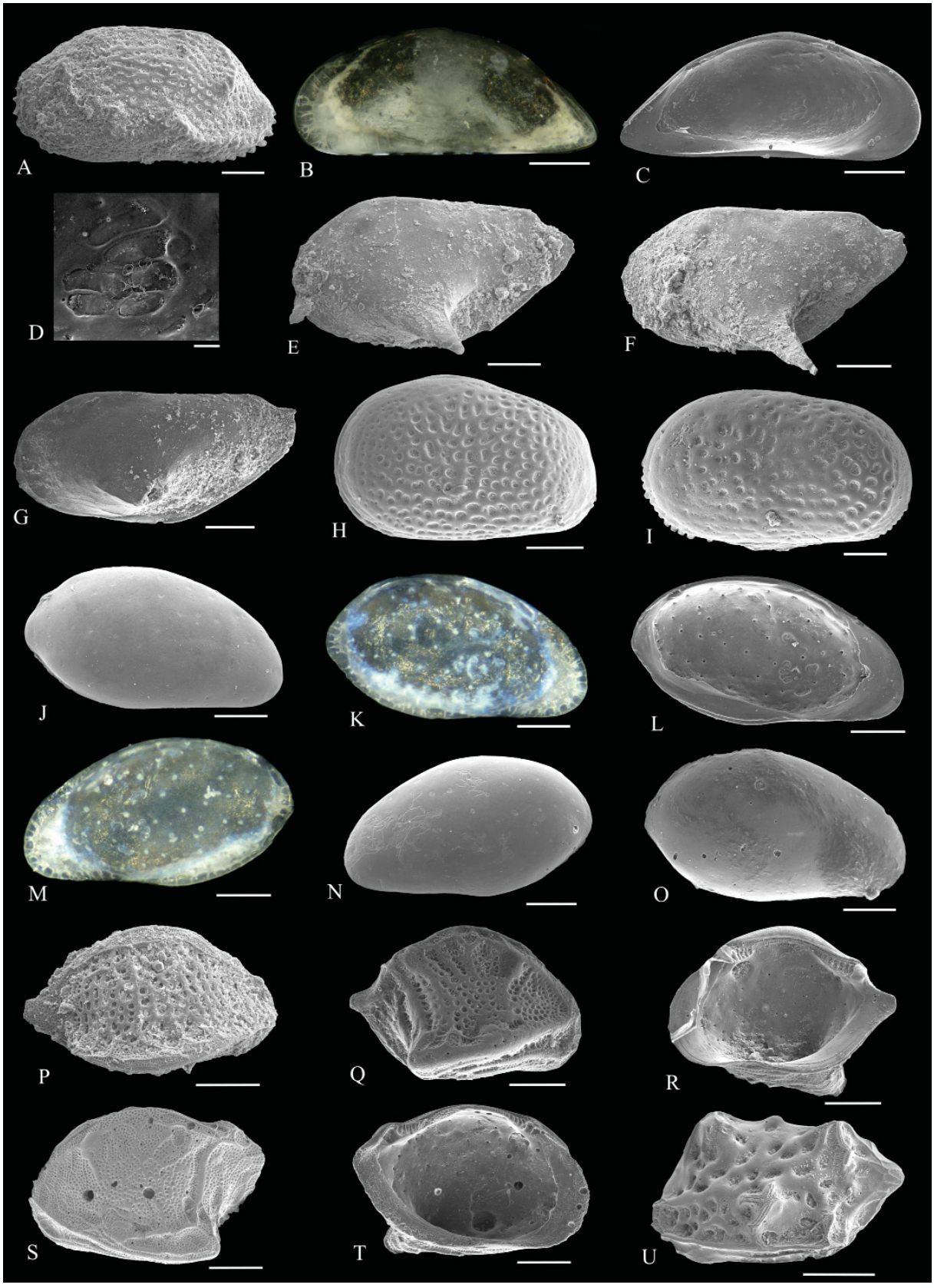
Fig. 6A. LV: L = 608 μm; H = 321 μm.

Stratigraphical and geographical distribution

Miocene to Recent (see for instance Malz & Lord 1988), cosmopolitan (see synonymy and chresonymy).

In New Caledonia: drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). New Caledonia (Maddocks 2007). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Fig. 6 (next page). SEM photos of ostracods from New Caledonia, except B, K, M in optical microscopy. **A**. *Triebelina sertata* Triebel, 1948, station B, LV, outer view (MNHN.F.F73353). **B–D**. *Paracypris bradyi* McKenzie, 1967, station 11, LV (Apostolescu 1967: pl. 1 fig. 12) (MNHN.F.F73332). **B**. Outer view in optical microscopy. **C**. Inner view. **D**. Insight on AMS. **E–F**. Bythocytheridae gen. et sp. indet. 1, station B. **E**. ♀, LV, outer view (MNHN.F.F73354). **F**. ♂, LV, outer view (MNHN.F.F73355). **G**. Bythocytheridae gen. et sp. indet. 2, station B, LV, outer view (MNHN.F.F73356). **H–I**. *Neocyprideis spinulosa* (Brady, 1868), station 11. **H**. Juvenile, LV, outer view (MNHN.F.F73357). **I**. LV, outer view (Apostolescu 1967: pl. 2 fig. 56 (LV)) (MNHN.F.F73328). **J–O**. *Paracytheroma arenicola* Hartmann, 1978, station 11. **J–K**. RV (Apostolescu 1967: pl. 1 fig. 16) (MNHN.F.F73336). **J**. Outer view. **K**. Outer view in optical microscopy. **L–M**. LV (Apostolescu 1967: pl. 1 fig. 13) (MNHN.F.F73334). **L**. Inner view. **M**. Outer view in optical microscopy. **N**. LV, outer view (MNHN.F.F73358). **O**. RV, outer view (Apostolescu 1967: pl. 1 fig. 15) (MNHN.F.F73335). **P**. *Cytheropteron* sp., station B, RV, outer view (MNHN.F.F73359). **Q–R**. *Oculocytheropteron* sp. 1, station 9, RV (Apostolescu 1967: pl. 2 fig. 62) (MNHN.F.F73331). **Q**. Outer view. **R**. Inner view. **S–T**. *Oculocytheropteron* sp. 2, station 11, LV (Apostolescu 1967: pl. 2 fig. 61) (MNHN.F.F73330). **S**. Outer view. **T**. Inner view. **U**. *Kangarina*? sp. A in Titterton & Whatley (2006b), station 11, LV, outer view (Apostolescu 1967: pl. 2 fig. 40) (MNHN.F.F73321). Scale bars: A–C, E–U = 100 μm; D = 20 μm.


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Suborder Cypridocopina Jones in Chapman, 1901
Superfamily Cypridoidea Baird, 1845
Family Paracyprididae Sars, 1923

Genus ***Paracypris*** Sars, 1866

Type species

Paracypris polita Sars, 1866, by monotypy.

Paracypris bradyi McKenzie, 1967
Figs 2–3, 6B–D

Paracypris bradyi McKenzie, 1967: 64, fig. 2d.

Paracypris cf. *trigonella* – Apostolescu 1967: pl. 1 fig. 12, table 1.
Paracypris sp. aff. *bradyi* – McKenzie *et al.* 1991: 146, pl. 2 fig. 7.
Paracypris bradyi – Hartmann 1981: 128 (not illustrated). — McKenzie & Pickett 1984: 230, fig. 3h–k. — Yassini & Jones 1987: 831, fig. 5.14; 1995: 309, figs 100–101; 2023: pl. 141 fig. 5. — Maddocks 1988: 62, fig. 4a–g. — McKenzie *et al.* 1990: 7, pl. 2 fig. 1. — Yassini *et al.* 1995: table 1 (not illustrated). — Titterton & Whatley 2006a: 77, figs 4.2, 6, pl. 1 figs 9, 12–13. — McDonald 2023: 150, fig. 3.4p–r. — McDonald *et al.* 2024: 351, fig. 4p–r.

? *Paracypris bradyi* – Mohammed Nisbath *et al.* 2017: pl. 1 fig. 4.

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73445. – **Saint-Vincent Bay** • 1 C, 1 RV, 3 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73332 (Apostolescu 1967: pl. 1 fig. 12 (LV), re-illustrated as Fig. 6B–D).

Dimensions (illustrated specimen)

LV: L = 991 μm; H = 417 μm.

Stratigraphical and geographical distribution

Upper Eocene to Recent, Southeastern Australia (McKenzie 1967; McKenzie & Pickett 1984; Yassini & Jones 1987, 1995, 2023; Maddocks 1988; McKenzie *et al.* 1990, 1991; McDonald 2023; McDonald *et al.* 2024). Brisbane, northwestern Australia (Hartmann 1981). Guadalcanal and Shortland islands, Solomon Islands (Titterton & Whatley 2006a). ?Central Bay of Bengal, India (Mohammed Nisbath *et al.* 2017). Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Paracypris bradyi McKenzie, 1967 is characterized by its branched radial pore canals anteriorly, simple ones posteriorly, and narrowly rounded anterior margin (Maddocks 1988). We follow Titterton & Whatley (2006a) in considering that their specimens from the Solomon Islands are attributable to this species in spite of their fewer marginal pore canals. The occurrence of *Paracypris bradyi* within the Bay of Bengal is conversely questionable as the marginal pores of the illustrated LV were neither observed nor discussed (Mohammed Nisbath *et al.* 2017).

Suborder Cytherocopina Baird, 1850
Superfamily Cytheroidea Baird, 1850

Family **Bythocytheridae** Sars, 1926

Remarks

The family Bythocytheridae Sars, 1926 is widely distributed both in shallow and deep waters worldwide. This wide ecological range, associated with its long stratigraphical distribution, resulted in a remarkable morphological diversity in the carapace, yet it remained very conservative in terms of soft parts (see Schornikov 1988; Bergue *et al.* 2025 for more references on the subject). The outline and alar process of the species herein recorded are important morphological traits of two bythocytherid genera: *Bythoceratina* Hornibrook, 1952 and *Monoceratina* Roth, 1928. *Bythoceratina*, however, has an alar process subdivided into two portions usually ended by well-developed spines. *Monoceratina*, on the other hand, is an extinct genus. The paucity of specimens and the impossibility to examine their adductor muscle scars because of their fragility preclude more detailed conclusions on the taxonomy of the species at hand. Notably, their morphology may also be reminiscent of certain species of the cytherurid genus *Cytheropteron* Sars, 1866. However, species of *Cytheropteron* generally possess more subtriangular valves than the present specimens, which are rather elongate. We therefore favor their attribution to Bythocytheridae, pending the discovery of additional specimens that would allow the observation of their inner characters. They are, therefore, referred to as Bythocytheridae gen. et sp. indet.

Bythocytheridae gen. et sp. indet. 1
Figs 3, 6E–F

Selected material examined

NEW CALEDONIA – **Prony Bay** • 3 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73354 (Fig. 6E), MNHN.F.F73355 (Fig. 6F).

Dimensions (illustrated specimens)

Fig. 6E. ♀ LV: L = 527 µm; H = 281 µm.

Fig. 6F. ♂ LV: L = 522 µm; H = 264 µm.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

The specimen illustrated in Fig. 6E is a female, while that in Fig. 6F is a male.

Bythocytheridae gen. et sp. indet. 2
Figs 3, 6G

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73356 (Fig. 6G).

Dimensions (illustrated specimen)

Fig. 6G. LV: L = 569 μm; H = 268 μm.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Bythocytheridae gen. et sp. indet. 2 differs from Bythocytheridae gen. et sp. indet. 1 by its more elongated outline and more developed eye-tubercle. Moreover, the post-ocular sulcus seems to be deeper in this species. The alar process of the figured specimen is broken.

Family Cytherideidae Sars, 1925

Genus ***Neocyprideis*** Apostolescu, 1956

Type species

Cyprideis (*Neocyprideis*) *durocortoriensis* Apostolescu, 1956, by original designation.

Neocyprideis spinulosa (Brady, 1868)
Figs 2, 6H–I

Cytheridea spinulosa Brady, 1868a: 182, pl. 13 figs 1–6.
Bishopina vangoethemi Wouters, 1981: 3, pls 1, 3.1.

Cytheridea spinulosa – Brady 1880: 112, pl. 33 fig. 6a–d; 1890: 505 (not illustrated). — Fyan 1916: 1210, figs 7–8.
Clithrocytheridea spinulosa – Keij 1954: 352, pl. 1 fig. 2. — Guha 1968: 212 (not illustrated).
Miocyprideis spinulosa – Kollmann 1960: 178, pl. 18 figs 12–13, pl. 19 fig. 16. — Malz & Ikeya 1986: 178, pl. 2 figs 1–9, pl. 3 fig. 10. — Zhao & Whatley 1989: 235, pl. 1 figs 12–14. — Jellinek 1993: 123, fig. 207. — Babinot & Kouyoumontzakis 1995: 30, pl. 2 figs 17–19. — Maddocks 1995: 358, pl. 2 figs 11–12; 2007: 272 (not illustrated). — Hussain 1998: 7, pl. 2 fig. 3. — Mohan *et al.* 2001: 8, pl. 1 figs 20–21. — Hoibian *et al.* 2002: fig. 8a (not illustrated). — Mostafawi *et al.* 2005: 131, pl. 2 fig. 3. — Faiz & Omar 2016: 146, pl. 2 figs 18–19. — Dewi *et al.* 2016: pl. 2 fig. 2.
Neocyprideis? sp. a – Apostolescu 1967: pl. 2 fig. 56, table 1 [noted as *Neocyprideis*? *cribrosa* (Brady, 1880) in table 1].
Miocyprideis atjehensis – Gramann 1975: 25, pl. 2 figs 9–10.
Bishopina vangoethemi – McKenzie & Pickett 1984: pl. 4 fig. f.
Clithrocytheridea cf. *spinulosa* – Cabioch *et al.* 1986: 26, pl. 8 figs 12–14. — Cabioch 1988: 286, pl. 22 figs 12–14.
Neocyprideis spinulosa – Watson 1988: 108, pl. 22 figs 1–9. — Whatley & Keeler 1989: pl. 1 figs 6, 9–11, 13. — Titterton *et al.* 2001: 37, pl. 2 figs 1–5. — Titterton & Whatley 2006b: 175 fig. 4.7, pl. 1 figs 16–19. — Forel 2021: 6, fig. 31l–n.
Bishopina spinulosa – Howe & McKenzie 1989: 16, figs 62–63. — Tabita Symphonia & Nathan 2021: 4, figs 3–9.
Clithrocytheridea atjehensis – Hoibian *et al.* 2000: pl. 1 fig. 2.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV, 4 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73328 (Apostolescu 1967: pl. 2 fig. 56 (LV), re-illustrated as Fig. 6I), MNHN.F.F73357 (Fig. 6H).

Dimensions (illustrated specimens)

Fig. 6H. Juvenile LV: L=449 µm; H=286 µm.

Fig. 6I. LV: L=624 µm; H=355 µm.

Stratigraphical and geographical distribution

Upper Pliocene to Recent (see Titterton & Whatley 2006b), widely distributed in shallow waters of the subtropical belt (see synonymy and chresonymy).

In New Caledonia: Nouméa, southwestern New Caledonia (Brady 1890). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Néra Delta, western New Caledonia (Hoibian *et al.* 2000). Roche Percée Bay, western New Caledonia (Hoibian *et al.* 2002). New Caledonia (Maddocks 2007). Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

Apostolescu (1967) illustrated one LV and mentioned that this species occurs in station 11. Three LV from station 11 are present in the micropaleontological slide associated with this publication.

Family Cytheromatidae Elofson, 1939

Genus ***Paracytheroma*** Juday, 1907

Type species

Paracytheroma pedrensis Juday, 1907, by monotypy.

Paracytheroma arenicola Hartmann, 1978
Figs 2, 6J–O

Paracytheroma arenicola Hartmann, 1978: 83, figs 137–146, pl. 4 fig. 17.

Paradoxostoma variabile – Apostolescu 1967: pl. 1 figs 13–16, table 1.
Paradoxostoma mangrovicola – Hoibian *et al.* 2000: pl. 1 fig. 15.
Paracytheroma arenicola – Maddocks 2007: 272 (not illustrated).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 4 RV, 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73336 (Apostolescu 1967: pl. 1 fig. 16 (RV), re-illustrated as Fig. 6J–K), MNHN.F.F73334 (Apostolescu 1967: pl. 1 fig. 13 (LV), re-illustrated as Fig. 6L–M), MNHN.F.F73358 (Fig. 6N), MNHN.F.F73335 (Apostolescu 1967: pl. 1 fig. 15 (RV), re-illustrated as Fig. 6O).

Dimensions (illustrated specimens)

Fig. 6J–K. RV: L=482 µm; H=268 µm.

Fig. 6L–M. LV: L=493 µm; H=274 µm.

Fig. 6N. LV: L=488 µm; H=279 µm.

Fig. 6O. RV: L=499 µm; H=295 µm.

Stratigraphical and geographical distribution

Dampier, northwestern Australia (Hartmann 1978). Néra Delta, western New Caledonia (Hoibian *et al.* 2000). New Caledonia (Maddocks 2007). Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

Apostolescu (1967) illustrated two RV and two LV of this species, one of the latter missing in the collection (Apostolescu 1967: pl. 1 fig. 14). This species was identified as "*Paradoxostoma variabile* Brady" by Apostolescu (1967: table 1) referring to specimens shown in Brady (1868b: pl. 35 figs 1–7). Brady (1868b) actually mentioned and illustrated *Paradoxostoma variabile* (Brady, 1835), originally described as *Cythere variabilis* by Baird (1835) from the UK, which is today attributed to *Boreostoma* Schornikov, 1993 (Schornikov 1993). The re-examination of the specimens from the Apostolescu collection supports their re-assignment to *Paracytheroma arenicola* Hartmann, 1978, thereby confirming the presence of this species in New Caledonia, as first reported without further discussion by Maddocks (2007). The present specimens are slightly larger than the specimens from Australia, ranging from 400 to 440 μm in length and 190 to 220 μm in height (Hartmann 1978).

It is noteworthy that *Paracytheroma arenicola* was re-assigned to *Javanella* Kingma, 1948 by Howe & McKenzie (1989). However, following Bergue & Coimbra (2007), we retain this species within *Paracytheroma* Juday, 1907 based on its overall outline, number of marginal pore canals, and the configuration of its central muscle scars.

Family Cytheruridae G.W. Müller, 1894

Genus ***Cytheropteron*** Sars, 1866

Type species

Cythere latissima Norman, 1865, subsequently designated by Brady & Norman (1889).

Cytheropteron sp.
Figs 2–3, 6P

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 RV, 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73359 (Fig. 6P).

Dimensions (illustrated specimen)

Fig. 6P. RV: L = 378 μm; H = 207 μm.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Genus ***Oculocytheropteron*** Bate, 1972

Type species

Oculocytheropteron praenuntatum Bate, 1972, by original designation.

Oculocytheropteron sp. 1
Fig. 2, 6Q–R

Cytheropteron sp. a – Apostolescu 1967: pl. 2 fig. 62, non 61 [= *Oculocytheropteron* sp. 2], table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73331 (Apostolescu 1967: pl. 2 fig. 62 (RV), re-illustrated as Fig. 6Q–R).

Dimensions (illustrated specimen)

Fig. 6Q–R. RV: L = 418 μm; H = 270 μm.

Stratigraphical and geographical distribution

Station 9, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

Apostolescu (1967) regarded this RV as conspecific with the LV here re-illustrated in Fig. 6S–T, together identified as *Cytheropteron* sp. a. Their re-illustration using SEM reveals differences in outline and ornamentation, indicating that they are not conspecific. They are both herein re-attributed to *Oculocytheropteron* Bate, 1972 based on their eye-tubercles, hinge curved, and modified artioperatodont (sensu Bate 1972). Apostolescu (1967) mentioned this species from stations 9 and 11 within Saint-Vincent Bay, without indicating where each of the two illustrated valves was obtained. The notes associated with the slide containing specimens from Apostolescu (1967) indicate that this RV was obtained from station 9 (Fig. 2).

Oculocytheropteron sp. 2
Figs 2, 6S–T

Cytheropteron sp. a – Apostolescu: pl. 2 fig. 61, non 62 [= *Oculocytheropteron* sp. 1], table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73330 (Apostolescu 1967: pl. 2 fig. 61 (LV), re-illustrated as Fig. 6S–T).

Dimensions (illustrated specimen)

Fig. 6S–T. LV: L = 439 μm; H = 265 μm.

Stratigraphical and geographical distribution

Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

As mentioned above, Apostolescu (1967) identified this LV as *Cytheropteron* sp. a, together with RV shown in Fig. 6Q–R. They are both re-attributed to *Oculocytheropteron* but not considered as conspecific based on their distinct outline and ornamentation. *Oculocytheropteron* sp. 2 is very close to *Cytheropteron* sp. from the Tertiary of Rutledge Creek, Victoria, Australia (McKenzie 1974: pl. 1 fig. 3). More material is needed to further discuss this similarity. The notes associated with the slide containing specimens from Apostolescu (1967) indicate that this LV was collected at station 11 (Fig. 2).

Genus ***Kangarina*** Coryell & Fields, 1937

Type species

Kangarina quellita Coryell & Fields, 1937, by monotypy.

***Kangarina*? sp. A in Titterton & Whatley, 2006b**
Figs 2, 6U, 7A

Cytherura? sp. a – Apostolescu 1967: pl. 2 fig. 40, table 1 [noted as *Cytherura* sp. a].
Kangarina? sp. A – Titterton & Whatley 2006b: 182, fig. 4.13–14, pl. 3 figs 15–20.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • no data; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral • 3 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73321 (Apostolescu 1967: pl. 2 fig. 40, re-illustrated as Figs 6U, 7A).

Dimensions (illustrated specimen)

Figs 6U, 7A. LV: L = 354 μm; H = 215 μm.

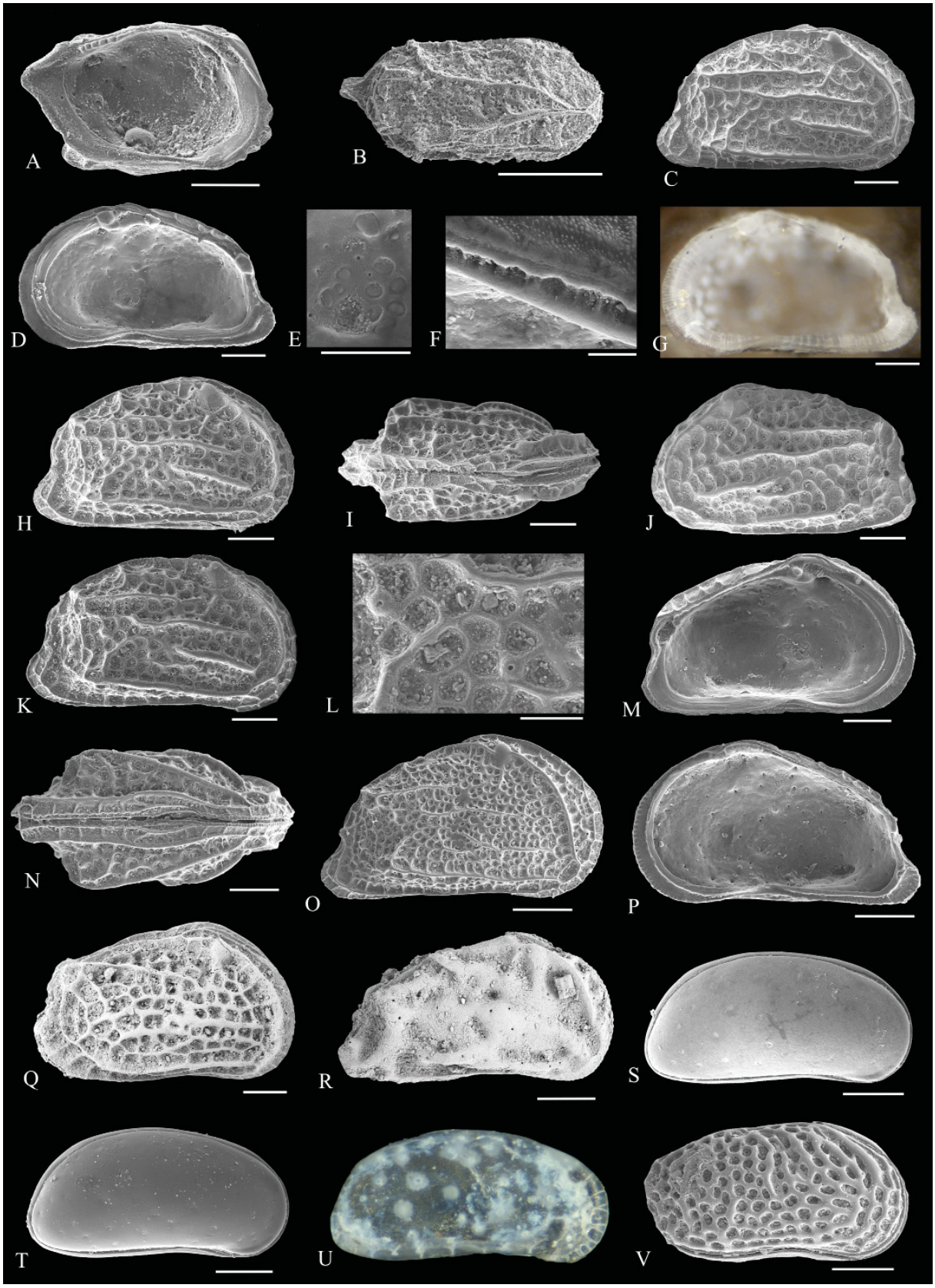
Stratigraphical and geographical distribution

Solomon Islands (Titterton & Whatley 2006b). Stations ?8 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

These specimens are conspecific with those from the Solomon Islands tentatively attributed to *Kangarina* Coryell & Fields, 1937 by Titterton & Whatley (2006b) who observed that they display a mosaic of characters related to *Kangarina*, *Eucytherura* G.W. Müller, 1894 and *Hemicytherura* Elofson, 1941. A new genus may prove necessary to accommodate this rather unique species, but the available material is not sufficient to go further into this discussion.

Fig. 7 (next page). SEM photos of ostracods from New Caledonia, except G and U in optical microscopy. **A**. *Kangarina*? sp. A in Titterton & Whatley (2006b), same specimen as Fig. 6U (MNHN.F.F73321), inner view. **B**. *Semicytherura* sp., station A, RV, outer view (MNHN.F.F73360). **C–P**. *Auradilus mediumiugum* Forel sp. nov., station 11. **C–G**. Holotype, adult RV (MNHN.F.F73361). **C**. Outer view. **D**. Inner view. **E**. Insight of AMS (see interpretative sketch in Fig. 18A). **F**. Detail of median socket of hinge. **G**. Inner view in optical microscopy. **H–I**. Paratype 1, adult C (Apostolescu 1967: pl. 2 fig. 55) (MNHN.F.F73314). **H**. Outer right view. **I**. Dorsal view. **J**. Paratype 2, adult LV, outer view (Apostolescu 1967: pl. 2 fig. 54) (MNHN.F.F73313). **K–L**. RV (MNHN.F.F73362). **K**. Outer view. **L**. Details of ornamentation and normal pores. **M**. LV, inner view (MNHN.F.F73363). **N**. C, ventral view (MNHN.F.F73364). **O–P**. Juvenile RV (MNHN.F.F73365). **O**. Outer view. **P**. Inner view. **Q**. *Auradilus packardi* (Brady, 1880), station A, C, right view (MNHN.F.F73366). **R**. *Caudites javana* Kingma, 1948, station A, C, right view (MNHN.F.F73367). **S–U**. *Parakrithella flavescens* (Brady, 1890), station 11. **S**. C, right view (MNHN.F.F73373). **T–U**. C (MNHN.F.F73374). **T**. Right outer view. **U**. Same specimen in optical microscopy. **V**. *Callistocythere angelina* Forel sp. nov., station 11, holotype, C, right view (MNHN.F.F73378). Scale bars: A–D, G–K, M–V = 100 μm; E, L = 50 μm; F = 10 μm.


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Apostolescu (1967) illustrated this LV identified as *Cytherura*? sp. a, mentioning this species at stations 8 and 11. The associated slide contains one additional LV, both LV being noted as issued from station 11. The unidentified picked specimens in his collection provided another LV from the same station. The occurrence of this species at station 8 is thus unverified.

Genus ***Semicytherura*** Wagner, 1957

Type species

Cythere nigrescens Baird, 1838, by original designation.

Semicytherura sp.
Figs 3, 7B

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 RV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73360 (Fig. 7B).

Dimensions (illustrated specimen)

Fig. 7B. RV: L = 253 μm; H = 118 μm.

Stratigraphical and geographical distribution

Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Family Hemicytheridae Puri, 1953

Genus ***Auradilus*** Jellinek, 1995

Type species

Mutilus splendideornatus Hartmann, 1974, by original designation.

Auradilus mediumiugum Forel sp. nov.
urn:lsid:zoobank.org:act:4FDFAB69-E510-48D8-A9FB-EEEFF443ED04
Figs 2, 7C–P, 8A, 18A; Table 2

Hemicythere cf. *packardi* – Apostolescu 1967: pl. 2 figs 54–55, table 1.
Mutilus (*Auradilus*) sp. – Dewi *et al.* 2017: fig. 3.1, table 1.

Diagnosis

A reticulate and micropapillate species of *Auradilus* with a long intervening ridge between the median and ear-shaped ridges; a ventral ridge disconnected from ear-shaped ridge, bifurcating anteriorly and merging with frame-ridge into a small islet.

Etymology

This species is named by apposition of the Latin '*medium iugum*', referring to the intervening ridge between the median and ear-shaped ridges, characteristic of the new species.

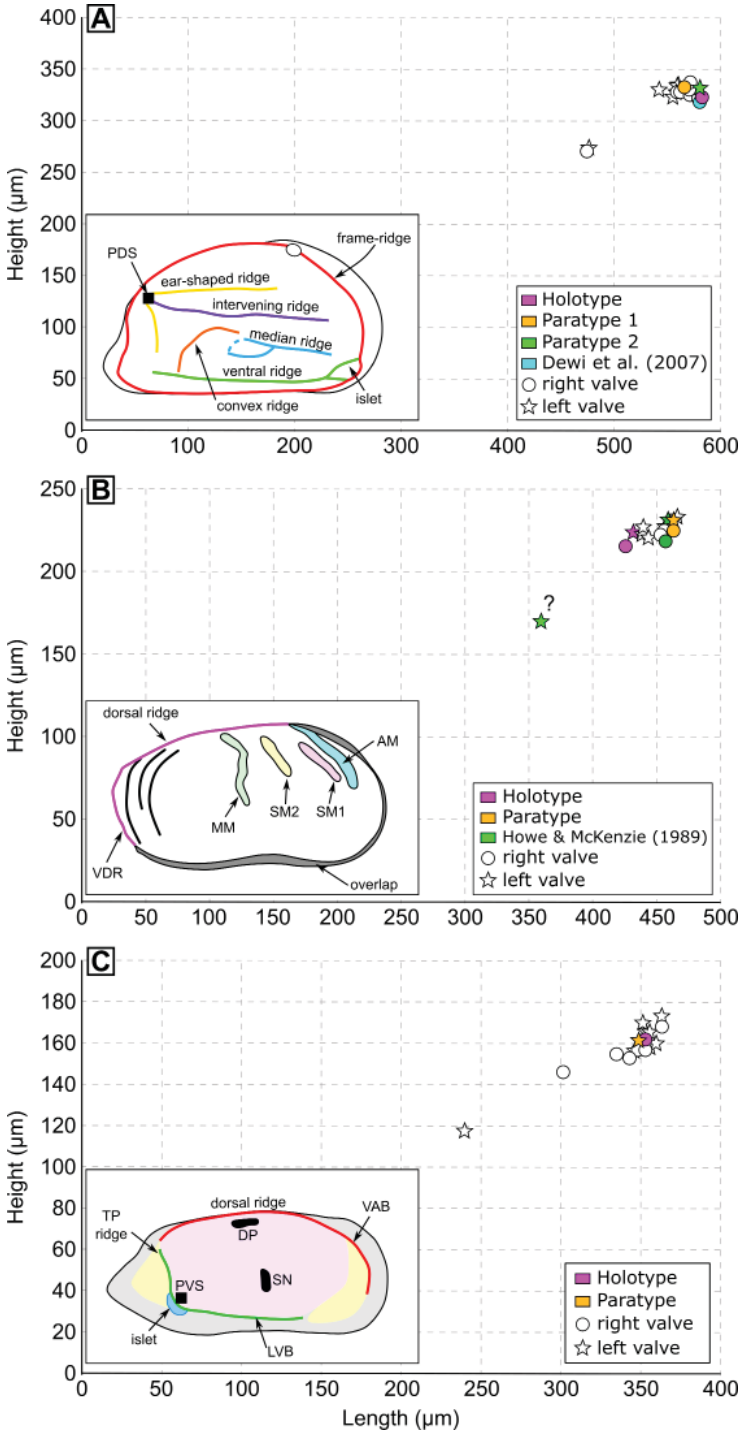


Fig. 8. Height/length scatter plots of new and emended species, including schemes showing diagnostic ornamental features. **A**. *Auradilus mediumiugum* Forel sp. nov. **B**. *Callistocythere angelina* Forel sp. nov. **C**. *Gambiella*? *toxica* Forel & Bergue sp. nov. with pink = punctate median area, yellow = submarginal reticulate areas, grey = marginal foveolate strip. For carapaces, right and left valves have been measured separately, and are shown in the same color. Abbreviations: AM = anterior murus; DP = dorsal platform; LVB= longitudinal ventral branch; MM = median murus; PDS = postero-dorsal shoulder; PVS = postero-ventral shoulder; SN = subcentral node; SM1 = straight murus 1; SM2 = straight murus 2; TP ridge = transverse posterior ridge; VAB = vertical anterior branch; VDR = vertical branch of dorsal ridge.

Type material

Holotype

NEW CALEDONIA – **Saint-Vincent Bay** • adult RV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73361 (Fig. 7C–G).

Paratypes

NEW CALEDONIA – **Saint-Vincent Bay** • 1 adult C; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73314 (paratype 1: Apostolescu 1967: pl. 2 fig. 55, re-illustrated as Fig. 7H–I) • 1 adult LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73313 (paratype 2: Apostolescu 1967: pl. 2 fig. 54, re-illustrated as Fig. 7J).

Additional material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 2 RV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73458, MNHN.F73479 • 1 C, 4 RV, 6 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73362 (Fig. 7K–L), MNHN.F.F73363 (Fig. 7M), MNHN.F.F73364 (Fig. 7N), MNHN.F.F73365 (Fig. 7O–P).

Description

Carapace of medium size, subtrapezoidal in lateral view with Hmax at ACA and Lmax below mid-H. Anterior margin broad, infracurvate and gently compressed. DB sloping straight towards PCA, overhung by frame-ridge (Fig. 7D, M). Behind PCA, outline subvertical and concave terminally towards blunt caudal process located slightly above venter and oriented upward. Posterior margin laterally compressed. Ventral margin with tenuous oral concavity in front of mid-L on both valves. Eye-tubercle ovoid and small, below and in front of ACA on frame-ridge. In dorsal (Fig. 7I) and ventral (Fig. 7N) views, carapace lanceolate with Wmax at posterior ⅕ of L, anteriorly and posteriorly compressed, more so posteriorly.

Lateral surface displaying six major ridges (Fig. 8A):
- frame-ridge uninterrupted except by eye-tubercle, thickest anteriorly, overreaching DB;
- ventral ridge thick, straight and slightly inclined anteriorly; extends from postero-ventral extension, bifurcates to delimitate an ovoid-subtriangular islet with frame-ridge antero-ventrally;
- median ridge thickened anteriorly and tapering posteriorly, looping into a small oval area which is not always well developed;
- convex ridge rising from end of ventral ridge to oval area of median ridge, thickened ventrally;
- ear-shaped ridge with straight and subhorizontal anterior portion; postero-dorsal shoulder around ⅓ of H, located low for the genus and not overhanging DB; posterior branch subvertical, thin, not reaching ventral ridge;
- thick and sinuous intervening ridge between median ridge and anterior portion of ear-shaped ridge, merging with postero-dorsal shoulder.

Lateral surface entirely covered with strong primary reticulation, with fossae varying from subcircular to polygonal in shape, shallower in front of frame-ridge and behind vertical branch of ear-shaped ridge. Muri and walls of fossae micropapillate (Fig. 7L). Normal pores rimmed, intramural (Fig. 7L), and sparsely distributed over the surface. As for the genus, marginal pore canals numerous, simple and straight, denser antero- and postero-ventrally (Fig. 7G).

Table 2. Dimensions of the type and figured specimens of *Auradilus mediumiugum* Forel sp. nov. Abbreviation: na = not available.

	RV		LV	
	L (µm)	**H (µm)**	**L (µm)**	**H (µm)**
Holotype (Fig. 7C–G)	582	323	na	na
Paratype 1 (Fig. 7H–I)	566	333	na	na
Paratype 2 (Fig. 7J)	581	333	na	na
Fig. 7K–L	562	328	na	na
Fig. 7M	na	na	560	335
Fig. 7N	na	na	542	331
Fig. 7O–P	475	271	na	na

In inner view, hinge holamphidont, in LV with deep anterior socket followed by round anterior tooth, thick median bar irregularly crenulate ending by thicker tooth (Fig. 7M). Symmetrical in RV with slightly subdivided anterior tooth and smooth posterior one (Fig. 7D). Knob-like *Aurila*-tooth not observed. Central muscle scars with four subovoid AMS (1-2-2-1) and three frontal scars (Figs 7E, 18A). Calcified inner lamella well-developed anteriorly and posteriorly, avestibulate.

Dimensions

Fig. 8A, Table 2.

Stratigraphical and geographical distribution

Bangka Island, northern Sulawesi, Indonesia (Dewi *et al.* 2017). Stations 9 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

This species is attributed to *Auradilus* Jellinek, 1995 based on its AMS pattern (1-2-2-1) and postero-dorsal shoulder. *Auradilus mediumiugum* sp. nov. differs from all known species of the genus by its ear-shaped ridge horizontal anteriorly, low postero-dorsal shoulder as well as the presence of an intervening ridge between the ear-shaped and median ridges, and of the antero-ventral islet. In juveniles (Fig. 7O–P), these diagnostic characters are well visible. This species is easily distinguished from *Auradilus packardi* (Brady, 1880), which co-occurs in the studied samples (Fig. 7Q), mainly by its posterior end located more ventrally, more strongly-expressed ear-shaped, ventral and median ridges, a subhorizontal anterior portion of the ear-shaped ridge as well as by the presence of the intervening ridge.

Apostolescu (1967) illustrated 1 RV and 1 LV of this species from station 11, identifying them as *Hemicythere* cf. *packardi* Brady, 1880. The micropaleontological slide containing specimens related to Apostolescu (1967) also contains 2 C from station 11. The re-observation of unidentified picked specimens in his collection reveals its presence also at station 9 (Fig. 2).

Auradilus packardi (Brady, 1880)
Figs 3, 7Q

Cythere packardi Brady, 1880: 88, pl. 19 fig. 2a–d.

Cythere packardi – Brady 1890: 501, pl. 2 fig. 19. — Puri & Hulings 1976: 282, pl. 12 figs 4–6. — De Deckker & Jones 1978: 100 (not illustrated).
Cythereis packardi – G.W. Müller 1912: 346 (not illustrated). — De Deckker & Jones 1978: 109 (not illustrated).
Hemicythere packardi – van den Bold 1950: 901 (not illustrated).
Mutilus packardi – Benson 1964: 403 (not illustrated). — Hoibian *et al.* 2000: pl. 1 fig. 24; 2002: pl. 1 fig. 16.
Radimella packardi – Khosla *et al.* 1982: 365 (not illustrated).
Auradilus packardi – Maddocks 2007: 273 (not illustrated).

non *Hemicythere packardi* – Keij 1954: 354, pl. 2 figs 1–2 [= *Auradilus splendideornatus* (Hartmann, 1974)].

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 C; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73366 (Fig. 7Q).

Dimensions (illustrated specimen)

Fig. 7Q. RV: L = 589 μm; H = 346 μm. LV: L = 597 μm; H = 361 μm.

Stratigraphical and geographical distribution

Booby Island (Ngiangu), northeastern Australia (Brady 1880; Puri & Hulings 1976; De Deckker & Jones 1978). Torres Strait, southern Australia (Brady 1880; Puri & Hulings 1976; De Deckker & Jones 1978). Nouméa, southwestern New Caledonia (Brady 1890). Suva, Levuka and Vuna Point (Taviuni), Sava-Sava Bay, Rambé Island, Loma-Loma, Fiji (Brady 1890). Lufi-Lufi and Apia, Upolu, Samoa (Brady 1890). Miani lagoon, Pakistan (Khosla *et al.* 1982). Néra Delta, southwestern New Caledonia (Hoibian *et al.* 2000). Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). New Caledonia (Maddocks 2007). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

The carapace here attributed to *Auradilus packardi* is slightly larger than the carapace designated as lectotype by Puri & Hulings (1976) (LV: L = 560 μm; H = 330 μm. RV: L = 540 μm; H = 310 μm).

Genus ***Caudites*** Coryell & Fields, 1937 emend. Coimbra & Ornellas 1987

Type species

Caudites medialis Coryell & Fields, 1937, by monotypy.

Caudites javana Kingma, 1948
Figs 3, 7R

Caudites medialis Coryell & Fields var. *javana* Kingma, 1948: 85, pl. 10 fig. 5a–b.

Caudites javana – Keij 1953: 159, pl. 1 fig. 8a–b; 1954: 385, pl. 2 figs 12–13. — Benson 1964: 14 (not illustrated). — Guha 1968: 64, pl. 5 figs 13, 19. — Jain 1978: 122, figs 4f.1–3. — Cabioch *et al.* 1986: 27, pl. 9 figs 11–12. — Cabioch 1988: 288, pl. 23 figs 11–12. — Zhao & Whatley 1989: 244, pl. 4 figs 13–14. — Hoibian *et al.* 2000: figs 11, 13 (not illustrated); 2002: fig. 8a (not illustrated). — Hussain & Mohan 2000: 62, pl. 2 fig. 9. — Sridhar *et al.* 2002: 28, pl. 3 fig. 2. — Mohammed 2004: 38, pl. 2 fig. 5. — Maddocks 2007: 273 (not illustrated). — Gopalakrishna *et al.* 2007: pl. 3

fig. 10. — Titterton & Whatley 2008: 20, fig. 4.8–9, pl. 2 figs 1–7. — Mostafawi *et al.* 2010: 254, pl. 2 fig. 12. — Mohammed & Keyser 2012: 268, fig. 5.63–66.
Caudites cf. *javana* – Hartmann 1978: 101, figs 240–246, pl. 9 figs 8–9.
Caudites javanus – Tabita Symphonia & Nathan 2021: 4, fig. 2.8.

? *Caudites javana* – Hussain 1998: 11, pl. 2 fig. 15. — Hussain & Mohan 2001: 54 (not illustrated). — Mohan *et al.* 2001: 8, pl. 3 fig. 11. — Hussain *et al.* 2004: table 1 (not illustrated); 2010: fig. 2h. — Rajkumar *et al.* 2020: table 1 (not illustrated). — Radhakrishnan *et al.* 2022: pl. 1 fig. 1.

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 C; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73367 (Fig. 7R).

Dimensions (illustrated specimen)

Fig. 7R. RV: L=472 µm; H=249 µm. LV: L=472 µm; H=254 µm.

Stratigraphical and geographical distribution

Miocene of Andaman Islands (Guha 1968). Upper Pliocene of Java (Kingma 1948). Banda and Celebes Seas, Indonesia (Keij 1953, 1954). Manilla Harbour (Benson 1964). Broome, northwestern Australia (Hartmann 1978). Mandvi Beach, western India (Jain 1978). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Southeastern Malay Peninsula (Zhao & Whatley 1989). ?Gulf of Mannar, southwestern India (Hussain 1998). Néra Delta, southwestern New Caledonia (Hoibian *et al.* 2000). ?Bay of Bengal, off Karikkattukuppam, southeastern India (Mohan *et al.* 2001). ?Adyar River estuary, eastern India (Hussain & Mohan 2001). Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). Palk Bay, southeastern India (Sridhar *et al.* 2002). Southwestern Yemen (Mohammed 2004). ?Chennai, southeastern India (Hussain *et al.* 2004). Malabar Coast, Kerala, southwestern India (Gopalakrishna *et al.* 2007). New Caledonia (Maddocks 2007). Solomon Islands (Titterton & Whatley 2008). ?Southeastern India (Hussain *et al.* 2010). Northern Arabian Sea (Mostafawi *et al.* 2010). Aden City, Yemen (Mohammed & Keyser 2012). ?Gulf of Mannar, southeastern India (Rajkumar *et al.* 2020; Radhakrishnan *et al.* 2022). East Indian shelf (Tabita Symphonia & Nathan 2021). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

Titterton & Whatley (2008) considered that the specimens from New Caledonia illustrated by Cabioch *et al.* (1986) (the same being figured in Cabioch 1988) may have to be re-attributed to *Caudites munita* Bonaduce *et al.*, 1980, described from the Gulf of Aqaba (Bonaduce *et al.* 1980). We do not subscribe to this opinion as *Caudites munita* has flat, thicker and more numerous ridges than the specimens from New Caledonia, which conform to *Caudites javana* Kingma, 1948 as generally otherwise accepted.

Reports of *Caudites javana* from the Indian coasts in Mohan *et al.* (2001) are questionable according to Mostafawi *et al.* (2010), to which we here add those from Hussain & Mohan (2001), Hussain *et al.* (2004, 2010), Rajkumar *et al.* (2020) and Radhakrishnan *et al.* (2022). Mostafawi *et al.* (2010) considered that specimens reported from the Gulf of Mannar, southwestern India (Hussain 1998) may have to be re-attributed to *Orionina territoriae* Howe & McKenzie, 1989, described from northwestern Australia and recombined as *Caudites scopulicola territoriae* (Howe & McKenzie, 1989) by Warne *et al.* (2006).

Caudites javana is today widely distributed in the Gulf of Aden and Indo-Pacific region but is absent from the Red Sea and Africa, which led Mohammed & Keyser (2012) to hypothesize that it is currently extending its distribution to the west and has not yet reached the African continent.

Family Krithidae Mandelstam in Bubikyan, 1958

Genus ***Parakrithella*** Hanai in Benson *et al.*, 1961

Type species

Neocyprideis pseudadonta Hanai, 1959, by original designation (*Neocyprideis* Hanai, 1959 being pre-occupied, *Parakrithella* was introduced by Hanai in Benson *et al.* 1961).

Parakrithella flavescens (Brady, 1890)
Figs 2–3, 7S–U

Cytheridae flavescens Brady, 1890: 506, pl. 2 figs 29–32.

Parakritella pseudodentata (*sic*) – Apostolescu 1967: pl. 1 figs 18–20, table 1.
Parakrithella flavescens – Maddocks 2007: 272 (not illustrated).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 3 C, 1 RV, 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73373 (Fig. 7S), MNHN.F.F73374 (Fig. 7T–U). – **Nouméa lagoon** • 1 C, 1 RV, 3 LV*;* La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73460–MNHN.F.F73464.

Dimensions (illustrated specimens)

Fig. 7S. RV: L=426 μm; H=200 μm. LV: L=435 μm; H=211 μm.

Fig. 7T–U. RV: L=446 μm; H=211 μm. LV: L=459 μm; H=225 μm.

Stratigraphical and geographical distribution

Nouméa Harbour, southwestern New Caledonia (Brady 1890). Levuka, Sava-Sava Bay, Vanua Levu, Fiji (Brady 1890). New Caledonia (Maddocks 2007). Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

Apostolescu (1967) illustrated one carapace identified as *Parakrithella pseudodentata* (Hanai, 1959), which we consider as a mistake for *Parakrithella pseudadonta*, type species of the genus. Because of the small size of the illustrations in Apostolescu (1967) and smooth surface of this species, it is not possible to ascertain that the figured specimen is indeed present in the collection. The slide associated with Apostolescu (1967) contains 2 C, 1 RV and 1 LV from station 11, the carapaces being here re-illustrated as Fig. 7S–U.

Parakrithella pseudadonta was recently re-illustrated and re-discussed by Tanaka (2016). It differs from the specimens at hand by its more tapered posterior end, less convex dorsal margin and straighter ventral margin behind oral concavity. *Parakrithella flavescens* (Brady, 1890) is so far the only known species of *Parakrithella* Hanai, 1961 from New Caledonia (see Maddocks 2007). It was originally ascribed to the genus *Cytheridea* Bosquet, 1852 and re-assigned to *Parakrithella* by Maddocks (2007), without discussion. It is noteworthy that the type specimens of *Parakrithella flavescens* have not been re-illustrated since Brady's original description, leaving some uncertainty regarding its precise morphology,

which was only depicted in drawings. The present specimens are nonetheless morphologically consistent with those in Brady (1890: pl. 2 fig. 29), leading us to consider their attribution to this species as justified. We therefore confirm the re-assignment of this species to *Parakrithella* on the basis of its lateral outline and the presence of bifurcated anterior marginal pore canals (Fig. 7U).

Family Leptocytheridae Hanai, 1957

Genus ***Callistocythere*** Ruggieri, 1953

Type species

Loxoconcha littoralis G.W. Müller, 1894, by original designation [currently accepted as *Sagmatocythere littoralis* (G.W. Müller, 1894)].

Callistocythere angelina Forel sp. nov.
urn:lsid:zoobank.org:act:FF64A4B7-AC06-4271-8AF1-0F2DBB54E28B
Figs 2, 7V, 8B, 9A–L, 18B; Table 3

Leptocythere cf. *demissa* – Apostolescu 1967: pl. 2 figs 57–59, table 1.
? ?*Praemunita* sp. – Howe & McKenzie 1989: 37, fig. 107.

Diagnosis

A reticulate *Callistocythere* species with a lateral surface ornamented with round fossae posteriorly, elongate anteriorly and ventrally. Dorsally, fossae separated by thick and raised muri radiating from the dorsal ridge. Four main muri occur anteriorly (anterior, straight murus 1, straight murus 2, median) and four muri parallel to the posterior end, the most distal one corresponding to ventral branch of dorsal ridge.

Etymology

The specific epithet honors Angelina Bastos (CNRS, CR2P), in recognition of her capital support for the research activities of CR2P members; by apposition.

Type material

Holotype

NEW CALEDONIA – **Saint-Vincent Bay** • C; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73378 (Figs 7V, 9A–D).

Paratype

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73381 (Fig. 9L).

Additional material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C, 2 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73465–MNHN.F.F73467 • 1 C (dissociated), 1 RV, 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73379 (Fig. 9E–H), MNHN.F.F73380 (Fig. 9I–K).

Description

Carapace of small size, elongate subrectangular in lateral view with Hmax at ACA and Lmax at mid-H. LV slightly larger than RV, overlapping it along anterior and ventral margins. Anterior margin

round and infracurvate. DB long, masked by dorsal ridge behind mid-L (Fig. 9E, I). Posterior margin subvertical, truncate ventrally. Ventral margin with large oral concavity in front of mid-L. Anterior and ventral margins bordered by thin and narrow laterally compressed flange, interrupted at oral concavity. A dorsal ridge overreaches DB behind ACA, its curved vertical branch forming the posterior edge of the carapace (Fig. 9B, D). In dorsal (Fig. 9B) and ventral (Fig. 9C) views, carapace ovoid with Wmax behind mid-L and posterior end flat.

Reticulate lateral surface ornamented with:
- round fossae organized randomly behind mid-L;
- posteriorly, round fossae organized in rows separated by four more or less distinctly expressed curved and concentric thick and raised muri radiating from dorsal ridge, parallel to posterior margin;
- elongate fossae organized in rows in front of mid-H and on ventral surface. Dorsally, rows separated by thick and raised muri radiating subvertically from dorsal ridge (Fig. 9B).

Four main muri occur in front of mid-L on both valves (Figs 8B, 9L):
- anterior murus emerges from ACA, descends to mid-H parallel to anterior margin;
- straight murus 1 directly behind anterior murus, short and straight, originating below a narrow elongate fossa with raised margins and descending obliquely to above mid-H;
- straight murus 2 behind straight murus 1, disconnected from dorsal ridge, descending obliquely to upper ⅓ of H; less visible on LV;
- median murus S-shaped on LV and inversely S-shaped on RV, emerging at mid-L below dorsal ridge, descending slightly below mid-H, terminating behind an elongate, shallow fossa.

Normal pores simple, on muri; one pore on conulus on the upper part of flat posterior surface of each valve (Fig. 9D). Marginal pore canals not seen.

In inner view, hinge modified entomodont, in RV (Fig. 9I–K) composed of 1) anterior tooth stepped, smooth anteriorly, lower and pustulose posteriorly, 2) round, small, pustulose and shallow socket, 3) median groove entirely denticulate, with enlarged ends, 4) large, smooth subquadrate posterior tooth. Symmetrical in LV (Fig. 9E, G–H) with 1) anterior socket stepped, smooth anteriorly, pustulose posteriorly, with curved, elongate anti-slip tooth, bulbous posteriorly, 2) round, small, pustulose tooth,

Fig. 9 (next page). SEM photos of ostracods from New Caledonia. **A–L**. *Callistocythere angelina* Forel sp. nov., station 11. **A–D**. Holotype, C, same specimen as Fig. 7V (MNHN.F.F73378). **A**. Left view. **B**. Dorsal view. **C**. Ventral view. **D**. Insight on posterior end in dorsal view with symmetrical pore conuli (red arrows). **E–H**. LV of dissociated C (MNHN.F.F73379). **E**. Inner view. **F**. Details of AMS (see interpretative sketch in Fig. 18B). **G**. Details of posterior end of hinge. **H**. Details of anterior end of hinge. **I–K**. RV of the same dissociated C (MNHN.F.F73380). **I**. Inner view. **J**. Details of anterior end of hinge. **K**. Details of posterior end of hinge. **L**. Paratype, C, right view (MNHN.F.F73381), purple arrow = narrow elongate fossa with raised margins fossa above SM1, red arrow = elongate, shallow fossa anterior to MM. **M–N**. *Callistocythere parakeiji* Titterton & Whatley, 2007, station 9. **M**. C, right view (Apostolescu 1967: pl. 2 figs 50–52) (MNHN.F.F73316). **N**. LV, outer view (MNHN.F.F73375). **O–P**. *Callistocythere punctatuberculata* Titterton & Whatley, 2007. **O**. C, station A, right view (MNHN.F.F73377). **P**. C, station B, left view (MNHN.F.F73376). **Q**. *Leptocythere pulchra* Zhao & Whatley, 1989, station A, LV, outer view (MNHN.F.F73382). **R–X**. *Gambiella*? *toxica* Forel & Bergue sp. nov., station B. **R–V**. Holotype, RV (MNHN.F.F73383). **R**. Outer view. **S**. Inner view. **T**. Insight on AMS (see interpretative sketch in Fig. 18C). **U**. Details of anterior end of hinge. **V**. Details of posterior end of hinge. **W–X**. Paratype, LV (MNHN.F.F73384). **W**. Outer view. **X**. Inner view. Scale bars: A–E, I, L–S, W–X = 100 μm; F, U–V = 20 μm; G–H, J–K = 50 μm; T = 10 μm. Abbreviations: AM = anterior murus; MM = median murus; SM1 = straight murus 1; SM2 = straight murus 2.

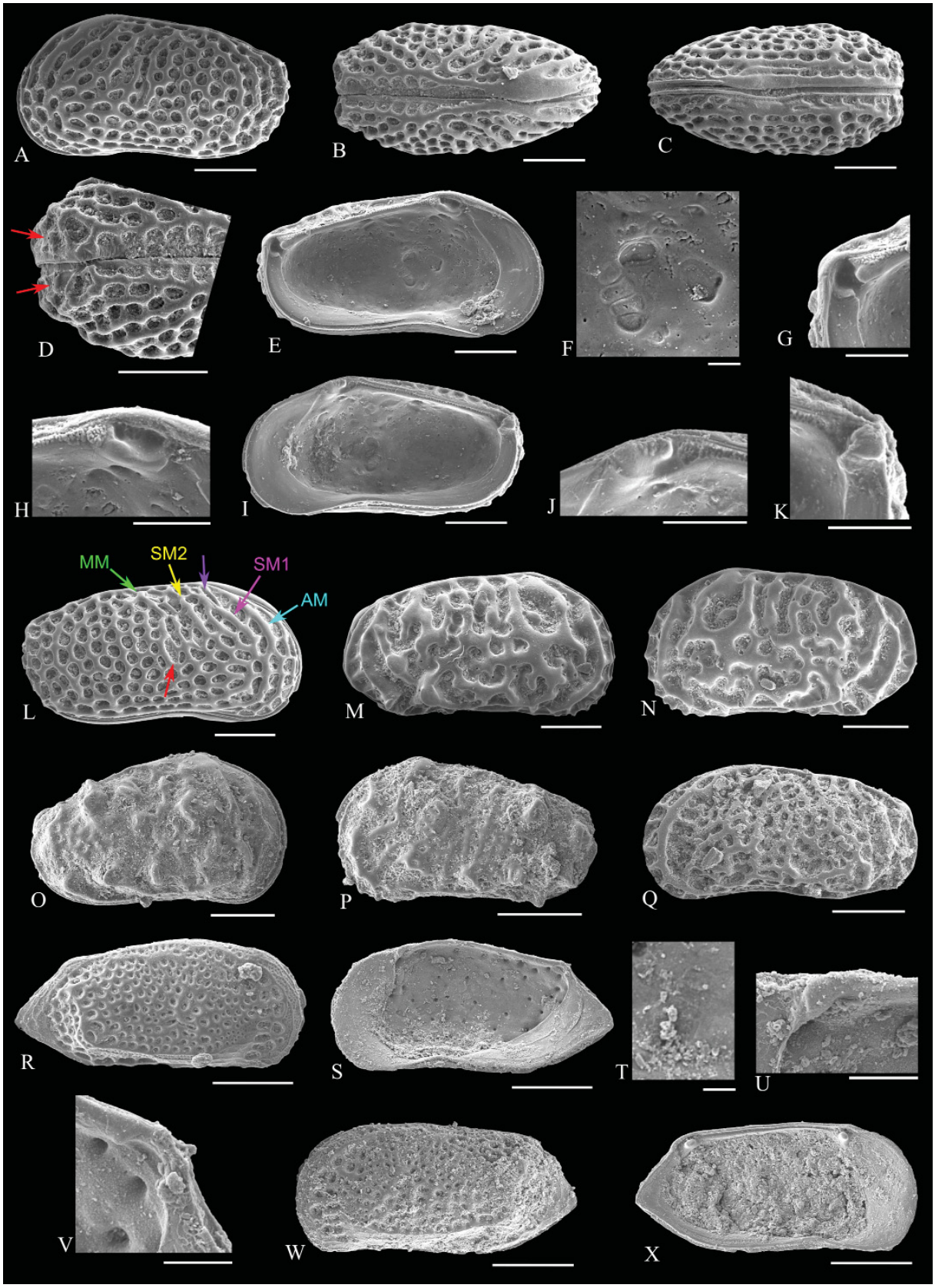

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Table 3. Dimensions of the type and figured specimens of *Callistocythere angelina* Forel sp. nov. Abbreviation: na = not available.

	RV		LV	
	L (µm)	**H (µm)**	**L (µm)**	**H (µm)**
Holotype (Figs 7V, 9A–D)	426	215	432	224
Paratype (Fig. 9L)	463	224	463	232
Fig. 9E–H (LV), Fig. 9I–K (RV)	454	223	459	232

3) median bar thin, denticulate, enlarged and pustulose anteriorly and posteriorly, 4) posterior socket subsquare and open interiorly. AMS with four packed adductor scars in an oblique row, V-shaped frontal scar, two small ovoid mandibular scars and a large elongate fulcral point (Figs 9F, 18B). Calcified inner lamella wide anteriorly with broad vestibule, narrower posteriorly with reduced vestibule (Fig. 9E, I).

Dimensions

Fig. 8B, Table 3.

Stratigraphical and geographical distribution

?Northwestern Australia (Howe & McKenzie 1989). Stations 9 and 11, Saint-Vincent Bay, southwest New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

Callistocythere angelina sp. nov. was first reported from station 11 within Saint-Vincent Bay by Apostolescu (1967) as *Leptocythere* cf. *demissa* (Brady, 1868), a species that has since been re-attributed to the pectocytherid genus *Keijia* Teeter, 1975. The new species differs from *Keijia* in lacking the diagnostic anterior submarginal depression, posterior submarginal angulation and in its modified entomodont rather than pentodont hinge. The latter character excludes *Callistocythere angelina* sp. nov. from Pectocytheridae as a whole. It is instead attributed to Leptocytheridae based on its outline and hinge morphology. It is placed in *Callistocythere* based on its strongly reticulate surface, well-developed anterior and posterior marginal ridges, and hinge structure with intermediate crenulated element on the LV bearing a single tooth at its anterior termination (see Hanai 1956, 1957). *Callistocythere angelina* sp. nov. differs from other species of the genus by its hinge structure, the median bar occurring on LV rather than RV, and its ornamentation, most species generally displaying a less regular reticulation pattern with more prominent ridges (e.g., Fig. 9M–N). The ornamentation pattern of *Callistocythere angelina* sp. nov. is similar to that of Miocene species from Japan (e.g., *Callistocythere nanamagariensis* Tanaka in Tanaka & Hasegawa, 2013, *Callistocythere kyokoae* Tanaka in Tanaka & Hasegawa, 2013, *Callistocythere annakensis* Tanaka in Tanaka & Hasegawa, 2013) and from Korea (e.g., *Callistocythere kyongjuensis* Huh & Whatley, 1997; *Callistocythere seojeongriensis* Huh & Whatley, 1997), but their ridges and fossae patterns differ. It may also be compared with *Callistocythere subreticulata* Gou in Gou *et al.*, 1983 from Pliocene deposits from Hainan Island (Gou *et al.* 1983), which is shorter and higher and displays a distinct ridge pattern.

Howe & McKenzie (1989) reported ?*Praemunita* sp. from Australia, noting that "this taxon cannot be assigned confidently to either *P. broomensis* or *P. hartmanni*. When adults are known, it may well be described as a new species, closer to *P. hartmanni* than to *P. broomensis*" (Howe & McKenzie 1989: 37). *Praemunita* Labutis in Howe & McKenzie, 1989 is a pectocytherid diagnosed by its tubular outline, strongly reticulate carapace with narrow concentric ridges anteriorly and posteriorly, posterior margin weakly denticulate, inner lamella broad anteriorly and posteriorly, axe-head shape anterior vestibule

and elongate posterior vestibule, marginal pore canals few, straight to flexuous and simple, normal pore canals scattered simple rimmed, hinge pentodont with median element slightly arched anteriorly otherwise straight, AMS composed of four elongate scars, one or two frontal scars, small mandibular scars, usually distinct rounded fulcral point. *Praemunita* is today either considered as a valid genus or as a subgenus of *Keijia* (Warne *et al.* 2006). The status of ?*Praemunita* sp. has never been clarified, but it is morphologically closer to the present species than to any *Praemunita* species so far reported. The internal characters of the specimens assigned to ?*Praemunita* sp. by Howe & McKenzie (1989) should be thoroughly investigated to confirm their pectocytherid affinities. Pending such examination, we tentatively regard this species as conspecific with *Callistocythere angelina* sp. nov. based on external morphology.

Apostolescu (1967) illustrated 1 C of this species identified as *Leptocythere* cf. *demissa*, the associated slide containing 2 C and 1 LV, all from station 11. Owing to the small size of the original illustrations in Apostolescu (1967), it is impossible to recognize which of the carapaces was illustrated. Both are shown here. The analysis of the additional, unidentified specimens in the collection associated handwritten notes, shows that this species also occurs at station 9.

Callistocythere parakeiji Titterton & Whatley, 2007
Figs 2–3, 9M–N

Callistocythere parakeiji Titterton & Whatley, 2007: 52, fig. 4.9–10, pl. 2 figs 14, 19–20, 23, 26.

Callistocythere species JA – Maddocks 1966: 63, fig. 48.2a–b.
Callistocythere aff. *crispata* – Apostolescu 1967: pl. 2 figs 50–52, table 1.
Leptocythere keiji – Cabioch *et al.* 1986: 26, pl. 8 figs 9–11. — Cabioch 1988: 286, pl. 22 figs 9–11.

? *Leptocythere keiji* – Babinot & Degaugue-Michalski 1996: text-fig. 6 (not illustrated). — Hoibian *et al.* 2000: fig. 11 (not illustrated).
? *Callistocythere keiji* – Maddocks 2007: 272 (not illustrated).

Selected material examined

NEW CALEDONIA – **Prony Bay** • 2 C, 1 RV, 2 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73468–MNHN.F.F73472. – **Saint-Vincent Bay** • 1 C; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73316 (Apostolescu 1967: pl. 2 figs 50–52 (C), re-illustrated as Fig. 9M), MNHN.F.F73375 (Fig. 9N) • 3 C, 2 RV, 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73473–MNHN.F.F73478. – **Nouméa lagoon** • 11 C, 1 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73479–MNHN.F.F73490.

Dimensions (illustrated specimens)

Fig. 9M. RV: L = 443 µm; H = 233 µm. LV: L = 449 µm; H = 238 µm.

Fig. 9N. LV: L = 416 µm; H = 229 µm.

Stratigraphical and geographical distribution

Nosy Be, northern Madagascar (Maddocks 1966). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). ?Chesterfield Islands and

northern New Caledonia (Babinot & Degaugue-Michalski 1996). ?Néra Delta, western New Caledonia (Hoibian *et al.* 2000). Solomon Islands (Titterton & Whatley 2007). Stations 9 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

In their description of *Callistocythere parakeiji*, Titterton & Whatley (2007) re-attributed specimens identified as *Leptocythere keiji* Hartmann, 1978 from New Caledonia (Cabioch *et al.* 1986; Cabioch 1988, both illustrating the same specimens) to *Callistocythere parakeiji*. The present observation of Apostolescu's material indicates that all specimens identified as *Callistocythere* aff. *crispata* (Brady, 1868) in Apostolescu (1967) also belong to *Callistocythere parakeiji*. Specimens from Néra Delta in western New Caledonia (Hoibian *et al.* 2000), Chesterfield Islands and northern New Caledonia (Babinot & Degaugue-Michalski 1996), identified as *Leptocythere keiji* Hartmann, 1978, are only questionably re-attributed to *Callistocythere parakeiji* as they were not illustrated. Maddocks (2007) listed *Callistocythere keiji* (Hartmann, 1978) as occurring around New Caledonia based on these previously published records. We also regard this occurrence as uncertain.

Apostolescu (1967) reported specimens identified as *Callistocythere* aff. *crispata* from stations 9 and 11 in Saint-Vincent Bay, without indicating the station of the illustrated carapace. Notes in the collection indicate that the illustrated carapace (here shown in Fig. 9M) comes from station 9. The micropaleontological slide associated with Apostolescu (1967) also contains 1 RV and 1 LV from station 11, which were not illustrated.

Callistocythere punctatuberculata Titterton & Whatley, 2007
Figs 3, 9O–P

Callistocythere punctatuberculata Titterton & Whatley, 2007: 54, fig. 4.12–13, pl. 2 figs 1–11.

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 C, 4 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73376 (Fig. 9P). – **Nouméa lagoon** • 1 C, 1 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73377 (Fig. 9O).

Dimensions (illustrated specimens)

Fig. 9O. RV: L = 398 μm; H = 230 μm. LV: L = 398 μm; H = 234 μm.

Fig. 9P. LV: 310 μm; H = 169 μm.

Stratigraphical and geographical distribution

Solomon Islands (Titterton & Whatley 2007). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Until the present record, this species was only known from the Solomon Islands (Titterton & Whatley 2007).

Genus ***Leptocythere*** Sars, 1925

Type species

Cythere pellucida Baird, 1850, subsequently designated by Sars (1925).

Leptocythere pulchra Zhao & Whatley, 1989
Figs 3, 9Q

Leptocythere pulchra Zhao & Whatley, 1989: 173, pl. 1 figs 7, 9, non figs 5–6 [= *Paratanella scindata* Jellinek, 1993].

Leptocythere pulchra – Whatley & Keeler 1989: 71, pl. 3 figs 8–10, non fig. 11 [= *Kotoracythere inconspicua* (Brady, 1880)]. — Titterton & Whatley 2007: 49, fig. 4.7–8, pl. 1 figs 11–19. — Wang *et al.* 2019: appendix 1 (not illustrated). — Forel 2021: 6, fig. 3r. — Luz *et al.* 2025: figs 10.21, 11.28.
Paratanella pulchra – Jellinek 1993: 118, pl. 134–137.

non *Leptocythere pulchra* – Babinot & Kouyoumontzakis 1995: pl. 2 fig. 20 [= *Neocyprideis timorensis* (Fyan, 1916)]. — Gopalakrishna *et al.* 2007: pl. 1 fig. 12 [= *Paratanella scindata* Jellinek, 1993].

? *Leptocythere pulchra* – Faiz & Omar 2014: 61 (not illustrated).

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73382 (Fig. 9Q).

Dimensions (illustrated specimen)

Fig. 9Q. LV: L = 373 µm; H = 182 µm.

Stratigraphical and geographical distribution

Holocene, Hang Hau Formation, Hong-Kong (Wang *et al.* 2019). Jason Bay, Coast of Malaya (Zhao & Whatley 1989). St. Pierre Harbour, Reunion Island, Indian Ocean (Whatley & Keeler 1989). Kenya (Jellinek 1993). Solomon Islands (Titterton & Whatley 2007). ?Pahang River Delta, Pahang Darul Makmur, Malaysia (Faiz & Omar 2014). Southwestern Peninsular Thailand, Ao nun, Satun Province, Andaman Sea (Forel 2021). Trindade Island, Brazil (Luz *et al.* 2025). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

The generic placement of this species in *Leptocythere* has been widely accepted, except by Jellinek (1993) who considered that it should be placed in *Paratanella* Jellinek, 1993, which differs from *Leptocythere* by its hinge structure and marginal pore canals. This opinion was never followed in the literature. *Leptocythere pulchra* from the Malabar Coast, southwestern India (Gopalakrishna *et al.* 2007) was re-attributed to *Paratanella scindata* Jellinek, 1993 by Mohammed & Keyser (2012).

Genus ***Gambiella*** Witte, 1985

Type species

Gambiella caelata Witte, 1985, by original designation.

Gambiella*? *toxica Forel & Bergue sp. nov.
urn:lsid:zoobank.org:act:6B05B286-A222-4397-A74B-7156A1B0EF86
Figs 3, 8C, 9R–X, 10A–L, 18C; Table 4

Diagnosis

A species attributed with doubt to *Gambiella*, very small, thin and elongate carapace lacking eye-tubercle. Lateral surface reticulo-punctate, interrupted by smooth subcentral node and dorsal platform, and free margin bordered by a foveolate strip with fine intercalated ridges. Two main ridges: 1) a transverse posterior ridge, transitioning into a longitudinal ventral branch through a foveolate islet on postero-ventral shoulder, 2) a weak dorsal ridge with anterior vertical branch. Hinge holomerodont.

Etymology

The name of the species is formed by the Latin adjective '*toxica*', in reference to its occurrence in the chemically stressful waters of the Prony Bay Hydrothermal Field.

Type material

Holotype

NEW CALEDONIA – **Prony Bay** • RV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73383 (Fig. 9R–V).

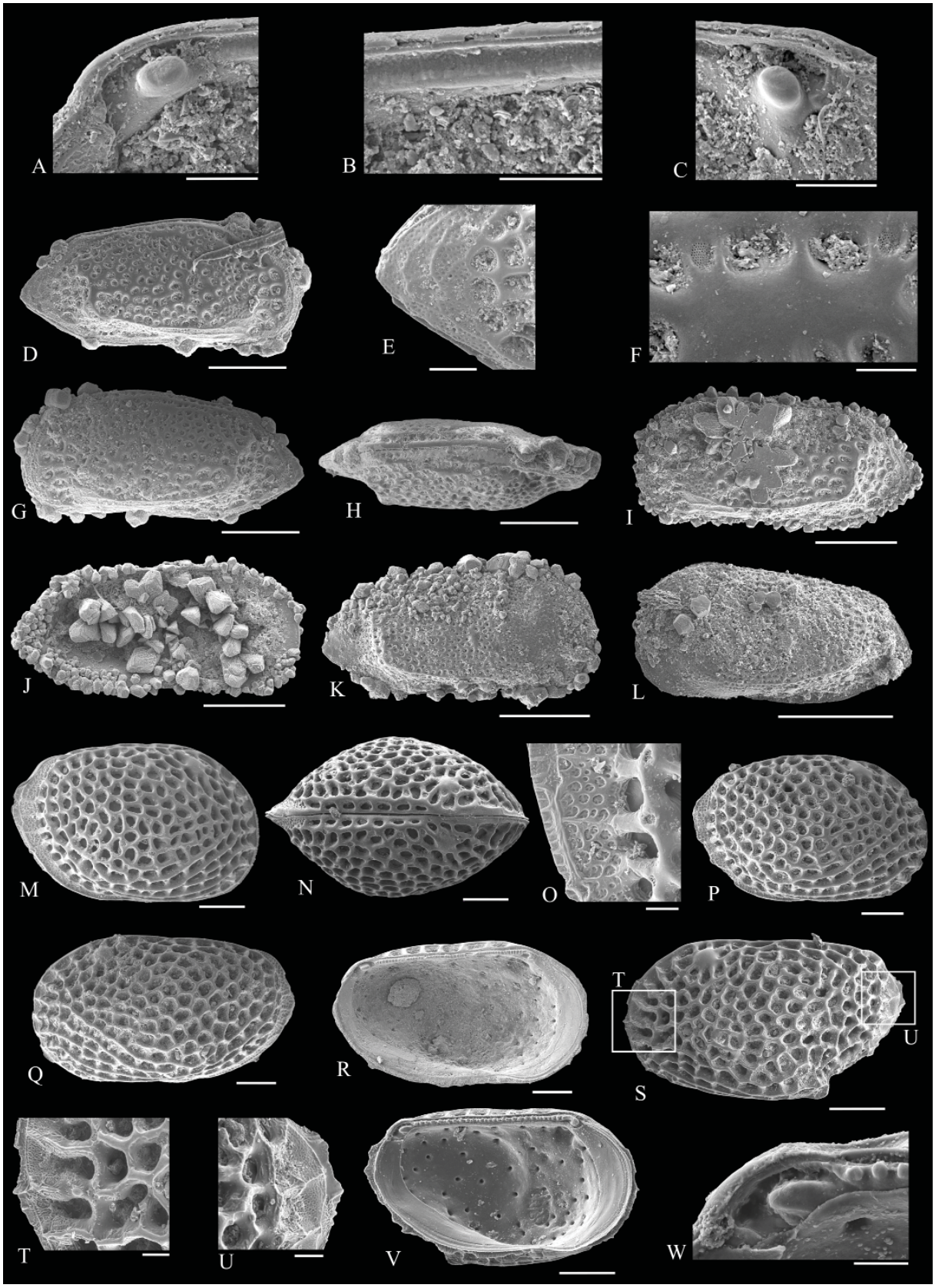
Paratype

NEW CALEDONIA – **Prony Bay** • 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73384 (Figs 9W–X, 10A–C).

Additional material examined

NEW CALEDONIA – **Prony Bay** • 2 C, 4 RV, 6 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73385 (Fig. 10D–H), MNHN.F.F73386 (Fig. 10I–J), MNHN.F.F73387 (Fig. 10K), MNHN.F.F73388 (Fig. 10L).

Fig. 10 (next page). SEM photos of ostracods from New Caledonia. **A–L**. *Gambiella*? *toxica* Forel & Bergue sp. nov., station B. **A–C**. Paratype, same specimen as Fig. 9W–X (MNHN.F.F73384). **A**. Details of posterior end of hinge. **B**. Details of median element of hinge. **C**. Details of anterior end of hinge. **D–H**. C (MNHN.F.F73385). **D**. Right view. **E**. Details of posterior foveolate ornamentation. **F**. Detail of dorsal platform and sieve-pores. **G**. Left view. **H**. Dorsal view. **I–J**. LV (MNHN.F.F73386). **I**. Outer view. **J**. Inner view. **K**. Juvenile RV, outer view (MNHN.F.F73387). **L**. Juvenile LV, outer view (MNHN.F.F73388). **M–R**. *Loxoconcha australis* Brady, 1880. **M–O**. ♀, C, station 7 (Apostolescu 1967: pl. 2 figs 34–35) (MNHN.F.F73323). **M**. Right view. **N**. Dorsal view. **O**. Details of posterior ornamentation of RV. **P**. ♀, RV, outer view, station 8 (Apostolescu 1967: pl. 2 fig. 32) (MNHN.F.F73322). **Q–R**. ♂, LV, station A (MNHN.F.F73390). **Q**. Outer view. **R**. Inner view. **S–W**. *Loxoconcha charbonnieri* Forel sp. nov., holotype, adult ♂, LV, station 9 (Apostolescu 1967: pl. 2 fig. 38) (MNHN.F.F73325). **S**. Outer view. **T**. Detail of antero-marginal ornamentation. **U**. Detail of postero-marginal ornamentation. **V**. Inner view. **W**. Detail of posterior end of hinge. Scale bars: A–C, E, O, T–U, W = 20 μm; D, G–N, P–S, V = 100 μm; F = 10 μm.


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Description

Carapace very small, thin, elongate subtrapezoidal in lateral view with Hmax in front of mid-L and Lmax below mid-H, L being ca 2.5 times H. LV slightly larger than RV, overlapping it all around, more so dorsally, with interruption at PB. Anterior margin broad, supracurvate, laterally compressed. ACA indistinct. DB long (ca ⅘ of L), straight to very gently convex, gently sloping posteriorly (5–10°), with terminal concavity in front of PCA. Behind PCA, upper outline straight to very slightly concave, joining concave ventral outline into a triangular caudate located just below mid-H. Strong lateral compression behind PCA, continuing to mid-L. Ventral margin largely concave with oral concavity in front of mid-L. In dorsal view, carapace rectangular, laterally compressed anteriorly and posteriorly, with Wmax along median surface (Fig. 10H).

Lateral surface with two main ridges and a shoulder (Fig. 8C):
- dorsal ridge very thin, arched, starting below PCA and sometimes connected to posterior ridge; running parallel to DB without overreaching it; vertical anterior branch parallel to anterior margin, fading out below mid-H;
- transverse posterior ridge originating below PCA, gently inclined anteriorly, concave to straight, with superposed thin mural ridge; longitudinal ventral branch extending parallel to ventral margin to anterior ⅓. A postero-ventral shoulder and subrectangular foveolate islet mark the transition to longitudinal branch.

Lateral surface reticulo-punctate with three main areas (Fig. 8C):
- a median area with small to large punctae randomly arranged, increasing in size anteriorly, and bounded by muri of variable thickness. Punctae interrupted by two main smooth areas, a dorsal platform located in the dorso-median region (Fig. 10F) and a vertical subcentral node that is mostly seen on juveniles (Fig. 10K). Punctae aligned in a denser row along ridges;
- two submarginal areas with large subquadrate reticulae: one on the inclined surface posterior to the transverse posterior ridge, and the other between the anterior ridge and the punctate median area;
- a marginal foveolate strip extending along free margin from ADB to PDB, crossed by thin anastomosing ridges parallel to the free margin and bearing short (Fig. 10E); foveolae larger anteriorly.

Sieve-type pores large, with setal pore off-center, scattered on muri (Fig. 10F).

In inner view, calcified inner lamella wide anteriorly and posteriorly, inner margin bordered thickened, more so anteriorly (Fig. 9F). Anteriorly, lamella vertical and only slightly sinuous in upper third, concave in lower part, with narrow vestibule. Posteriorly, lamella oblique with broad vestibule. Hinge holomerodont, in RV composed of 1) denticulate, thin and concave anterior tooth, 2) very finely crenulate median bar, curved anteriorly, 3) thin and concave posterior tooth (Fig. 9U–V). Symmetrical in LV with anterior and posterior sockets underlain by large anti-slip nodes, circular anteriorly, elongate posteriorly (Fig. 10A, C), and very finely denticulate median socket (Fig. 10B). On RV, small *Leptocythere* knob within oral concavity (Fig. 9S), symmetrical snap pit poorly visible on LV. AMS hardly visible because of encrustation, composed of four packed subrectangular scars in a vertical row in front of mid-H (Figs 9T, 18C). Other inner characters not seen because of encrustations.

Dimensions

Fig. 8C, Table 4.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Table 4. Dimensions of the type and figured specimens of *Gambiella*? *toxica* Forel & Bergue sp. nov. Abbreviation: na = not available.

	RV		LV	
	L (µm)	**H (µm)**	**L (µm)**	**H (µm)**
Holotype (Fig. 9R–V)	353	162	na	na
Paratype (Figs 9W, X, 10A–C)	na	na	348	162
Fig. 10D–H	na	na	359	160
Fig. 10I, J	na	na	346	157
Fig. 10K	301	146	na	na
Fig. 10L	na	na	239	117

Remarks

The new species is attributed to Leptocytheridae based on the presence of a *Leptocythere* knob on the RV, a characteristic feature of the family, as well as its small size, elongate outline, and broad marginal area. Its lateral outline is particularly reminiscent of the rare *Gambiella*, for which three formally described species are currently known: *Gambiella caelata* Witte, 1985 (type species), *Gambiella caudata* (Brady, 1890) and *Gambiella pytta* Howe & McKenzie, 1989. *Gambiella caelata* was described from Gambia (Witte 1985) and subsequently reported from Senegal (Witte 1993), Yemen (Mohammed & Keyser 2012) and India (Rajkumar *et al.* 2020), although the latter record was not illustrated. *Gambiella caudata* was described from Fiji (Brady 1890; McKenzie 1986) and has since been reported from Manila (Keij 1954) and Hawaii, including from Neogene deposits (Holden 1967). Finally, *Gambiella pytta* is only known from northern Australia (Howe & McKenzie 1989; Warne *et al.* 2006). Several additional records of unidentified species, specimens identified only to genus or attributed to other genera document the occurrence of *Gambiella* in the Holocene of Bermuda (Witte 1993; Keyser & Schöning 2000), the Ryukyu Islands in Japan (Tabuki & Nohara 1990), Clipperton Island (Allison & Holden 1971), Taiwan (Hu & Tao 2008), and the Timor Sea (Dewi *et al.* 2004) as well as possibly from the West Flower Garden Bank within the Gulf of Mexico (Maddocks 1974) and lower Miocene deposits of Midway Island (Holden 1976). In lateral view, *Gambiella* is characterized by an elongate carapace, with a length approximately 2.5 times its height, and valves of subequal dimensions. The anterior margin is broadly rounded, the posterior end bears a bluntly pointed and laterally compressed caudal process, the compressed area extending along the ventral margin to approximately mid-L. Internally, the genus was originally characterized by a gongylodont hinge, with LV bearing a strong and smooth hinge bar; an AMS composed of four undivided individual scars arranged in a subvertical row; and a bipartite frontal scar consisting of a large oval scar and a smaller, rounded scar positioned anteriorly (Witte 1985). Since its description, however, the characterization of the hinge of *Gambiella* has varied considerably, with the hinge being described as pentodont (McKenzie 1986; Howe & McKenzie 1989) or hemigongylodont (Warne *et al.* 2006). *Gambiella*? *toxica* sp. nov. differs from this generic description and from all known species of the genus in having a supracurvate and laterally compressed anterior margin, non-longitudinally arranged fossae, no eye-tubercle, a distinctive outline of the calcified outer lamella and a holomerodont hinge. The nature of the hinge of *Gambiella*? *toxica* may justify the establishment of a new genus to accommodate the present specimens. However, *Gambiella* remains poorly understood with no information available on its soft parts and appendages, and conflicting descriptions of its hinge morphology. An in-depth revision of all species attributed to the genus is therefore necessary to fully assess its diagnostic characters. Moreover, the available specimens of *Gambiella*? *toxica* exhibit varying degrees of mineralization on both their external and internal surfaces (e.g., Fig. 10D, G–L), preventing observation of the marginal pores and most internal features. Until the generic concept of *Gambiella* is clarified and additional characters can be observed on newly collected specimens of the present species,

we provisionally attribute it to *Gambiella*. This placement is based primarily on its striking overall resemblance to the genus, while acknowledging the significant differences in hinge morphology. The hemicytherid *Hartmannosa* Özdikmen, 2009 [replacement name of the preoccupied *Palaciosa* Hartmann, 1959, type species *Hartmannosa vandenboldi* (Hartmann, 1959)], and more specifically *Hartmannosa cracenta* (Bate *et al.*, 1981) from Ecuador (Bate *et al.* 1981), has a relatively similar lateral outline. The resemblance is limited to the lateral outline as *Hartmannosa* is larger, has a less ornamented surface, an amphidont hinge and an hemicytherid AMS.

Gambiella? *toxica* sp. nov. appears to be endemic to the Aiguille de Prony within the PBHF. In spite of their very delicate valves, juveniles have been found in the course of this analysis (Fig. 10K–L), representing two distinct ontogenetic stages (Fig. 8C). The ontogeny of this species is characterized by the gradual strengthening of all ridges and the differentiation of the median punctate area and marginal foveolate strip.

Family Loxoconchidae Sars, 1925

Genus ***Loxoconcha*** Sars, 1866

Type species

Cythere rhomboidea Fischer, 1855, by original designation.

Loxoconcha australis Brady, 1880
Figs 2–3, 10M–R, 11A

Loxoconcha australis Brady, 1880: 119, pl. 28 figs 3a–d, 5a–f.
Loxoconcha australis var. *tasmanica* Chapman, 1915: 44, pl. 2 fig. 6.

Loxoconcha australis – Brady 1890: 507 (not illustrated). — Chapman 1914: 16, pl. 8 fig. 30; 1931: 39, 41 (not illustrated); 1941: 200 (not illustrated) . — Chapman & Crespin 1928: 170 (not illustrated). — Chapman & Parr 1935: 4 (not illustrated). — Benson 1964: 16 (not illustrated). — Puri & Hulings 1976: 297, pl. 18 figs 17–18, pl. 19 figs 1–4. — De Deckker & Jones 1978: 131 (not illustrated). — Yassini & Jones 1987: 825, appendix figs 3.20–3.22, 4.22; 1995: 340, figs 310–314. — Yassini & Kendrick 1988: figs 4h–l. — Yassini & Wright 1988: 169, fig. 7p. — Yassini *et al.* 1993: 394 (not illustrated); 1995: table 1 (not illustrated). — Babinot & Degaugue-Michalski 1996: text-figure 6 (not illustrated). — Mohammed 2004: 44, pl. 3 fig. 4. — Mohammed & Keyser 2012: 266, fig. 9.127–129. — Warne & Soutar 2012: table 1 (not illustrated).
Loxoconcha sp. a – Apostolescu 1967: pl. 2 figs 32–35, table 1.
Loxoconcha dampierensis – Cabioch *et al.* 1986: 28, pl. 10 figs 1–2. — Cabioch 1988: 289, pl. 24 figs 1–2. — Hoibian *et al.* 2000: pl. 1 fig. 10; 2002: pl. 1 fig. 5. — Maddocks 2007: 273 (not illustrated).

non *Loxoconcha australis* – McKenzie 1967: 86, pl. 12 figs 10–11, 3n–o.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C; geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral; MNHN MNHN.F.F73446 • 1 C, 2 LV; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73323 (Apostolescu 1967: pl. 2 figs 34–35 (♀ C), re-illustrated as Fig. 10M–O) • 1 RV; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac

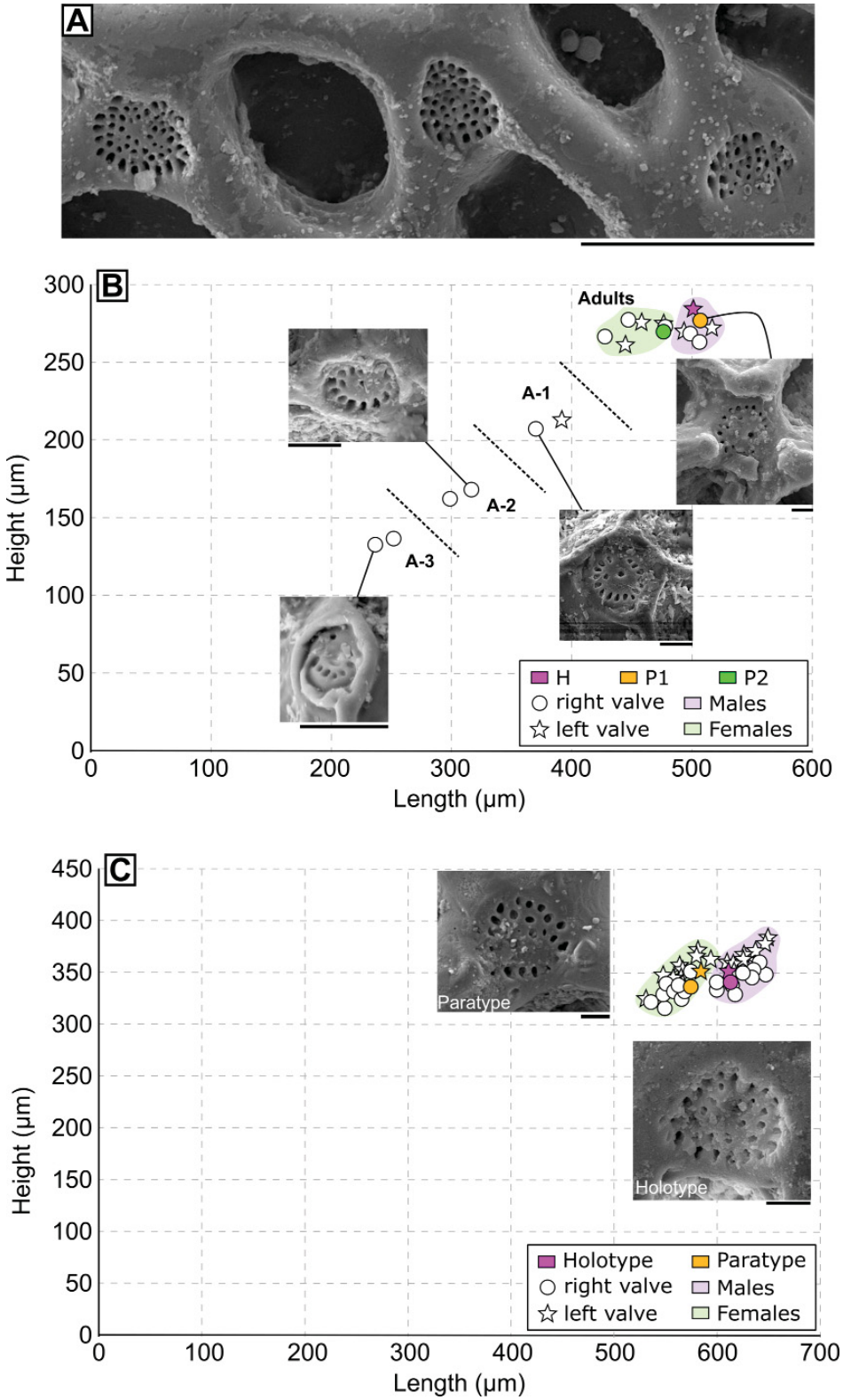


Fig. 11. A. Sieve-pores of *Loxoconcha australis* Brady, 1880. **B**. Height/length scatter plot and sieve-pores of *Loxoconcha charbonnieri* Forel sp. nov. **C**. Height/length scatter plot and sieve-pores of *Loxoconcha venenosa* Forel sp. nov. For carapaces, right and left valves have been measured separately, and are shown in the same color. Abbreviations: H = holotype; P1 = paratype 1; P2 = paratype 2. Scale bars: A = 50 µm; B–C = 5 µm.

expedition station 8; detrital soft coral; MNHN MNHN.F.F73322 (Apostolescu 1967: pl. 2 fig. 32 (♀ RV), re-illustrated as Fig. 10P) • 1 RV, 2 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73491–MNHN.F.F73493 • 1 RV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73447. – **Nouméa lagoon** • 1 C, 2 RV, 2 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73390 (Fig. 10Q–R).

Dimensions (illustrated specimens)

Fig. 10M–O. ♀ RV: L = 542 μm; H = 339 μm. ♀ LV: L = 542 μm; H = 339 μm.

Fig. 10P. ♀ RV: L = 559 μm; H = 351 μm.

Fig. 10Q–R. ♂ LV: L = 657 μm; H = 369 μm.

Stratigraphical and geographical distribution

Miocene-Pliocene of Australia (Chapman 1914, 1916; Chapman & Crespin 1928; De Deckker & Jones 1978). Pliocene of southeast Australia (Warne & Soutar 2012). Holocene of Point Waylen, Swan River Estuary, southwestern Australia (Yassini & Kendrick 1988). Port Jackson, Australia (Brady 1880; Puri & Hulings 1976). Booby Island (Ngiangu), northeastern Australia (Brady 1880). Tasmania, Australia (Chapman 1914; De Deckker & Jones 1978). Great Australian Bight, southern Australia (Chapman & Parr 1935). Nouméa, southwestern New Caledonia (Brady 1890). Drill core NC.35.PV, Ricaudy reef, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Drill core NC.14.OU, Mamié reef, southeastern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Lake Illawarra, south Wollongong, New South Wales, southeastern Australia (Yassini & Jones 1987). Port Hacking, New South Wales, Australia (Yassini & Wright 1988). Gulf of Carpentaria, northeastern Australia (Yassini *et al.* 1993). Southeastern Australia (Yassini & Jones 1995). Windang Island, New South Wales, southeastern Australia (Yassini *et al.* 1995). Northern New Caledonia and Chesterfield Islands (Babinot & Degaugue-Michalski 1996). Néra Delta, southwestern New Caledonia (Hoibian *et al.* 2000). Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). Southwestern Yemen (Mohammed 2004). Coast of Aden City, Yemen (Mohammed & Keyser 2012). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3). Stations 4, 7, 8, 9 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

The specimens identified as *Loxoconcha dampierensis* Hartmann, 1978 in Cabioch *et al.* (1986), Cabioch (1988) and Hoibian *et al.* (2000, 2002) do not belong to that species based on their ornamentation and ventral ridges reaching the anterior margin, while this is not the case in *Loxoconcha dampierensis* (Hartmann 1978). Cabioch *et al.* (1986) and Cabioch (1988) already regarded their specimens as conspecific with those identified as *Loxoconcha* sp. a by Apostolescu (1967), all here being re-attributed to *Loxoconcha australis* Brady, 1880. The mention of *Loxoconcha dampierensis* in New Caledonia in Maddocks (2007) relies on these previous reports and is thus also re-attributed to *Loxoconcha australis*. McKenzie (1967: 86) reported *Loxoconcha australis* from Port Philipp Bay, Victoria, Australia, adding that "it has also been recorded from Nouméa (Brady 1890: p. 507, 520) but on examining the Noumean types these were found to differ consistently in shape and surface reticulation from the southern Australian material". The lateral outline and ornamentation of the lectotype of *Loxoconcha australis* (Puri & Hulings 1976) differ markedly from the specimens illustrated by McKenzie (1967), leading us to conclude that the Australian specimens do not correspond to *Loxoconcha australis*. It appears that *Loxoconcha australis* may warrant revision, as specimens with markedly different ornamentation patterns have been included over time.

The studied specimens of *Loxoconcha australis* display sexual dimorphism, elongate carapaces (Fig. 10Q–R) being considered as males while females are shorter and plumper (Fig. 10M–O). They are rather close to *Loxoconcha charbonnieri* sp. nov. in terms of hinge structure and ornamentation. *Loxoconcha australis* nonetheless differs in having 1) a reduced wing-like process replaced by a short and curved rib, 2) a marginal ornamentation made of shallow fossae with sola displaying shallow foveolae in a peripheral ring (Fig. 10O). Sieve-pores on *Loxoconcha australis* encompass a dense sieve-plate without setal pore (Fig. 11A), lacking the concentric organization seen on *Loxoconcha charbonnieri* sp. nov. (Fig. 11B).

Apostolescu (1967) illustrated 1 RV, 1 LV and 1 C: the RV and C are here re-illustrated, while the LV was not found in the collection. Apostolescu (1967) reported this species from stations 4, 7, 8 and 11, without indicating the exact provenance of each of the illustrated specimens. The notes found in the collection indicate that the carapace was collected at station 7 and RV at station 8.

Loxoconcha charbonnieri Forel sp. nov.
urn:lsid:zoobank.org:act:6FF1EDDD-D125-480B-AB31-CB9FB8D4DB59
Figs 2–3, 10S–W, 11B, 12A–G, 18D; Table 5

Loxoconcha sp. b – Apostolescu 1967: pl. 2 figs 37–38, table 1.

Diagnosis

A new reticulate *Loxoconcha* species with large, deep fossae and muri surmounted by thick mural ridges. Ventrally, rows of fossae separated by ridges forming the edge of wing-like process, terminated by sharp, subflat triangular end bearing three subquadrangular fossae. Small postero-dorsal ridge overhangs dorsal border. Marginal ornamentation complex, consisting of 1) nearly smooth strip bordering free margin, 2) thin submarginal ridge, and 3) caperate inner strip crossed anteriorly and posteriorly by prolongations of ridges and mural ridges in arrow-like pattern. Eye-tubercle bordered by fossae arranged in flower-like pattern. Sieve pores with concentrical subdivision encompassing subcentral pore, smooth corolla and sieve structure in a narrow peripheral ring.

Etymology

The species is named after Prof. Sylvain Charbonnier, paleocarcinologist at the MNHN (Paris, France), for endless support.

Type material

Holotype

NEW CALEDONIA – **Saint-Vincent Bay** • adult ♂ LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73325 (Apostolescu 1967: pl. 2 fig. 38, re-illustrated as Figs 10S–W, 12A–B).

Paratypes

NEW CALEDONIA – **Saint-Vincent Bay** • 1 adult ♂ RV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73324 (Apostolescu 1967: pl. 2 fig. 37, re-illustrated as Fig. 12C). – **Nouméa lagoon** • 1 adult ♀ C; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73396 (Fig. 12F).

Additional material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73448 • 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73449. – **Nouméa lagoon** • 1 C, 8 RV, 5 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73394 (Fig. 12D–E), MNHN.F.F73395 (Fig. 12G).

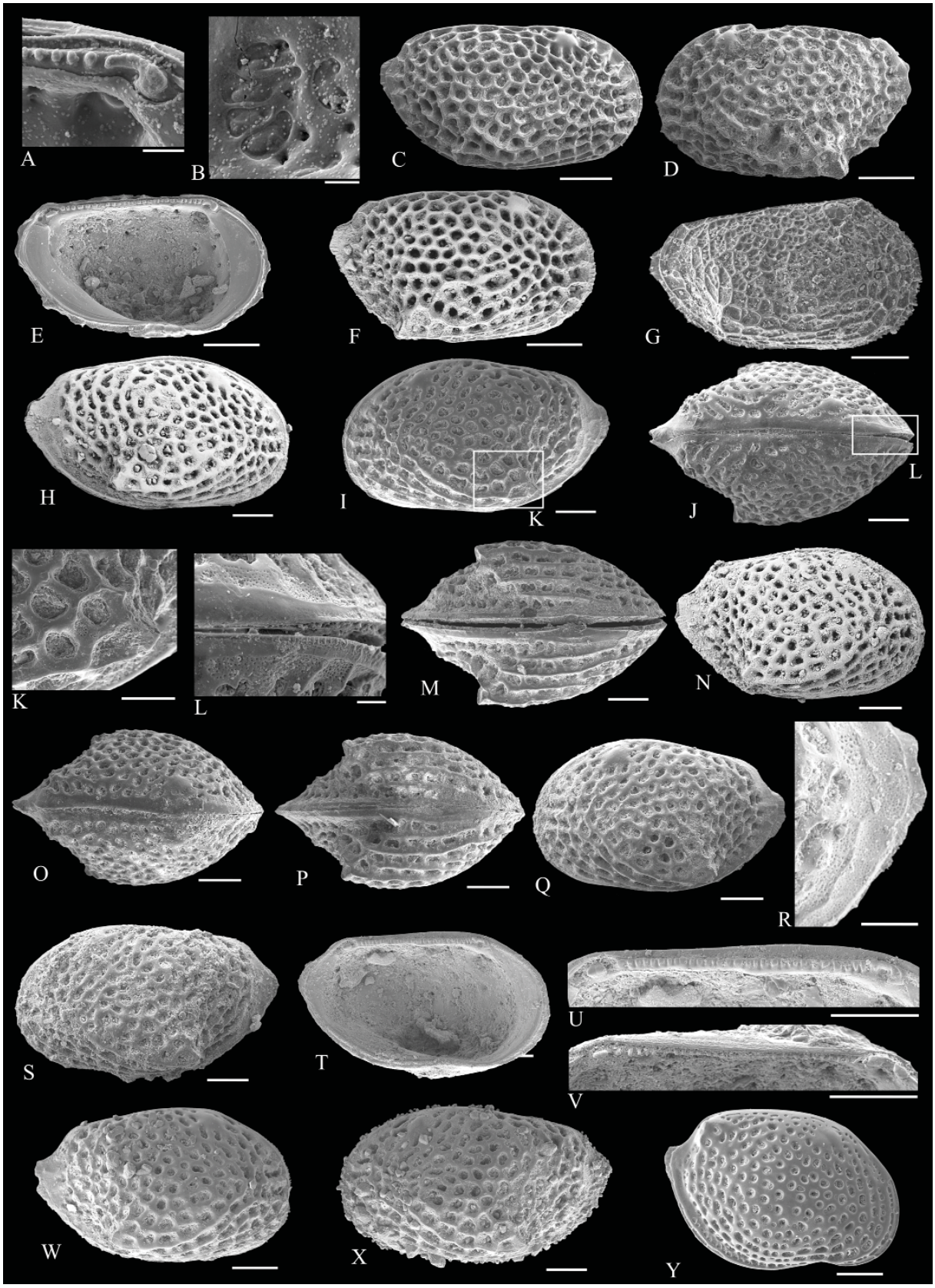
Description

Carapace of medium size, subrectangular in lateral view, shorter in females, with Hmax slightly posterior to mid-L and Lmax around mid-H. LV narrowly overlapping RV at PCA and along slope posterior to it (Fig. 12F). Anterior margin broad, slightly supracurvate. Dorsal outline sinuous in both valves, with antero-dorsal transition rounded and continuous, rather than forming a distinct cardinal angle, and PCA ca 100° in both valves. Posterior margin with large and rather long subdorsal process in the upper ⅓ of H, with very concave dorsal slope behind PCA and straight to very slightly convex ventral slope. Posterior margin gently compressed laterally behind PCA, more strongly so in juveniles (Fig. 12G). Ventral margin with tenuous oral concavity anterior to mid-L. Eye-tubercle large, circular, located below antero-dorsal transition; smooth in adults, covered with thin ridges in juveniles (Fig. 12G).

Lateral surface reticulated with deep and large fossae, circular to subquadrate in central, anterior and posterior areas, elongate subrectangular dorsally and ventrally. Muri surmounted by thick mural ridges (Fig. 10T). A ridge bordered on both sides by a row of subrectangular fossae overhangs dorsal line behind mid-L, clearly visible in inner view (Figs 10V, 12E). Ventrally, fossae organized in longitudinal rows separated by high ridges. Lateral wing-like process well developed, with edges defined by longitudinal ridges enclosing a row of fossae and terminating in a sharp, triangular distal end enclosing three subquadrangular fossae arranged triangularly and forming a flat surface laterally. Eye-tubercle bordered by a ring-like row of eight subrectangular fossae arranged in a flower-like pattern.

Fossae do not reach free margin, which displays a complex ornamentation from PCA to antero-dorsal transition, interrupted ventrally. It encompasses, from the outside inward (Fig. 10T–U):
- a narrow and nearly smooth outer fringe, with rare caperation, bearing thorns of various thicknesses;
- an intermediate thin submarginal ridge, already visible in juveniles (Fig. 12G);

Fig. 12 (next page). SEM micrographs of ostracods from New Caledonia. **A–G**. *Loxoconcha charbonnieri* Forel sp. nov. **A–B**. Holotype, same specimen as Fig. 10S–W (MNHN.F.F73325). **A**. Detail of anterior end of hinge. **B**. Detail of AMS (see interpretative sketch in Fig. 18D). **C**. Paratype 1, adult, ♂, RV, outer view, station 9 (Apostolescu 1967: pl. 3 fig. 37) (MNHN.F.F73324). **D–E**. Adult, ♀, LV, station A (MNHN.F.F73394). **D**. Outer view. **E**. Inner view. **F**. Paratype 2, adult, ♀, C, station A (MNHN.F.F73396). **G**. A-3? juvenile, RV, outer view, station A (MNHN.F.F73395). **H–X**. *Loxoconcha venenosa* Forel sp. nov., station B. **H–M**. Holotype, adult, ♂, C (MNHN.F.F73391). **H**. Right view. **I**. Left view. **J**. Dorsal view. **K**. Detail of wing-like process of left valve. **L**. Detail of anterior marginal ornamentation, in front of eye-tubercle. **M**. Ventral view. **N–Q**. Paratype 1, adult, ♀, C (MNHN.F.F73392). **N**. Right view. **O**. Dorsal view. **P**. Ventral view. **Q**. Left view. **R**. Adult, ♂, LV (MNHN.F.F73389), details of posterior marginal ornamentation. **S–U**. Adult ♂ LV (MNHN.F.F73443). **S**. Outer view. **T**. Inner view. **U**. Detail of the hinge. **V**. Adult, ♂, RV, detail of the hinge (MNHN.F.F73444). **W**. A-1, ♀, RV, outer view (MNHN.F.F73398). **X**. Adult, ♂, LV, outer view (MNHN.F.F73393). **Y**. *Loxoconcha georgei* Hartmann, 1978, RV, outer view, station 11 (MNHN.F.F73397). Scale bars: A–B, L = 20 μm; C–J, M–Y = 100 μm; K = 50 μm.


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- a wide caperate inner area, bordered by fossae lacking their external muri and opening directly onto the flange. Caperation slightly extends onto the solum of bordering fossae and onto the extremities of ventral ridges and muri. Caperate area crossed by arrow-like terminations of ventral ridges and mural ridges, which do not cross submarginal ridge. Posteriorly, these terminations are thin (Fig. 10U) and already visible in juveniles (Fig. 12G).

Large sieve pores on muri, nested within thick mural ridges (Fig. 10T), displaying a concentric structure composed of: 1) a subcentral setal pore, 2) a smooth corolla, and 3) sieve structure in a narrow peripheral ring (Fig. 11B). This structure is already visible in juveniles.

Sexual dimorphism strong, males being lower and more elongated than females; dorsal ridge more expressed in males, and females with a circular ridge above lateral wing-like process (Fig. 12F).

In inner view, hinge gongylodont, in LV composed of 1) horseshoe-shaped anterior element, thicker anteriorly, 2) straight, denticulate median element with rounded denticles, 3) subrectangular, undivided posterior tooth, topped by crenulate horseshoe socket (Figs 10V–W, 12A, E). Symmetrical in RV. Calcified inner lamella wide anteriorly and posteriorly, vestibulum narrow. AMS with four packed adductor scars, the lower two subovoid to subtriangular, the upper two irregular; frontal scar C-shaped (Figs 12B, 18D).

Dimensions

Fig. 11B, Table 5.

Stratigraphical and geographical distribution

Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3). Stations 9 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

The ornamentation pattern of *Loxoconcha charbonnieri* sp. nov., combined with its gongylodont hinge featuring complete anterior and posterior horseshoe elements with fine rounded crenulations, distinguishes it from all known *Loxoconcha* species. Among the winged *Loxoconcha* species currently known from New Caledonia, *Loxoconcha charbonnieri* can be compared to *Loxoconcha alata* Brady, 1868 described from western Turkey (Brady 1868c) and later reported from Nouméa (Brady 1890), with type specimens re-illustrated by Athersuch (1977). The new species differs by its ornamentation ventrally dominated by ridges, a distinct morphology of the wing-like process, a caperate marginal surface, a marginal flange, and, internally, complete horseshoe-shaped teeth. It differs from *Loxoconcha heronislandensis* Hartmann, 1981 by the morphology of its wing-like process, lack of postero-dorsal shoulder, and internally by its complete horseshoe-shaped teeth. *Loxoconcha charbonnieri* differs from *Loxoconcha huahineensis* Hartmann, 1984 and *Loxoconcha parahuahineensis* Behrens, 1991 by the nature of its surface ornamentation (e.g., ridges not merging with the anterior margin, lack of postero-dorsal shoulder and of postero-median nodules). *Loxoconcha charbonnieri* differs from *Loxoconcha australis* (Fig. 10M–R) by the development and structure of its wing-like process, structure of sieve pores, marginal ornamentation as well as the shape of the crenulation of the median bar of the hinge (subrectangular in *Loxoconcha australis*, Fig. 10R).

Smaller valves have been assigned to juvenile stages A-3 to A-1, with only one RV possibly corresponding to an A-3 stage illustrated here (Fig. 12G). These smaller and thinner valves are attributed to *Loxoconcha charbonnieri* sp. nov. based on their subtriangular wing-like process, pronounced marginal fringe, thin marginal ridge, delicate caperation posteriorly, and ventral surface dominated by longitudinal ribs. In young juveniles, the flower pattern is not seen around the eye-tubercle, and the lateral surface displays

Table 5. Dimensions of the type and figured specimens of *Loxoconcha charbonnieri* Forel sp. nov. Abbreviation: na = not available.

	RV		LV	
	L (µm)	**H (µm)**	**L (µm)**	**H (µm)**
Holotype (Figs 10S–W, 12A–B)	na	na	502	283
Paratype 1 (Fig. 12C)	507	277	na	na
Paratype 2 (Fig. 12F)	479	272	479	272
Fig. 12D–E	na	na	445	261
Fig. 12G	237	132	na	na

thin muri delimitating shallow reticulated cells. The concentric structure of the sieve pores is already visible, with each pore surrounded by a bulge (Fig. 11B).

Apostolescu (1967) reported this species, identified as *Loxoconcha* sp. b, from station 9 within Saint-Vincent Bay. The re-observation of unidentified picked specimens in his collection reveals its presence also at station 11.

Loxoconcha venenosa Forel sp. nov.
urn:lsid:zoobank.org:act:B4BB9D58-69CE-466A-BFC9-69E62B20623B
Figs 3, 11C, 12H–X; Table 6

Diagnosis

A reticulate *Loxoconcha* species with deep fossae variable in shape and a pointed wing-like process with the edge formed by a thick ridge. Marginal ornamentation consisting of a smooth serrate strip bordering the free margin, a thin submarginal ridge and a foveolate area, posteriorly crossed by thin ridges in a tile-pattern. Ventrally, fossae in longitudinal rows separated by ridges reaching submarginal ridge anteriorly, while they end in front of the foveolate surface posteriorly.

Etymology

The name of the species is formed by the Latin adjective '*venenosa*' (poisonous), in reference to its occurrence in the chemically stressful waters of the Prony Bay Hydrothermal Field.

Type material

Holotype

NEW CALEDONIA – **Prony Bay** • adult ♂ C; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73391 (Fig. 12H–M).

Paratype

NEW CALEDONIA – **Prony Bay** • 1 adult ♀ C; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73392 (Fig. 12N–Q).

Additional material examined

NEW CALEDONIA – **Prony Bay** • 2 C, 18 RV, 20 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73389 (Fig. 12R), MNHN.F.F73443 (Fig. 12S–U), MNHN.F.F73444 (Fig. 12V), MNHN.F.F73398 (Fig. 12W), MNHN.F.F73393 (Fig. 12X).

Description

Carapace medium-sized, subovate in lateral view, with Hmax at the anterior ⅓ of L, and Lmax slightly below mid-L. LV overlapping RV all around except along anterior margin and PVB, with maximum dorsally. Anterior margin broad, slightly infracurvate. Dorsal outline slightly sinuous in both valves, with antero-dorsal transition rounded and continuous, and PCA ca 120° on both valves. Posterior margin with rather long subdorsal process in the upper ⅓ of H, with concave dorsal slope behind PCA and slightly convex ventral slope. Posterior margin laterally compressed behind PCA. Ventral margin with tenuous oral concavity in front of mid-L. Eye-tubercle large, smooth, ovoid, located in front of antero-dorsal transition. In dorsal and ventral views, carapace arrow-shaped, with Wmax around mid-L and pointed ends of wing-like processes marking transition to a two-step posterior lateral compression in both valves.

Lateral surface reticulated with deep and large fossae, circular to subquadrate in central area, elongate to polylobate with internal outgrowths around the margins and on the wing-like process. Muri relatively thick, with faint mural ridges mostly visible along the margins and ventrally (Fig. 12L). Ventrally, fossae organized in longitudinal rows separated by high ridges. Lateral wing-like process well developed, with edge defined by a longitudinal ridge and terminating in a sharp, triangular distal end (Fig. 12K). Eye-tubercle bordered by elongate, subquadrate and bilobate fossae. Fossae do not reach free margin, which displays a complex ornamentation from PCA to antero-dorsal transition, reduced anteriorly, more so ventrally (Fig. 12M, P) and interrupted dorsally (Fig. 12J, O). It encompasses (Fig. 12L, R):

- a narrow, finely serrated outer fringe, bearing rare thorns;
- an intermediate thin submarginal ridge;
- a foveolate inner area, much wider posteriorly, bordered anteriorly and posteriorly by fossae opening onto the flange. It is crossed by a supplementary thin ridge parallel to free margin and by extensions of mural ridges crossing the supplementary ridge to reach the submarginal ridge subperpendicularly, forming a tile-like pattern on specimens where this ornamentation is most developed posteriorly (e.g., Fig. 12H).

Large sieve structures scattered on muri, with dense sieve plate lacking setal pore (Fig. 11C).

In inner view, hinge gongylodont, in LV (Fig. 12T–U) with: 1) horseshoe-shaped anterior element, 2) straight denticulate median element with subrectangular denticles of highly variable dimensions, 3) subrectangular, bilobate posterior tooth topped by a crenulate horseshoe socket. Symmetrical in RV with bilobate subrectangular anterior tooth (Fig. 12V). Calcified inner lamella wide anteriorly and posteriorly, vestibulum narrow. AMS not seen due to sediment encrustation and remineralization.

Dimensions

Fig. 11C, Table 6.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

As already detailed for *Loxoconcha charbonnieri* sp. nov., to which it is notably close, *Loxoconcha venenosa* sp. nov. differs from all known *Loxoconcha* species in the pattern of its marginal ornamentation, the heterogeneous shape of its fossae, the shape and structure of its lateral wing-like process, and its gongylodont hinge featuring complete anterior and posterior horseshoe elements. Although very close to *Loxoconcha charbonnieri*, *Loxoconcha venenosa* is slightly larger (Fig. 11B–C), lacks a dorsal ridge, has a different lateral wing-like process, a narrower reticulation, a foveolate rather than caperate

Table 6. Dimensions of the type and figured specimens of *Loxoconcha venenosa* Forel sp. nov. Abbreviation: na = not available.

	RV		LV	
	L (µm)	**H (µm)**	**L (µm)**	**H (µm)**
Holotype (Fig. 12H–M)	613	340	614	351
Paratype (Fig. 12N–Q)	574	336	584	351
Fig. 12S–U	na	na	639	361
Fig. 12W	559	332	na	na
Fig. 12X	na	na	646	377

marginal ornamentation, and denticles of the median hinge element that are heterogeneous in size and subrectangular rather than circular.

Loxoconcha venenosa sp. nov. is restricted to the PBHF and all specimens display varying degrees of crystallization on the outer and inner surfaces (e.g., Fig. 12S–T, X), as also observed in *Gambiella*? *toxica* Forel & Bergue sp. nov. These crystallizations are often strongly developed: many of the available specimens could not be measured confidently, surface structures are often obscured, and the inner surfaces are consistently masked, precluding the observation of the AMS. All measurable specimens are adults, as indicated by their wide calcified inner lamella (Fig. 12T) and their narrow size distribution (Fig. 11C). This observation may indicate either a different niche within the PBHF between adults and juveniles or the removal of small juveniles by currents around the Aiguille de Prony (Fig. 4).

Loxoconcha georgei Hartmann, 1978
Figs 2, 12Y

Loxoconcha georgei Hartmann, 1978: 105, fig. 259–268, pl. 9 figs 13–16.

Loxocorniculum georgei – Cabioch *et al.* 1986: 28, pl. 9 fig. 13. — Cabioch 1988: 289, pl. 9 fig. 13.
Loxoconcha georgei – Howe & McKenzie 1989: 24, figs 8, 84–85, 154. — Behrens 1991: 116, pl. 4 fig. 6–9. — Maddocks 2007: 273 (not illustrated).

non *Loxoconcha georgei* – Hoibian *et al.* 2000: pl. 1 fig. 7.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73397 (Fig. 12Y).

Dimensions (illustrated specimen)

Fig. 12Y. RV: L = 510 µm; H = 347 µm.

Stratigraphical and geographical distribution

Northwestern Australia (Hartmann 1978; Howe & McKenzie 1989). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Northern Great Barrier Reef, Australia (Behrens 1991). Station 11, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2).

Remarks

The genus *Loxocorniculum* Benson & Coleman, 1963 was erected to accommodate species differing from *Loxoconcha* by a well-developed, horn-like postero-dorsal tubercle, coarsely reticulate surface, two short, prominent longitudinal ridges extending backwards from the anterior margin and characteristic pore conuli (see for instance summary in Keyser & Schöning 2000; Titterton & Whatley 2009b). In the case of *Loxoconcha georgei* Hartmann, 1978, it was only re-attributed to *Loxocorniculum* in works dealing with specimens from New Caledonia by Cabioch *et al.* (1986, 1988), both notably illustrating the same specimens. Here, we follow the most recent reports and retain this species in *Loxoconcha*, because of its pitted surface, and absence of longitudinal ridges and pore conuli. This position is in line with, for instance, Keyser & Schöning (2000), who considered that the distinction between *Loxoconcha* and *Loxocorniculum* is no longer clear as species with a pitted surface have been subsumed in *Loxocorniculum*.

This species was not mentioned in Apostolescu (1967), but re-observation of unidentified picked specimens in his collection reveals its presence at station 11.

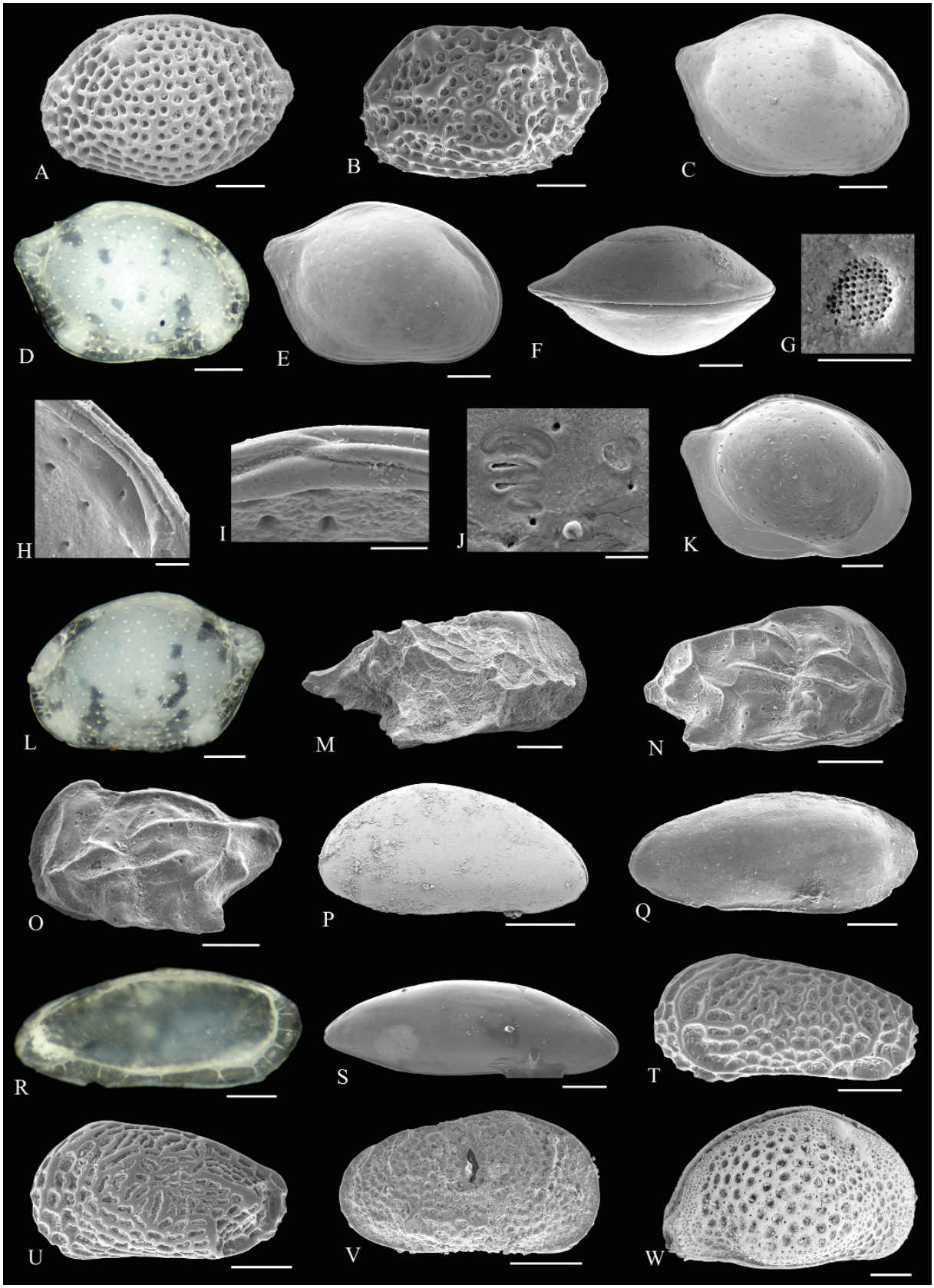
Loxoconcha pumicosa Brady, 1880
Figs 2, 13A

Loxoconcha pumicosa Brady, 1880: 118, pl. 28 fig. 2a–d.

Loxoconcha pumicosa – Brady 1890: 507. — Bate 1963: table 1 (not illustrated). — Apostolescu 1967: pl. 2 fig. 36, table 1. — Puri & Hulings 1976: 298, pl. 18 figs 10–12. — De Deckker & Jones 1978: 132 (not illustrated). — Watson 1988: 181, pl. 34 figs 7–16. — Titterton *et al.* 2001: 38, pl. 2 figs 20–22. — Maddocks 2007: 273 (not illustrated). — Titterton & Whatley 2009b: 304, fig. 4.7, 10, pl. 2 figs 1–9.

Loxoconcha sp. cf. *L. pumicosa* – Titterton 1984: 362, pl. 11 figs 7–8, pl. 46 figs 11–21.

Fig. 13 (next page). SEM micrographs of ostracods from New Caledonia, except D, L and R in optical microscopy. **A**. *Loxoconcha pumicosa* (Brady, 1880). LV, outer view, station 7 (Apostolescu 1967: pl. 2 fig. 36) (MNHN.F.F73326). **B**. *Loxoconcha parahuahineensis* Behrens, 1991, LV, outer view, station 11 (MNHN.F.F73399). **C–L**. *Loxoconchella honoluliensis* (Brady, 1880). **C–D**. RV, station 7 (MNHN.F.F73400). **C**. Outer view. **D**. Same specimen in optical microscopy. **E–G**. C, station 8 (Apostolescu 1967: pl. 2 figs 29–31) (MNHN.F.F73327). **E**. Right view. **F**. Dorsal view. **G**. Insight on sieve pore. **H–L**. LV, station 8 (MNHN.F.F73401). **H**. Detail of anterior end of hinge. **I**. Detail of posterior end of hinge. **J**. Detail of AMS (see interpretative sketch in Fig. 18E). **K**. Inner view. **L**. Outer view in optical microscopy. **M**. *Paracytheridea remanei* Hartmann, 1964, RV, outer view, station A (MNHN.F.F73402). **N–O**. *Paracytheridea trilobites* (Brady, 1890), station 11. **N**. RV, outer view (MNHN.F.F73403). **O**. LV, outer view (Apostolescu 1967: pl. 2 fig. 39) (MNHN.F.F73333). **P**. *Cytherois* sp., C, right view, station A (MNHN.F.F73404). **Q–R**. *Paradoxostoma novaecaledoniae* Brady, 1890, LV, station 8 (Apostolescu 1967: pl. 1 fig. 17) (MNHN.F.F73337). **Q**. Outer view. **R**. Same specimen in optical microscopy. **S**. *Paradoxostoma* sp., C, right view, station 11 (Apostolescu 1967: pl. 1 fig. 21) (MNHN.F.F73338). **T**. *Keijia demissa* (Brady, 1868a), C, left view, station 11 (MNHN.F.F73405). **U**. *Kotoracythere inconspicua* (Brady, 1880), LV, outer view, station 11 (MNHN.F.F73406). **V**. *Pectocythere*? sp., juvenile, RV, outer view, station A (MNHN.F.F73407). **W**. *Neobuntonia* cf. *guttata* (Brady, 1890), C, right view, station A (MNHN.F.F73408). Scale bars: A–F, K–W = 100 μm; G = 10 μm; H–J = 20 μm.


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Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 2 RV; geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral; MNHN MNHN.F.F73494, MNHN.F.F73495 • 1 LV; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73326 (Apostolescu 1967: pl. 2 fig. 36 (LV), here re-illustrated as Fig. 13A) • 1 LV; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral; MNHN MNHN.F.F73496 • 1 RV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73497.

Dimensions (illustrated specimen)

Fig. 13A. LV: L = 560 μm; H = 352 μm.

Stratigraphical and geographical distribution

Booby Island (Ngiangu), northeastern Australia (Brady 1880; Bate 1963; Puri & Hulings 1976; Titterton *et al.* 2001). Narés Harbour, Admiralty Islands (Brady 1880; Bate 1963; Puri & Hulings 1976; De Deckker & Jones 1978; Titterton *et al.* 2001). Nouméa, southwestern New Caledonia (Brady 1890). Fiji (Brady 1890). Samoa (Brady 1890). Solomon Islands (Titterton 1984; Titterton & Whatley 2009b). Pulau Seribu, Java Sea (Watson 1988). New Caledonia (Maddocks 2007). Stations 4, 7, 8 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

Apostolescu (1967) mentioned that this species occurs at stations 7 and 8 (Fig. 2), and illustrated one LV (re-illustrated as Fig. 13A) without indicating its precise origin. Notes in the collection indicate it was collected at station 7. The slide containing specimens used for Apostolescu (1967) contains another LV, from station 8. The re-observation of unidentified picked specimens in his collection reveals its presence at stations 4 and 11.

Loxoconcha parahuahineensis Behrens, 1991
Figs 2–3, 13B

Loxoconcha parahuahineensis Behrens, 1991: 119, figs 28–33, pl. 6 figs 5–12.

Loxoconcha cf. *fischeri minima* – Cabioch *et al.* 1986: 28, pl. 10 figs 3–6. — Cabioch 1988: 289, pl. 24 figs 3–6.
Loxoconcha insulaecapricornensis – Hoibian *et al.* 2002: pl. 1 fig. 1.
Loxoconcha parahuahineensis – Maddocks 2007: 273 (not illustrated).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral; MNHN MNHN.F.F73498 • 1 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73499 • 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73399 (Fig. 13B). – **Nouméa lagoon** • 1 RV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73500.

Dimensions (illustrated specimen)

Fig. 13B. LV: L = 506 μm; H = 308 μm.

Stratigraphical and geographical distribution

Lizard Island, northern Great Barrier Reef, Australia (Behrens 1991). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). New Caledonia (Maddocks 2007). Stations 8, 9 and 11, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

Loxoconcha parahuahineensis Behrens, 1991 is characterized by its coarsely reticulate surface, horn-like postero-dorsal tubercle and two curved longitudinal ridges extending from the anterior margin. It nonetheless lacks the pore conuli, altogether characterizing *Loxocorniculum*. As noted above, we consider the distinction between the two genera to be unclear and therefore retain this species within *Loxoconcha*. Here, we follow Behrens (1991) in re-attributing specimens identified as *Loxoconcha* cf. *fischeri minima* Teeter, 1975 from the Ricaudy reef, New Caledonia (Cabioch *et al.* 1986; Cabioch 1988) to *Loxoconcha parahuahineensis*. The LV identified as *Loxoconcha insulaecapricornensis* Hartmann, 1981 from Roche Percée Bay (Hoibian *et al.* 2002) is also re-attributed to *parahuahineensis* based on its numerous posterior thorns, marked postero-dorsal tubercle and distinct ornamentation on the lateral surface.

This species was notably not recognized in Apostolescu (1967), although 1 RV was picked from station 8. The re-observation of unidentified picked specimens in his collection reveals it also occurs at stations 9 and 11.

Genus ***Loxoconchella*** Triebel, 1954

Type species

Loxoconcha honoluliensis Brady, 1880, by original designation (see Malz & Keij 1987).

Loxoconchella honoluliensis (Brady, 1880) emend.
Figs 2, 13C–L, 18E

Loxoconcha honoluliensis Brady, 1880: 117, pl. 28 fig. 6a–f.

Loxoconcha honoluliensis – Brady 1890: 507 (not illustrated). — Puri & Hulings 1976: 297, pl. 19 figs 5–6. — De Deckker & Jones 1978: 131 (not illustrated).

Loxoconchella honoluliensis – Apostolescu 1967: pl. 2 figs 29–31, table 1. — Holden 1967: 34, fig. 24a–c; 1976: F33, pl. 6 figs 18–20. — Keij 1978: 222, fig. 3. — Babinot & Degaugue-Michalski 1996: 354 (not illustrated). — Hoibian *et al.* 2000: pl. 1 fig. 12. — Maddocks 2007: 273 (not illustrated).

non *Loxoconchella honoluliensis* – Triebel 1954: 19, pl. 1 figs 1–6.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV, 1 LV; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73400 (Fig. 13C–D) • 1 C, 1 RV, 1 LV; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral; MNHN MNHN.F.F73327 (Apostolescu 1967: pl. 2 fig. 29–31 (C), re-illustrated as Fig. 13E–G), MNHN.F.F73401 (Fig. 13H–L).

Stratigraphical and geographical distribution

Miocene of Midway Island (Holden 1976). Honolulu, Hawaii (Brady 1880; Puri & Hulings 1976; Keij 1978). Nouméa, southwestern New Caledonia (Brady 1890). Suva, Fiji (Brady 1890). Apia and Lufi-Lufi, Upolu, Samoa (Brady 1890). Hawaiian Islands (Holden 1967). Between Melbourne and Adelaide, southern Australia (De Deckker & Jones 1978). Northern New Caledonia and Chesterfield Islands (Babinot & Degaugue-Michalski 1996). Néra Delta, western New Caledonia (Hoibian *et al.* 2000). New Caledonia (Maddocks 2007). Stations 7 and 8, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Diagnosis in Keij (1978: 221)

"A species of the genus *Loxoconchella* characterised by carapace with nearly straight posterodorsal margin, rounded posterodorsal corner and slightly convex dorsal margin, the ventral margin reinforced by low, rounded rim, surface smooth with widely spaced pits, approx. 25 branching marginal pore canals".

Revised diagnosis

A species of *Loxoconchella* with very finely foveolate surface, very fine anastomosing ridges, most conspicuous postero-ventrally, and evenly distributed sieve pores; laterally compressed posterior margin; eye-tubercle elongate ovoid, bordered by long and narrow post-ocular sulcus. Pattern of translucent patches variable medially, with recognizable subtriangular patches around oral concavity, in ocular region and along postero-ventral, postero-dorsal, and anterior borders. Marginal pore canals branching anteriorly, ventrally and at caudal process, unbranching and straight postero-ventrally. Hinge adont, AMS of four packed scars, the uppermost one arcuate capping the three subrectangular scars below.

Original description in Brady (1880: 117)

"Carapace of the female, seen from the side, flexuous, subrhomboidal, highest behind the middle, height equal to two-thirds of the length, anterior extremity broad and well-rounded, posterior oblique, produced above the middle into a very broad, truncated beak; dorsal margin flattened in front, convex behind; ventral sinuated in front of the middle, strongly convex and keeled behind; seen from above, the outline is lozenge-shaped, widest in the middle, thence tapering without much curve to the extremities which are subacuminate, width equal to more than half the length; end view very broadly ovate. Surface of the shell marked with distant circular punctures, or irregularly reticulated. The shell of the male is, as usual, more compressed and less strongly arcuate dorsally".

Revised description in Keij (1978: 222)

"The anterior margin is broadly rounded, the ventral one is straight, turning obliquely upwards with a broad swing into the straight lower part of the posterior margin. A caudal process is situated at ¾ of the height. The dorsal part of the posterior margin is almost straight, merging into the slightly convex, forward sloping dorsal margin by means of the broadly rounded posterior cardinal angle. The surface is smooth with widely scattered punctae. A low inconspicuous rim is present along the dorsal margin. A low eye-tubercle is situated at the anterior cardinal angle. A pronounced, but low rim borders the ventral margin. The marginal area is moderately broad, with shallow anterior and posterior vestibula. Some 25 branching marginal pore canals are present. A low but broad eye socket is situated below the anterior hinge element. Hinge and central muscle scar as for the genus".

Revised description

Carapace of medium size, subrhomboidal in lateral view with Hmax behind mid-L at PCA and Lmax around mid-H. LV slightly larger than RV, narrowly overlapping it postero-dorsally (Fig. 13E). Anterior margin broadly rounded, infracurvate, laterally compressed in upper part. ADB and DB continuous, convex, and gently ascending to rounded PCA; PDB concave, very gently sloping posteriorly. Posterior

margin caudate with narrowly rounded extremity in upper ⅓ of H, laterally compressed at and below caudal process. Ventral margin sinuous with narrow oral concavity in front of mid-L. Eye-tubercle ovoid and long, posteriorly delimited by a narrow, elongated post-ocular sulcus. Free margin bordered by narrow flange extending from below eye-tubercle to caudal process, nearly interrupted within oral concavity, widest postero-ventrally.

Lateral surface finely foveolate, more densely so posteriorly, with delicate anastomosing ridges. Entire outline bordered by large and shallow fossae aligned and extending above eye-tubercle. Sieve pores of moderate width for the genus (Fig. 13G), evenly distributed over the surface. Medially, translucent patches variable in number and shape; marginally, translucent patches composed of a consistent pattern encompassing (Fig. 13D, L):

- two subtriangular patches surrounding oral concavity, not extending above mid-H;
- an elongate patch along PVB;
- a narrow postero-dorsal patch extending laterally;
- an ocular patch;
- an anterior patch below mid-H.

Postero-dorsal, postero-ventral and posterior triangular patches linked in some specimens by additional lateral patches; similar pattern observed for ocular and anterior patches.

In dorsal view, outline biconvex with Wmax around mid-L, strong compression along posterior end, slight at eye-tubercle (Fig. 13F).

In inner view, calcified inner lamella moderately broad anteriorly and posteriorly, with shallow vestibule. Hinge adont, robust, in LV with 1) straight postero-dorsal groove, 2) long and convex bar below DB and ADB, passing over eye-tubercle (Fig. 13H–I, K). AMS composed of four packed scars in an incurved row behind mid-L and around mid-H. Scars decreasing in size, the upper one arcuate capping the subrectangular scars below; frontal scar bean-shaped (Figs 13J, 18E). Mandibular scars inconspicuous. Marginal pore canals branching anteriorly, ventrally and at caudal process; straight and unbranching postero-ventrally in RV (Fig. 13D), branching in LV (Fig. 13L).

Dimensions (illustrated specimens)

Fig. 13C, D. RV: L=481 µm; H=338 µm.

Fig. 13E–G. RV: L=543 µm; H=373 µm. LV: L=543 µm; H=373 µm.

Fig. 13K–L. LV: L=549 µm; H=397 µm.

Remarks

The complicated taxonomic history of *Loxoconchella honoluliensis* (Brady, 1880) was summarized by Keij (1978) and Malz & Keij (1987). Keij (1978: 224) stated that "the interior of *Loxoconchella honoluliensis*, although the type species of the genus, remains inadequately described. Puri & Hulings (1976) figured the lectotype, but these photographs only give an impression of the outline of the valves". The insufficient description of the internal valve structures and overall surface ornamentation of this species constitutes a major obstacle to understanding the genus, for which *Loxoconchella honoluliensis* is the type species. We here take the opportunity of this material from New Caledonia to emend, re-describe and illustrate it in full detail.

Whatley *et al.* (2000) discussed the possible occurrence of *Loxoconchella honoluliensis* in Easter Island previously mentioned in Keij (1978), considering that "whether or not he had any faunal evidence on

which to base this statement, we have no idea" and "Keij's is the only previous reference to Easter Island Ostracoda known to the authors" (Whatley *et al*. 2000: 90). Although no specimens were illustrated, Holden (1967: table 1) listed *Loxoconchella honoluliensis* as present in recent environments of Easter Island, which likely constitutes the basis for the statement made by Keij (1978). Whatley *et al.* (2000) described *Loxoconchella catarrhopos* Whatley *et al.*, 2000, which remains the only formally reported species of *Loxoconchella* from Easter Island. As *Loxoconchella honoluliensis* has never been illustrated from Easter Island, we consider at this stage that it does not occur around Easter Island. Whatley *et al*. (2000) didn't discuss the similarity between *Loxoconchella catarrhopos* and *Loxoconchella honoluliensis*, which is quite noticeable. *Loxoconchella catarrhopos* has larger and denser sieve pores that are concentrically aligned parallel to the free margin, more convex PDB and PVB, lacks the strong lateral compression posteriorly, has a round, small eye-tubercle without post-ocular sulcus, punctae more expressed over the entire surface and a row of tightly packed, elongate and deep pits bordering the free margin. Whatley *et al.* (2000) furthermore stated that the internal features of *Loxoconchella catarrhopos* are "as for the genus", a characterization that necessitates re-examination of the type specimens, given that the internal features of the type species of *Loxoconchella* have remained poorly documented to date.

Apostolescu (1967) illustrated one carapace of this species, indicating that it occurs at stations 7 and 8 within the Saint-Vincent Bay (Fig. 2). The associated slide contains all specimens at hand in this study: 1 RV and 1 LV from station 7; 1 RV, 1 LV, 1 C from station 8.

Family Paracytherideidae Puri, 1957

Genus ***Paracytheridea*** G.W. Müller, 1894

Type species

Paracytheridea depressa G.W. Müller, 1894, by monotypy.

Paracytheridea remanei Hartmann, 1964
Figs 3, 13M

Paracytheridea remanei Hartmann, 1964: 65, pl. 23 figs 114–120, pl. 24 figs 121–124.
Paracytheridea reunionensis Whatley & Keeler, 1989: 65, pl. 1 figs 15, 17–19.
Paracytheridea gynaikokratia Behrens, 1991: 121, figs 40–43, pl. 7 figs 4–9.

Paracytheridea remanei – Hartmann 1978: 108, pl. 10 figs 10–14, text-fig. 3. — Howe & McKenzie 1989: 26, figs 70, 155. — Eagar 1999: pl. 1 fig. 7. — Mostafawi *et al.* 2005: 136, pl. 3 fig. 7. — Keyser & Mohammed 2021: 6, pl. 2 figs 25–27.
Paracytheridea cf. *P. tschoppi* – Krutak 1982: 274, pl. 5 figs 10–14.
Paracytheridea aff. *remanei* – Cabioch *et al.* 1986: 28, pl. 10 figs 7–8. — Cabioch 1988: 290, pl. 24 figs 7–8.
Paracytheridea gynaikokratia – Maddocks 2007: 272 (not illustrated).
Paracytheridea cf. *reunionensis* – Mostafawi 1992: 152, pl. 5 fig. 111.
Paracytheridea tschoppi – Witte 1993: 66, pl. 8 figs 18–19.
Paracytheridea sp. 2 – Dewi 2000: pl. 1 fig. 8.

pars *Australimoosella* sp. A – Hoibian *et al.* 2002: pl. 1 fig. 7, non fig. 8 [= *Ponticocythereis impressionista* Forel sp. nov.].

Selected material examined

NEW CALEDONIA – **Prony Bay** • 4 RV, 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73518–MNHN.F.F73522. – **Nouméa lagoon** • 3 RV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73402 (Fig. 13M).

Dimensions (illustrated specimen)

Fig. 13M. RV: L = 639 µm; H = 270 µm.

Stratigraphical and geographical distribution

Red Sea (Hartmann 1964). Northwestern Australia (Hartmann 1978). Veracruz-Anton Lizardo reefs, Mexico (Krutak 1982). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Réunion Island, Indian Ocean (Whatley & Keeler 1989). Northwestern Australia (Howe & Mckenzie 1989). Northern Great Barrier Reef (Behrens 1991). Sunda Shelf (Mostafawi 1992). Gambia, Western Africa (Witte 1993). Gilbert Islands, Kiribati (Eagar 1999). Southern Kalimantan, Indonesia (Dewi 2000). Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). Bali, Indonesia (Mostafawi *et al.* 2005). New Caledonia (Maddocks 2007). Al-Hudeida City, Yemen, Red Sea (Keyser & Mohammed 2021). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Here, we follow the synonymy proposed by Mostafawi *et al.* (2005), considering that pronounced sexual dimorphism in this species, affecting both dimensions and ornamentation, has led to misidentifications and to the description of unnecessary species. Maddocks (2007) listed *Paracytheridea gynaikokratia* Behrens, 1991, described from the northern Great Barrier Reef (Behrens 1991), as occurring in New Caledonia waters. Mostafawi *et al.* (2005) considered *Paracytheridea gynaikokratia* as a junior synonym of *Paracytheridea remanei* Hartmann, 1964, recently also followed for instance by Keyser & Mohammed (2021).

Paracytheridea trilobites (Brady, 1890)
Figs 2–3, 13N–O

Cytheropteron? *trilobites* Brady, 1890: 511, pl. 3 figs 22–23.

Cytheropteron trilobites – Benson 1964: 16 (not illustrated).
Paracytheridea sp. a – Apostolescu 1967: pl. 2 fig. 39, table 1.
Paracytheridea trilobites – McKenzie 1986: pl. 1 fig. 15. — Davis & Horne 1988: 41 (not illustrated). — Maddocks 2007: 272 (not illustrated).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 2 RV, 4 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73333 (Apostolescu 1967: pl. 2 fig. 39 (LV), re-illustrated as Fig. 13O), MNHN.F.F73403 (Fig. 13N). – **Nouméa lagoon** • 5 RV, 2 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73501–MNHN.F.F73507.

Dimensions (illustrated specimens)

Fig. 13N. RV: L = 402 µm; H = 215 µm.

Fig. 13O. LV: L = 413 µm; H = 221 µm.

Stratigraphical and geographical distribution

Banc de l'Aiguille, Nouvelle-Calédonie, southwestern New Caledonia (Brady 1890; McKenzie 1986; Davis & Horne 1988). New Caledonia (Benson 1964; Maddocks 2007). Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

To the best of our knowledge, only the lectotype of this species has been illustrated, first as a drawing by Brady (1890) and later by SEM in McKenzie (1986), not considering the specimen identified as *Paracytheridea* sp. a in Apostolescu (1967). The ridges on the surface of the present valves are well recognizable and similar to those on the lectotype in McKenzie (1986), but the lectotype seems to be broken posteriorly. Apostolescu (1967) illustrated 1 LV, his slide containing 3 LV, all issued from station 11.

Family Paradoxostomatidae Brady & Norman, 1889

Genus ***Cytherois*** G.W. Müller, 1884

Type species

Cytherois virens G.W. Müller, 1884, by monotypy.

Cytherois sp.
Figs 3, 13P

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 C; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73404 (Fig. 13P).

Dimensions (illustrated specimen)

Fig. 13P. RV: L = 387 µm; H = 192 µm. LV: L = 392 µm; H = 192 µm.

Stratigraphical and geographical distribution

Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

The carapace at hand is very close to *Cytherois* cf. *gracilis* Hartmann, 1964 reported by Keyser & Mohammed (2021) from Al-Hudeida City, Red Sea, which was only compared to *Cytherois gracilis* because of its larger size. The present specimen is slightly shorter and higher, and at this stage we refrain from any further conclusion until more material is found.

Genus ***Paradoxostoma*** Fischer, 1855

Type species

Paradoxostoma dispar Fischer, 1855, by monotypy.

Paradoxostoma novaecaledoniae Brady, 1890
Figs 2, 13Q–R

Paradoxostoma novae-caledoniae Brady, 1890: 512, pl. 4 fig. 19.

Paradoxostoma novaecaledoniae – Benson 1964: 17 (not illustrated). — Cabioch *et al.* 1986: 29, pl. 11 fig. 10. — Cabioch 1988: 290, pl. 25 fig. 10. — Babinot & Degaugue-Michalski 1996: text-fig. 6 (not illustrated). — Maddocks 2007: 273 (not illustrated).

Paradoxostoma sp. a – Apostolescu 1967: pl. 1 fig. 17, table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 LV; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral; MNHN MNHN.F.F73337 (Apostolescu 1967: pl. 1 fig. 17, re-illustrated as Fig. 13Q–R).

Dimensions (illustrated specimen)

LV: L = 574 μm; H = 241 μm.

Stratigraphical and geographical distribution

Nouméa harbor, southwestern New Caledonia (Brady 1890). Drill core NC.14.OU, Mamié reef, southeastern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Northern New Caledonia and Chesterfield Islands (Babinot & Degaugue-Michalski 1996). Station 8, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Paradoxostoma sp.
Figs 2, 13S

Xiphichilus cf. *arenatus* (*sic*) – Apostolescu 1967: pl. 1 fig. 21, table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73338 (Apostolescu 1967: pl. 1 fig. 21, re-illustrated as Fig. 13S).

Dimensions (illustrated specimen)

RV: L = 668 μm; H = 217 μm. LV: L = 673 μm; H = 217 μm.

Stratigraphical and geographical distribution

Station 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

This species was originally attributed to *Xiphichilus* Brady, 1870 by Apostolescu (1967), a genus that has since been recognized as a junior synonym of *Paradoxostoma* (Horne & Whittaker 1985). Notably, Apostolescu (1967) identified this species as *Xiphichilus* cf. *arenatus* Brady, 1880, indicating that *arenatus* was described and illustrated by Brady (1880: pl. 35 fig. 2). We consider that this species was in fact compared with *Xiphichilus arcuatus*, illustrated in Brady (1880: pl. 35 fig. 2). Babinot & Degaugue-Michalski (1996) mentioned *Xiphichilus* cf. *arenatus* from Northern New Caledonia and Chesterfield Islands, which we interpret as indicating that their specimens are conspecific with those illustrated by

Apostolescu (1967). The absence of illustration in Babinot & Degaugue-Michalski (1996) precludes further discussion.

The specimen at hand differs from *Xiphichilus arcuatus* in being shorter and with a higher posterior end. It is close to *Paradoxostoma limbaughi* Allison & Holden, 1971 from Clipperton (Allison & Holden 1971), but its anterior margin is narrower and more triangular, and its PVB is slightly concave. Allison & Holden (1971) already pointed out the similarity of the two species.

Family Pectocytheridae Hanai, 1957

Genus ***Keijia*** Teeter, 1975

Type species

Cythere demissa Brady, 1868, by original designation.

Keijia demissa (Brady, 1868)
Figs 2, 13T

Cythere demissa Brady, 1868a: 180, pl. 12 figs 1–2.
Aenigmocythere hirundo Bonaduce *et al.*, 1976: 380, pl. 4 figs 6–11, text-fig. 4.
Pectocythere? *foveata* Hartmann, 1978: 144, pl. 14 figs 12–13; text-figs 619–620.
Hemicytheridea anterocostata Williams, 1980: 88, pl. 5 figs 2–4, 6 [nomen nudum].
? *Keijia novilunaris* Zhao in Zhao *et al.*, 1985: 211, pl. 21 figs 14–18.
Keijia borneoensis Mostafawi, 1992: 140, pl. 2 figs 41–43.

Cythere demissa – Brady 1880: 66, pl. 12 figs 1a–j; 1890: 497 (not illustrated). — Chapman 1914: 34, pl. 6 fig. 11; 1941: 197 (not illustrated). — Chapman & Crespin 1928: 169 (not illustrated). — Crespin 1943: 100 (not illustrated).
Leptocythere demissa – Hornibrook 1953: 13, 17, 21 (not illustrated). — Keij 1954: 354, pl. 1 fig. 3a–b. — Benson 1964: 16 (not illustrated). — Teeter 1973: 47, fig. 2a–g.
Callistocythere demissa – Eagar 1971: 58 (not illustrated). — De Deckker & Jones 1978: 79 (not illustrated).
Keijia demissa – Teeter 1975: 436, figs 7r–s, 8e. — Krutak 1982: 272, pl. 3 figs 17–20. — Cabioch *et al.* 1986: 25, pl. 8 figs 4–5. — Whatley & Zhao 1987: 353, pl. 5 figs 27–28. — Cabioch 1988: 285, pl. 22 figs 4–5. — Taylor 1988: 90, pl. 6 figs 10–11. — Watson 1988: 211, pl. 40 figs 15–26. — Zhao & Whatley 1989: 186 (not illustrated). — Whatley & Keeler 1989: 73, pl. 4 figs 12–14. — Gou 1990: 26, pl. 3 fig. 38a–b. — Coimbra *et al.* 1992: pl. 2 fig. 14; 1999: pl. 2 fig. 10. — Mostafawi 1992: pl. 2 fig. 44. — Jellinek 1993: 121, pl. 8 figs 171–172. — Witte 1993: 26, pl. 4 figs 10–12. — Babinot & Kouyoumontzakis 1995: 20, pl. 1 figs 20–21. — Yassini & Jones 1995: 338, figs 271–274. — Shyam Sunder *et al.* 1995: 473, pl. 1 figs 7–8. — Yassini *et al.* 1995: table 1 (not illustrated). — Hussain 1998: 6, pl. 1 fig. 16. — Mohan *et al.* 2001: 2, pl. 1 figs 14–15. — Titterton *et al.* 2001: 38, pl. 2 figs 13–19. — Coimbra & Fauth 2002: 571, fig. 3.9. — Sridhar *et al.* 2002: 23, pl. 2 fig. 1. — Wouters 2003: 144, pl. 5 figs 1–7, pl. 13 fig. 1a–b. — Hussain *et al.* 2004: table 1 (not illustrated). — Mostafawi *et al.* 2005: 130, pl. 1 fig. 15. — Warne *et al.* 2006: pl. 6 figs 7–9. — Titterton & Whatley 2009a: 48, fig. 4.29–30, pl. 2 figs 1–8. — Ganesan & Hussain 2010: fig. 3b. — Mohammed & Keyser 2012: 264, fig. 7.105–108. — Morley & Hayward 2016: appendix 1 (not illustrated). — Wang *et al.* 2019: appendix 1 (not illustrated). — Machado *et al.* 2020: fig. 6M. — Radhakrishnan *et al.* 2022: table 1 (not illustrated).
Aenigmocythere hirundo – Bonaduce *et al.* 1980: 380, pl. 4 figs 1–11.

Hemicytheridea anterocostata – Titterton 1984: 415, pl. 14 figs 5–6, pl. 51 figs 1–10.
Pectocythere foveata – Yassini & Jones 1987: 826, pl. 14 figs 12–13.
Pectocythere (?) *foveata* – Howe & McKenzie 1989: 32.
Mckenziartia foveata – Yassini & Mikulandra 1989: 133, figs 2g–i, 3g, 4b.
Keijia hirundo – Behrens 1991: 113, pl. 2 figs 12–13.
Keijia foveata – Behrens 1991: 114, pl. 3 figs 1–2.
Keija demissa [sic] – Maddocks 2007: 273 (not illustrated).
Keijia demissa s.l. – Niiyama *et al.* 2019: table 2 (not illustrated).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 4 C; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73405 (Fig. 13T).

Dimensions (illustrated specimen)

Fig. 13T. LV: L=413 μm; H=201 μm.

Stratigraphical and geographical distribution

Today, this species is circumtropical, widely distributed in the Indo-Pacific, Australasia, Atlantic and Caribbean (see synonymy and chresonymy). In the fossil record, this species has been reported from Oligocene-Holocene deposits from New Zealand (e.g., Chapman 1914; Chapman & Crespin 1928; Crespin 1943; Hornibrook 1952; De Deckker & Jones 1978) and Australia (see De Deckker & Jones 1978), though some may be misidentified according to McKenzie (1982). The synonymy and chresonymy of this species mainly follow De Deckker & Jones (1978), Witte (1993), Titterton *et al.* (2001) and Titterton & Whatley (2009a).

In New Caledonia: Nouméa, southwestern New Caledonia (Brady 1890). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). New Caledonia (Maddocks 2007). Station 11, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2).

Remarks

Witte (1993) proposed that *Keijia demissa* was passively transported by ships from the Indo-Pacific and Australian area into the Caribbean and Atlantic. Titterton *et al.* (2001) doubted this proposition without further discussion. A number of alternative transportation mechanisms are also possible, including those summarized and discussed by Coimbra & Carreño (2012) and Machado *et al.* (2020) in the context of the large-scale distribution of tropical species, such as transport on floating algae and attached sediments, island hopping during periods of low sea level, dispersal by ocean currents and winds, and broader Neogene and Quaternary sea-level changes.

Keijia demissa was not mentioned in Apostolescu (1967), but the re-observation of unidentified picked specimens in his collection reveals its presence at station 11.

Genus ***Kotoracythere*** Ishizaki, 1966

Type species

Kotoracythere abnorma Ishizaki, 1966, by original designation.

Kotoracythere inconspicua (Brady, 1880)
Figs 2–3, 13U

Cythere inconspicua Brady, 1880: 70, pl. 13 fig. 1a–d.
Cythere cuneolus Brady, 1890: 500, pl. 2 figs 6–7.
Morkhovenia kingstoni McKenzie *et al.*, 1990: 11, pl. 3 fig. 1.

Cythere inconspicua – Scott 1905: 377 (not illustrated). — Puri & Hulings 1976: 278, pl. 6 figs 10–12.
Leptocythere inconspicua – Keij 1954: 354, pl. 1 fig. 4. — Benson 1964: 16 (not illustrated). — Guha 1968: 60, pl. 4 fig. 10. — Teeter 1973: 47, fig. 1g–l.
Morkhovenia inconspicua – Teeter 1975: 435, figs 7o–q, 8c. — Bonaduce *et al.* 1980: 144, pl. 5 figs 10–14. — Krutak 1982: 271, pl. 4 figs 13–16. — Cabioch *et al.* 1986: 25, pl. 8 fig. 3. — Cabioch 1988: 285, pl. 22 fig. 3. — Behrens 1991: 113, pl. 4 figs 9–10. — Hartmann 1991: 171, pl. 2 fig. 14b. — Tabuki & Nohara 1995: 343, pl. 4 fig. 6. — Babinot & Degaugue-Michalski 1996: text-fig. 6 (not illustrated). — Zhou 1996: 70, pl. 3 fig. 2a–b. — Hoibian *et al.* 2000: pl. 1 fig. 4.
Munseyella inconspicua – Holden 1976: 34, pl. 1 figs 14–16, pl. 11 figs 3–5.
Pectocythere sp. *ceduna* 120 – Hartmann 1980: 123, pl. 3 figs 14–17.
Kotoracythere cf. *inconspicua* – Williams 1980: 90, pl. 15 fig. 5.
Morkhovenia cf. *inconspicua* – Hartmann 1981: 120, pl. 10 figs 1–6, text-figs 58–61b.
Kotoracythere inconspicua – Keeler 1981: 155, pl. 9 figs 5–7. — Titterton 1984: 430, pl. 14 figs 8–9, pl. 50 figs 11–20. — Titterton & Whatley 1988: 776 (not illustrated). — Watson 1988: 214, pl. 41 figs 1–10. — Weissleader *et al.* 1989: appendix 1 (not illustrated). — Zhao & Whatley 1989: 186 (not illustrated). — Whatley & Keeler 1989: 76, pl. 3 fig. 11, pl. 5 figs 6–7. — Gou 1990: 26, pl. 3 fig. 37a–b. — Witte & Van Harten 1991: 434, figs 3a–n, 4a–x, 5a–v. — Coimbra *et al.* 1992: pl. 1 fig. 4. — Jellinek 1993: 121, pl. 7 figs 157–165, pl. 8 figs 166–170. — Witte 1993: 25, pl. 3 figs 19–22. — Babinot & Kouyoumontzakis 1995: 28, pl. 1 figs 12–13. — Whatley & Roberts 1995: fig. 1.24. — Yassini & Jones 1995: 338, figs 287–288. — Sridhar *et al.* 1998: 193, fig. 3b; 2002: 22, pl. 2 figs 17–20; 2007: 131, tab. 5.3, 134–135, tabs 5.4–5.5, 136, fig. 5.1k. — Coimbra *et al.* 1999: pl. 2 fig. 11. — Titterton *et al.* 2001: 38, pl. 2 figs 13–19. — Coimbra & Fauth 2002: 572, fig. 3.10. — Wouters 2003: 144, pl. 6 figs 1–7, pl. 12 fig. 5a–b. — Mostafawi *et al.* 2005: 130, pl. 1 figs 10–12. — Warne *et al.* 2006: pl. 6 fig. 6. — Maddocks 2007: 272 (not illustrated). — Coimbra *et al.* 2009: 131, tab. 5.3, 134–135, tabs 5.4–5.5, 136, fig. 5.1k.— Titterton & Whatley 2009a: 52, fig. 4.32–33, pl. 2 figs 23–28. — Coimbra & Carreño 2012: tables 2–3 (not illustrated). — Mohammed *et al.* 2012: 160, pl. 4 fig. 60. — Mohammed & Keyser 2012: 262, fig. 7.101–104. — Machado *et al.* 2020: fig. 6l. — Keyser & Mohammed 2021: 11, pl. 4 figs 61–62. — Yassini & Jones 2023: pl. 149 figs 4–8. — Luz & Coimbra 2022: 313, fig. 4: 21–22.
Morkhovenia cuneola – McKenzie 1986: pl. 2 fig. 8.
Pectocythere? sp. 3 – Tabuki & Nohara 1988: pl. 1 figs 3–4.
Kotoracythere inconspicua s.l. – Niiyama *et al.* 2019: table 2 (not illustrated).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73406 (Fig. 13U). – **Nouméa lagoon** • 1 C, 1 RV; La Prévoyante beacon; geographical coordinates unknown;

depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73508, MNHN.F.F73509.

Dimensions (illustrated specimen)

Fig. 13U. LV: L = 424 µm; H = 228 µm.

Stratigraphical and geographical distribution

Miocene to Recent (see Titterton & Whatley 2009a), circumtropical, widely distributed in tropical sublittoral environments across the Indo-Pacific (except eastern Pacific), Australia, Senegal, Gambia, Cape Verde Islands, Brazilian shelf (see synonymy and chresonymy).

In New Caledonia: Banc de l'Aiguille, Nouméa, southwestern New Caledonia (Brady 1890; McKenzie 1986). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). Chesterfield Islands and Northern New Caledonia (Babinot & Degaugue-Michalski 1996). Néra Delta, western New Caledonia (Hoibian *et al.* 2000). Station 11, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

This species was not mentioned in Apostolescu (1967), but the re-observation of unidentified picked specimens in his collection reveals its presence at station 11.

Genus ***Pectocythere*** Hanai, 1957

Type species

Pectocythere quadrangulata Hanai, 1957, by original designation.

***Pectocythere*?** sp.
Figs 3, 13V

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 RV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73407 (Fig. 13V).

Dimensions (illustrated specimen)

Fig. 13V. Juvenile RV: L = 361 µm; H = 196 µm.

Stratigraphical and geographical distribution

Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

The available right valve is a juvenile specimen and is only questionably assigned to *Pectocythere* until additional material, including adult specimens, are found.

Family Thaerocytheridae Hazel, 1967

Genus ***Neobuntonia*** Hartmann, 1981

Type species

Neobuntonia siebertorum Hartmann, 1981, by original designation.

Remarks

Neobuntonia was originally assigned to the Hemicytheridae Puri, 1953 by Hartmann (1981), a placement followed by Neil (1994), who further specified that the genus belongs to the tribe Hemicytherini Puri, 1953. More recently, Titterton & Whatley (2008) considered its familial assignment to remain uncertain because of its rarity and the fact that the genus was established on the basis of only three specimens. We follow their interpretation and provisionally place *Neobuntonia* in the Thaerocytheridae, based on their observations of the muscle scar pattern of *Neobuntonia subalata* Titterton & Whatley, 2008.

Neobuntonia cf. ***guttata*** (Brady, 1890)
Figs 3, 13W

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 1 C; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73408 (Fig. 13W).

Dimensions (illustrated specimen)

Fig. 13W. RV: L = 531 μm; H = 326 μm. LV: L = 531 μm; H = 346 μm.

Stratigraphical and geographical distribution

Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

The carapace at hand is very close to *Cytheropteron guttatum* Brady, 1890 described from Nouméa (Brady 1890), which was since re-attributed to ?*Pseudaurila* Hu, 1981 (McKenzie 1986) and to *Neobuntonia* (Maddocks 2007), a position that we follow. Since the description of this species and re-illustration of the type-specimen by McKenzie (1986), specimens have only been compared to it (e.g., Mostafawi *et al.* 2005; Faiz & Omar 2016). This uncertainty in subsequent identifications may be related to the rarity of the specimens, as noted by Mostafawi *et al.* (2005), and to doubts concerning the fine ornamentation of Brady's specimen, which is hardly discernible on McKenzie's photograph. Brady (1890) described the surface of *Neobuntonia guttata* (Brady, 1890) as "smooth, marked throughout with closely-set circular, impressed puncta". New observations of the lectotype are needed to obtain high resolution images of the entire surface of both valves. The specimen at hand differs from what is visible on the lectotype by the less dense punctation, muri between punctae not bulbous and the lack of ridge-forming muri anteriorly and posteriorly. It is thus here only referred to as *Neobuntonia* cf. *guttata*. Of note, *Neobuntonia subalata* Titterton & Whatley, 2008 was described from the Solomon Islands without comparison to *Neobuntonia guttata*, in spite of their morphological similarity.

Neobuntonia sp. 1
Figs 2, 14A–B

Echinocythereis obtusalata – Apostolescu 1967: pl. 2 fig. 42, non fig. 41 [= *Neobuntonia* sp. 2], table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73320 (Apostolescu 1967: pl. 2 fig. 42, re-illustrated as Fig. 14A–B).

Dimensions (illustrated specimen)

Fig. 14A–B. RV: L = 699 µm; H = 389 µm.

Stratigraphical and geographical distribution

Station 7, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

Apostolescu (1967) illustrated 2 RV identified as *Echinocythereis obtusalata* (Brady, 1880) that are here re-illustrated in Fig. 14A–B, D–E, stating that this species occurs at stations 7 and 9, without further detail. *Cythere obtusalata* Brady, 1880 was described from Moncœur Island, Bass Straits (Brady 1880; Puri & Hulings 1976) and re-attributed to *Quadracythere* by Yassini & Jones (1987). The two specimens from the Apostolescu collection are not conspecific as the valve shown in Fig. 14A–B displays a ventro-lateral ala, pustules and spines predominantly developed ventrally and reticulation that is dense ventrally and sparse dorsally with micropapillate sola, whereas the specimen in Fig. 14D–E lacks an ala, exhibits much denser punctation and pustules, as well as a more pronounced and more rounded eye-tubercle.

The RV illustrated in Fig. 14A–B is attributed to *Neobuntonia* based on its lateral outline, ornamentation and amphidont hinge. At the time of description of the genus, Hartmann (1981) neither mentioned nor illustrated the AMS, either for the genus or for the type species. Here, we follow Titterton & Whatley (2008) in considering the AMS of *Neobuntonia* to be composed of four ovate adductor scars, except for the more elongate ventro-median scar, and two small, vertically aligned, ovate frontal scars. A prominent fulcral point is present between the dorso-median adductor and dorsal frontal scar. The fulcral point is particularly prominent in the present specimen. *Neobuntonia* is a rather rare Pacific genus and this RV differs from all known species by the combination of a subrectangular outline, reticulo-punctate ornamentation with interspersed papillae that become spines ventrally, and ventro-lateral inflation expressed as a wing-like process outlined by an outer ridge. More specimens are nonetheless needed to go further.

Notes found in the collection indicate that this species was collected at station 7.

Neobuntonia sp. 2
Figs 2, 14C–E

Echinocythereis obtusalata (Brady, 1880) – Apostolescu 1967: pl. 2 fig. 41, non fig. 42 [= *Neobuntonia* sp. 1], table 1.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV, 1 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73319 (Apostolescu 1967: pl. 2 fig. 41 (RV), re-illustrated as Fig. 14D–E), MNHN.F.F73410 (Fig. 14C).

Dimensions (illustrated specimens)

Fig. 14C. LV: L = 523 µm; H = 341 µm.

Fig. 14D–E. RV: L = 690 µm; H = 452 µm.

Stratigraphical and geographical distribution

Station 9, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

As for the previous species, these specimens are re-attributed to *Neobuntonia* based on their lateral outline, ornamentation, amphidont hinge, and AMS, which also displays a prominent fulcral point. They are retained in open nomenclature pending the availability of additional specimens.

Notes found in the collections indicate that the RV from Apostolescu (1967) was collected at station 9 and the re-observation of his picked, unidentified specimens provided an additional LV from the same station.

Genus ***Neohornibrookella*** Jellinek, 1993 emend. Warne & Whatley, 2016

Type species

Hermanites transoceanica Teeter, 1975, subsequently designated by Warne (2018).

Neohornibrookella sp.
Figs 3, 14F

Selected material examined

NEW CALEDONIA – **Prony Bay** • 2 RV, 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73409 (Fig. 14F).

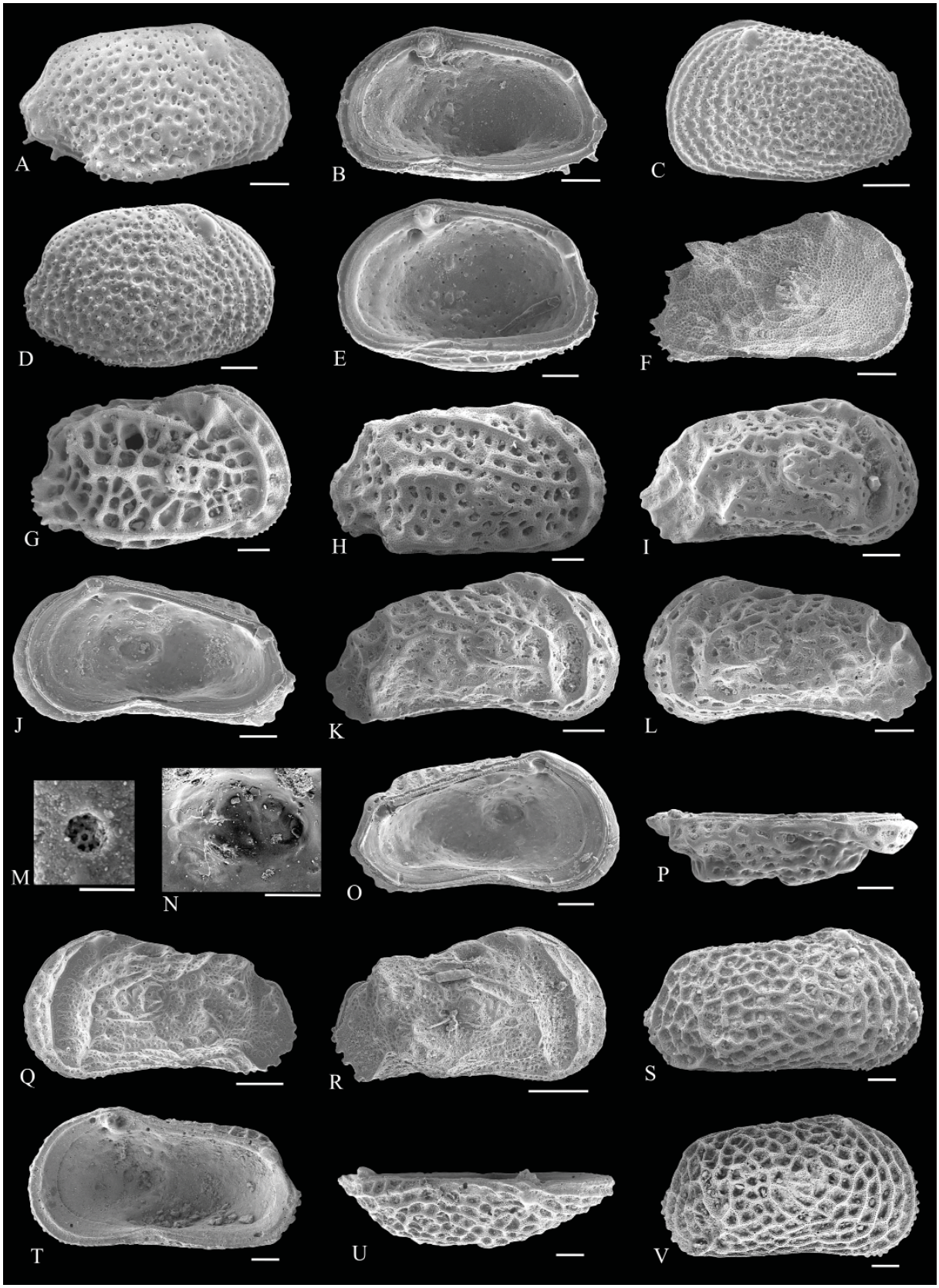
Dimensions (illustrated specimen)

Fig. 14F. Juvenile RV: L = 657 μm; H = 382 μm.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Fig. 14 (next page). SEM micrographs of ostracods from New Caledonia. **A–B**. *Neobuntonia* sp. 1, RV, station 7 (Apostolescu 1967: pl. 2 fig. 42) (MNHN.F.F73320). **A**. Outer view. **B**. Inner view. **C–E**. *Neobuntonia* sp. 2. **C**. LV, outer view, station 9 (MNHN.F.F73410). **D–E**. RV, station 9 (Apostolescu 1967: pl. 2 fig. 41) (MNHN.F.F73319). **D**. Outer view. **E**. Inner view. **F**. *Neohornibrookella* sp., juvenile RV, outer view, station B (MNHN.F.F73409). **G**. *Bosasella elongata* (Hu, 1979), C, right view, station 9 (MNHN.F.F73411). **H**. *Bosasella* cf. *gigas* Jellinek, 1993, RV, outer view, station 4 (MNHN.F.F73412). **I–R**. *Adencythere torticollis* (Brady, 1890) emend. **I–J**. RV, station 9 (Apostolescu 1967: pl. 2 fig. 53) (MNHN.F.F73317). **I**. Outer view. **J**. Inner view. **K**. RV, station 9, outer view (MNHN.F.F73368). **L**. LV, station 9, outer view (MNHN.F.F73369). **M–O**. LV, station 9 (MNHN.F.F73370). **M**. Sieve pore on the outer surface. **N**. Detail of AMS (see interpretative sketch in Fig. 18F). **O**. Inner view. **P**. RV, dorsal view, same specimen as in Fig. 14I–J. **Q**. Juvenile LV, outer view, station 11 (MNHN.F.F73371). **R**. Juvenile C, right view, station 9 (MNHN.F.F73372). **S–V**. *Lankacythere scotti* (Brady, 1890) emend., station A. **S–U**. Adult, RV (MNHN.F.F73419). **S**. Outer view. **T**. Inner view. **U**. Dorsal view. **V**. Adult RV, outer view (MNHN.F.F73420). Scale bars: A–L, O–V = 100 μm; M = 10 μm; N = 50 μm.


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Remarks

All available specimens are juveniles and closely resemble the juvenile stages of several species from southeastern Australia, including *Neohornibrookella glyphica* (Neil, 1994) from the early to late Miocene, *Neohornibrookella sorrentae* (Chapman & Crespin, 1928) from the early to late Miocene, and *Neohornibrookella nepeani* Warne & Whatley, 2016 from the late Miocene and early Pliocene (Warne & Whatley 2016). Until adults are discovered, these specimens cannot be confidently identified at the species level.

Genus ***Bosasella*** Bonaduce, 1985

Type species

Bosasella borchersi (Hartmann, 1964), by original designation.

Bosasella elongata (Hu, 1979)
Figs 2–3, 14G

Radimella elongata Hu, 1979: 63, pl. 1 figs 11–12.

Genus Uncertain species HA – Maddocks 1966: 57, fig. 38-1.
Bradleya sp. a – Apostolescu 1967: pl. 2 figs 43–45, table 1.
Jugosocythereis sp. – Benson 1972: 124, pl. 8 fig.1.
Bradleya sp. – Hughes 1977: pl. 70 fig. 16.
Radimella macroloba – Hu 1981: 189, pl. 4 figs 23, 25, 27–28. — Zhao & Wang 1988: 816, pl. 2 fig. 29.
Jugosocythereis sp. a (Apostolescu) – Cabioch *et al.* 1986: 27, pl. 9 fig. 7. — Cabioch 1988: 288, pl. 23 fig. 7.
Bradleya elongata – Gou 1990: 28, pl. 2 fig. 25.
Bosasella elongata – Jellinek 1993: 148, pl. 24 figs 391–398. — Mostafawi *et al.* 2005: 132, pl. 2 figs 8–9. — Noraswana *et al.* 2014: table 3 (not illustrated). — Tian *et al.* 2024: table 2 (not illustrated).
Tenedocythere elongata – Hoibian *et al.* 2002: pl. 1 fig. 18. — Maddocks 2007: 273 (not illustrated). — Titterton & Whatley 2008: 31, fig. 4.24–25, pl. 4 figs 18–24, 27.

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 RV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73510. – **Saint-Vincent Bay** • 1 C (Apostolescu 1967: pl. 2 figs 41–45, lost); geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral • 1 C; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73411 (Fig. 14G).

Dimensions (illustrated specimen)

Fig. 14G. RV: L = 814 μm; H = 462 μm. LV: L = 814 μm; H = 484 μm.

Stratigraphical and geographical distribution

Miocene and recent, Solomon Islands (Hughes 1977; Titterton & Whatley 2008). Miocene of Enewetak Atoll, equatorial Pacific Ocean (Mostafawi *et al.* 2005). Pleistocene, Hengchun Formation, Southern Taiwan (Hu 1979, 1981). Nosy Be, Madagascar (Maddocks 1966). Grand Comoro Island, Indian Ocean (Benson 1972). Drill core NC.35.PV, fringing reef Ricaudy, Nouméa, southwestern New Caledonia (Cabioch *et al.* 1986; Cabioch 1988). China Sea (Zhao & Wang 1988). Hainan island, South China

Sea (Gou 1990). Kenya (Jellinek 1993). Roche Percée Bay, southwestern New Caledonia (Hoibian *et al.* 2002). Bali, Indonesia (Mostafawi *et al.* 2005). Sulu Sea, Malaysia (Noraswana *et al.* 2014). Zanzibar Archipelago, Tanzania (Tian *et al*. 2024). Stations 4 and 9, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Apostolescu (1967) mentioned that this species, identified as *Bradleya* sp. a, occurs at station 4 within Saint-Vincent Bay. The illustrated carapace was not found in the collection and is considered lost. The re-observation of the unidentified picked specimens in his collection reveals its presence at station 9.

Bosasella cf. ***gigas*** Jellinek, 1993
Figs 2, 14H

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 RV; geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral; MNHN MNHN.F.F73412 (Fig. 14H).

Dimensions (illustrated specimen)

Fig. 14H. RV: L = 852 μm; H = 469 μm.

Stratigraphical and geographical distribution

Station 4, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2).

Remarks

This species was not mentioned in Apostolescu (1967), but the re-observation of unidentified picked specimens in his collection reveals its presence at station 4. It is very close to *Bosasella gigas* Jellinek, 1993 described from Kenya (Jellinek 1993). Both species are rather elongate, large, with no prominent lateral ridges as on other species of the genus. However, the present specimen has more developed dorsal and postero-median ridges and a more produced posterior end.

Family Trachyleberididae Sylvester-Bradley, 1948

Genus ***Adencythere*** Mohammed & Keyser, 2014

Type species

Adencythere kodalnamerensis Mohammed & Keyser, 2014, by original designation.

Adencythere torticollis (Brady, 1890) emend.
Figs 2–3, 14I–R, 15A, 18F; Table 7

Cythere torticollis Brady, 1890: 500, pl. 3 figs 1–2.

Cythereis torticollis – G.W. Müller 1912: 345 (not illustrated).
Cythere torticollis – Benson 1964: 15 (not illustrated).
Murrayina sp. a – Apostolescu 1967: pl. 2 fig. 53, table 1.
"*Cythereis*" *torticollis* – McKenzie 1986: pl. 2 fig. 11. — Davis & Horne 1988: 42 (not illustrated).
Coquimba torticollis – Maddocks 2007: 273 (not illustrated).

New diagnosis

A large *Adencythere* species with strongly ornamented surface encompassing large and deep antero-marginal sulcus, three shoulders (postero-dorsal, postero-median, posterior), six main ridges (anterior, ocular, antero-median, postero-median, dorsal, posterior) and subalate postero-ventral tubercle ending by a unique fossa.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C, 6 RV, 5 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73317 (Apostolescu 1967: pl. 2 fig. 53 (RV), re-illustrated as Fig. 14I–J, P), MNHN.F.F73368 (Fig. 14K), MNHN.F.F73369 (Fig. 14L), MNHN.F.F73370 (Fig. 14M–O), MNHN.F.F73372 (Fig. 14R) • 1 RV, 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73371 (Fig. 14Q). – **Nouméa lagoon** • 1 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73511.

Original description

"Shell, seen from the side, oblong, somewhat higher in front than behind, height scarcely equal to half the length. Anterior extremity obliquely rounded, and slightly crenated below the middle, posterior produced in the middle, its lower half divided into five or six short and broad teeth; dorsal margin prominent over the anterior hinge, thence sloping gently in a sinuous line backwards; ventral margin slightly sinuous throughout. Seen from above, the outline is very irregular, twice as long as broad, widest near the posterior extremity; lateral margins deeply indented at several points, converging suddenly and in a very zig-zag line to the posterior extremity, which forms a triangular, centrally-emarginate prominence; the anterior extremity is wider, rounded, and emarginate in the middle. Surface of the valves very rugose, a wide ridge just within and parallel to the anterior margin, an abrupt and irregular transverse ridge near the posterior extremity, and irregularly disposed ridges with numerous large fossae on the central portion." (Brady 1890: 500).

Emended description

In adults, both valves oblong in lateral view with Hmax at ACA and Lmax below mid-H. Anterior margin large, infracurvate, laterally compressed, coarsely denticulate in lower half. DB long (ca ⅔ of L), sloping posteriorly (ca 10°), masked by dorsal ridge behind mid-L (Fig. 14J, O). Ventral margin largely concave in both valves. Behind PCA, upper outline concave in RV, straight in LV, joining straight lower outline into a short caudal process bordered by four to six thick and short teeth. Posterior margin laterally compressed. Eye-tubercle small, round, smooth, located in front of ACA. Prominent rounded subcentral tubercle in front of mid-L. In dorsal view, outline subrectangular, laterally compressed anteriorly and posteriorly with Wmax along inflated median surface, bounded by antero-marginal sulcus and ventral branch of dorsal ridge (Fig. 14P).

Lateral surface with moderately deep and variably celate fossae. Muri thick, foveolate, with mural ridges; solum micropapillate. Fossae very shallow behind PCA and within antero-marginal sulcus, where they are large and subsquare. Six prominent ridges and three shoulders linked by a network of variously expressed ridges, including (Fig. 15A):

- ocular ridge descending from eye-tubercle, bifurcating antero-ventrally to form an islet with two fossae, and continuing to PVB;
- variably expressed anterior ridge between anterior margin and ocular ridge, running from above eye-tubercle to ventral surface;
- dorsal ridge convex above DB behind mid-L, forming postero-dorsal shoulder with sinuous vertical branch that descends subvertically, reaching ventral margin on RV, fading below postero-median shoulder on LV;

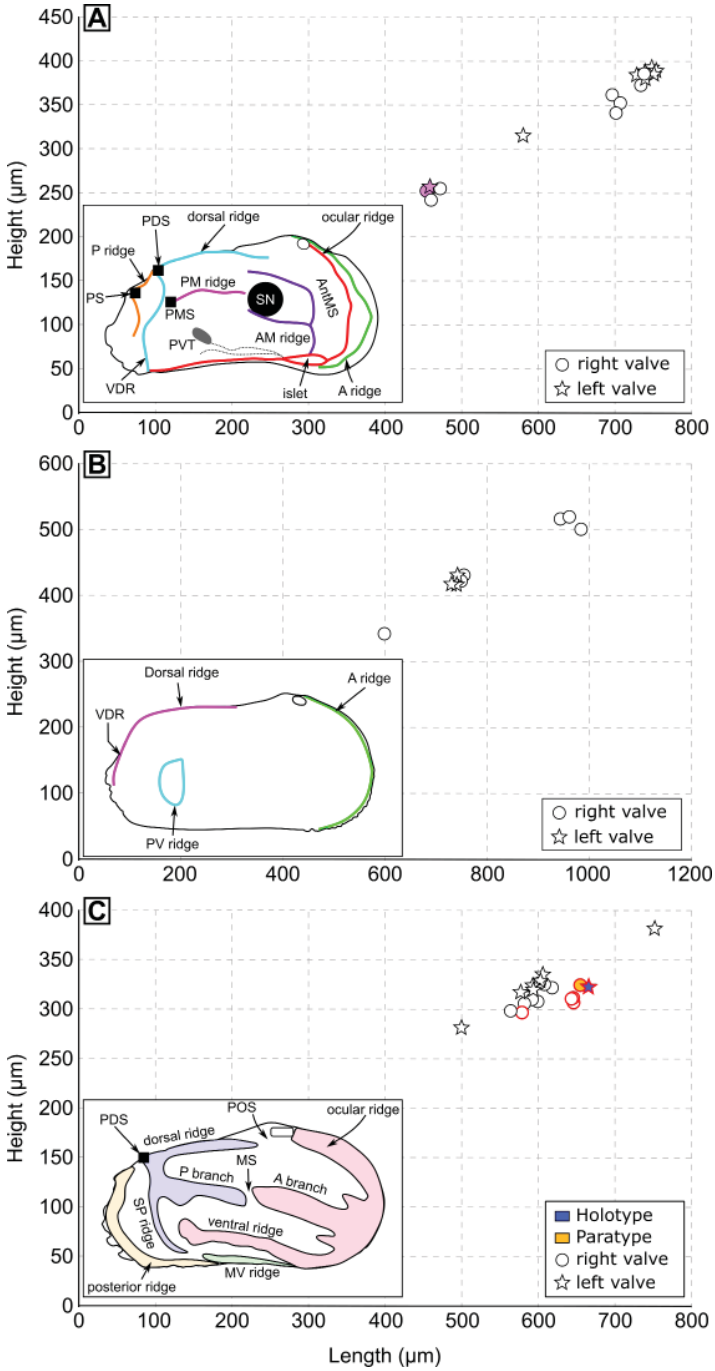


Fig. 15. Height/length scatter plots of new and emended species, including schemes showing diagnostic ornamental features. **A**. *Adencythere torticollis* (Brady, 1890) emend. **B**. *Lankacythere scotti* (Brady, 1890) emend. **C**. *Ponticocythereis impressionista* Forel sp. nov. Red outlines in the diagram indicate specimens with the subposterior ridge disconnected from the dorsal ridge. For carapaces, right and left valves have been measured separately, and are shown in the same colour. Abbreviations: A branch = anterior branch; A ridge = anterior ridge; AM ridge = antero-median ridge; AntMS = antero-marginal sulcus; MS = median sulcus; MV ridge = margino-ventral ridge; P branch = posterior branch; PDS = postero-dorsal shoulder; PM ridge = postero-median ridge; PMS = postero-median shoulder; POS = post-ocular sinus; P ridge = posterior ridge; PS = posterior shoulder; PV ridge = postero-ventral ridge; PVT = postero-ventral tubercle; SN = subcentral node; SP ridge = subposterior ridge; VDR = vertical branch of dorsal ridge.

- posterior ridge emerging from postero-dorsal shoulder, composed of two concave segments separated by posterior shoulder, fading ventrally;
- antero-median ridge rising vertically from antero-ventral islet of ocular ridge and bifurcating in two branches around subcentral tubercle;
- postero-median ridge subhorizontal, sinuous, between subcentral tubercle and postero-median shoulder.

Small and variously expressed subventral ridges converge posteriorly to form the subalate postero-ventral tubercle that ends in a flat surface bearing one fossa. Secondary ridges emerge dorsally from the postero-median ridge, merging with the dorsal ridge.

Antero-marginal sulcus large, deep, delimitated by ocular ridge and vertical branch of antero-median ridge. Subcentral tubercle ending posteriorly by two extensions resembling animal paw. Normal pores of sieve type with central setal pore (Fig. 14M), on muri and conuli.

Internally, avestibulate with calcified inner lamella well developed, mainly anteriorly and posteriorly. AMS in posterior part of muscle pit, composed of a row of four (or five?) undivided packed scars, the second one being thicker, with U-shaped frontal scar in the anterior part of muscle pit (Figs 14N, 18F). Hinge holamphidont (Fig. 14J, O) with finely crenulate median groove in RV, including crenulation above anterior tooth.

Dimensions

Fig. 15A, Table 7.

Stratigraphical and geographical distribution

Dredged in depths of ca 3.7–11.0 m and at Artillery Point, Nouméa, New Caledonia (Brady 1890; McKenzie 1986) (McKenzie 1986 mentioned that the lectotype is issued from the Banc de l'Aiguille, Nouméa). New Caledonia (Benson 1964; Maddocks 2007). Stations 9 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station A, southwestern lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

Cythere torticollis (Brady, 1890) was described from Nouméa (Brady 1890; McKenzie 1986) and an RV identified as *Murrayina* sp. a from station 9 was illustrated by Apostolescu (1967). The specimens in these publications remained the only illustrated so far, all subsequent mentions of the species corresponding to taxonomic lists or to tentative generic re-attributions. This species is thus so far known from New Caledonia only. The re-observation of unidentified picked specimens in the collections of Apostolescu reveals the presence of this species also at station 11. The micropaleontological slide containing specimens related to Apostolescu (1967) contains 1 RV and 2 LV from the same station that were not illustrated. The specimens examined here provide the first detailed insights into the morphology of the inner valve surface of this species, which was previously undocumented. They also provide an opportunity to thoroughly re-describe its surface ornamentation, previously only roughly depicted, and to document and illustrate its juvenile morphology. We therefore provide herein a new diagnosis and an emended description of this species, and re-attribute it to *Adencythere*.

This species was originally attributed by Brady (1890) to the genus *Cythere* O.F. Müller, 1875. It was later re-assigned to *Cythereis* Jones, 1849 by G.W. Müller (1912), and subsequently referred to as "*Cythereis*" by McKenzie (1986). Maddocks (2007) proposed that it should be placed in *Coquimba* Ohmert, 1968, but did not provide further details. *Coquimba* (type species *Coquimba hermi* Ohmert, 1968) is "a roughly rectangular genus of the new subfamily (note: Hemicytherinae Ohmert, 1968) with valves that are convex but laterally flattened, bearing more or less pronounced, posteriorly directed,

Table 7. Dimensions of the figured specimens of *Adencythere torticollis* (Brady, 1890) emend. Abbreviation: na = not available.

	RV		LV	
	L (µm)	**H (µm)**	**L (µm)**	**H (µm)**
Fig. 14I–J, P	738	386	na	na
Fig. 14K	706	353	na	na
Fig. 14L	na	na	740	381
Fig. 14M–O	na	na	748	394
Fig. 14Q	na	na	580	317
Fig. 14R	453	252	458	258

internally hollow posteroventral and posterodorsal protrusions; these, however, do not protrude wing-like from the lateral surface. A distinct ventral rib is always present in the anterior half of the valves" (Ohmert 1968: 137, translated from German). In the description of the genus, Ohmert (1968) indicated that AMS could not be observed, but that it is diagnosed by its postero-ventral and postero-dorsal protrusions and marginal dentition. Yet, Ohmert described the AMS of the type species *Coquimba hermi* as follows: "in the anterior upper quarter of the muscle pit, two frontal scars occur obliquely one above the other, the lower one usually constricted. Three obliquely oriented, parallel adductor scars are present in the posterior lower quarter of the muscle pit; the second-lowest is divided but still closely connected, such that the division is visible only in transmitted light. Two upper, crescent-shaped, vertically oriented, parallel adductor scars are also present." (Ohmert 1968: 139–140, translated from German). Although species with different AMS have since been described, including *Coquimba birchi* Dingle, 1993 from the southwestern Cape, South Africa, with four adductor scars, two additional scars dorsally and a large V-shaped anterior scar (Dingle 1993), the AMS of the specimens at hand significantly deviates from that of *Coquimba*. Similarly, their overall outline and characteristics differ, including their lower, elongate and less rectangular carapace with a distinct ornamentation pattern and avestibulate nature. Since the re-attribution to *Coquimba* by Maddocks (2007), the genus *Adencythere* was described from the Gulf of Aden (Mohammed & Keyser 2014). The type species *Adencythere kodalnamerensis* has an elongated, medium-sized carapace, with a well-developed eye-tubercle, and four ridges: 1) a thick frontal ridge running from the eye-tubercle parallel to the anterior margin, 2) a ventro-lateral ridge connected to the frontal one antero-ventrally, running parallel to the ventral margin and ending in a pronounced knob, forming a wing-like small alar extension (here: postero-ventral tubercle), 3) a median ridge starting obliquely from the antero-ventral margin, thickening around the subcentral tubercle and terminating in a small knob without reaching the posterior margin (here: postero-dorsal shoulder), 4) a dorsal ridge overreaching the dorsal edge, extending behind the ocular node to the posterior third of the length. Small minor ribs interconnect the median ridge with the three others. The surface of the valves is covered by wide and shallow fossae and secondary small pits. Its hinge is holamphidont, with in the RV: 1) a high and conical anterior tooth, 2) a large adjacent socket, 3) a crenulated median groove that terminally deepens and widens, and 4) a large posterior weakly-lobed tooth. Its AMS is composed of four slightly oblique unequal adductor scars, with a V-shaped frontal scar located in the sub-central tubercle. Its inner lamella is moderately wide, without a vestibule. It is notable that the information on ridges of *Adencythere* is rather confusing, as the diagnosis of the genus mentions four ridges, without providing details other than for the frontal ridge. The description of the type species also indicates four ridges (Mohammed & Keyser 2014: 1041: "The surface is ornamented with three ribs running along the lateral surface of the carapace with a relatively thicker frontal marginal one"), but only describes three in total. We therefore add here a description of what we consider to be the fourth, dorsal ridge.

The specimens from New Caledonia are fully consistent with the outer and inner characters of this genus, and *Cythere torticollis* is here re-attributed to *Adencythere*. The ornamentation pattern of *Adencythere torticollis* has, however, here been described differently from Mohammed & Keyser (2014), as the original description is rather confusing, as already indicated. Besides the issue concerning the ridges, the deep antero-marginal sulcus is not mentioned in the original diagnosis and description but is clearly visible on the type specimens. In terms of outline, *Adencythere torticollis* differs from *Adencythere kodalnamerensis*, the only species so far known for this genus, in being more rounded dorsally with a less expressed ACA and more protruding posterior end. Laterally, its dorsal ridge is located more posteriorly, it has a thin posterior ridge and lacks subsquare fossae aligned along the postero-ventral and posterior margins. The bulbous frontal ridge of *Adencythere kodalnamerensis* encompasses the ocular and anterior ridges of *Adencythere torticollis*, the latter being only visible as a mural ridge in *kodalnamerensis*. The antero-marginal sulcus is crossed by thick bridges in *Adencythere kodalnamerensis*, which are reduced in the present specimens. In the type species, the median ridge is continuous, and forms a perforated bridge posterior to the subcentral node (intermural ponticulus in the sense of Sylvester-Bradley & Benson 1971). In *Adencythere torticollis*, the absence of a bridge is at the origin of the subdivision of the median ridge into antero-median and posterior ridges. The paw-like ornamentation of the subcentral tubercle of *Adencythere torticollis* lacks in *Adencythere kodalnamerensis*. The anterior socket of the hinge in the LV is more elongate in *torticollis*, with the subsequent tooth less protruding and crenulation occurring above it. It is notable that Mohammed & Keyser (2014) indicate that they didn't see a sieve structure in the lateral pores. The present observations conversely reveal the presence of sieve pores on *Adencythere torticollis* (Fig. 14M).

In juveniles of *Adencythere torticollis* (Fig. 14Q–R), the diagnostic pattern of prominent ridges, sulcus, shoulders and subcentral tubercle are well recognizable, including paw-like structure. The entire surface of the juveniles, except for the eye-tubercle, is foveolate, with fossae that are finer and shallower than in adults, and with mural ridges.

Genus ***Lankacythere*** Bhatia & Kumar, 1979

Type species

Cythere coralloides Brady, 1886, by original designation.

Lankacythere scotti (Brady, 1890) emend.
Figs 3, 14S–V, 15B, 16A–E

Cythere scotti Brady, 1890: 499, pl. 3 figs 3–4.

Cythereis scotti – G.W. Müller 1912: 343 (not illustrated).
?*Thalmannia scotti* – McKenzie 1986: pl. 1 fig. 10. — Davis & Horne 1988: 41 (not illustrated).
Lankacythere scotti – Maddocks 2007: 273 (not illustrated).

New diagnosis

A large species of *Lankacythere* characterized by a reticulate surface with polygonal fossae bounded by broad, foveolate muri surmounted by thin, smooth mural ridges

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 6 RV, 3 LV; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73419 (Fig. 14S–U), MNHN.F.F73420 (Figs 14V, 16A), MNHN.F.F73421 (Fig. 16B–C), MNHN.F.F73422 (Fig. 16D–E).

Original description

"Shell, seen from the side, subquadrate, higher in front than behind; height equal to rather more than half the length. Anterior extremity wide and boldly rounded, and bearing a variable number of small fringing spines; posterior imperfectly rounded, its lower half slightly produced and bearing about six blunt marginal teeth; dorsal margin prominent over the anterior hinge, thence sloping gently backwards with a slight sinuation, and rounded at its junction with the posterior extremity, ventral almost perfectly straight. Seen from above, very broadly ovate, greatest width behind the middle, and equal to two-thirds of the length, lateral margins boldly curved and forming a continuous sweep with the wide anterior extremity; from the widest part of the shell the sides converge abruptly backwards, and terminate in a wide, truncated, central prominence; margins everywhere jagged or crenated. Shell-surface marked with a raised reticulated pattern, enclosing irregular polygonal excavations." (Brady 1890: 499–500)

Emended description

Carapace large, subrectangular in lateral view with Hmax at ACA and Lmax around mid-H. Anterior margin broad, equicurvate, antero-ventrally bordered by short and stout marginal spines. DB long, very gently sloping towards PCA at an angle of ca 20° in small specimens and 5° in larger ones, obscured by dorsal ridge. Behind PCA, outline sloping straight to slightly concave toward posterior located below mid-H. Posterior margin truncated ventrally, postero-ventrally bordered by short, blunt marginal denticles. Posterior end laterally compressed behind PCA, postero-ventrally bordered by marginal denticles. Eye-tubercle small, smooth, below ACA. In dorsal view, outline uniformely convex with Wmax just in front of mid-L (Fig. 14U).

Lateral surface uniformly reticulated, with slight interruption on the AMS area on juveniles (Fig. 16B, D). Fossae large, deep, polygonal and randomly arranged except anteriorly, where subrectangular fossae are organized in concentric rows parallel to the margin. Fossae bounded by broad, foveolate muri surmounted by thin, smooth mural ridges. Fossae large, shallow, with solum entirely foveolate in juveniles (Fig. 16B, D).

Surface marked by three fine but distinct ridges (Fig. 15B):
- anterior ridge originating above eye-tubercle, descending to AVB;
- dorsal ridge originating at mid-L, posteriorly overhanging DB, with sinuous vertical branch extending from PCA to postero-ventral slope;
- postero-ventral ridge at the termination of the latero-ventral inflation, short, curving on itself to delimit a subovoid area containing four fossae.

Internally, hinge holamphidont in RV with: 1) a smooth, stepped anterior tooth with low anterior portion, 2) round, smooth socket, 3) median socket finely denticulate, 4) posterior tooth subrectangular, slightly lobate dorsally. Calcified inner lamella moderately wide, AMS and marginal pore canals not seen.

Dimensions (illustrated specimens)

Fig. 14S–U. RV: L = 960 µm; H = 520 µm.

Figs 14V, 16A. RV: L = 943 µm; H = 518 µm.

Fig. 16B–C. LV: L = 741 µm; H = 418 µm.

Fig. 16D–E. RV: L = 599 µm; H = 342 µm.

All specimens available: Fig. 15B.

Stratigraphical and geographical distribution

Banc de l'Aiguille, Nouméa, southwestern New Caledonia (Brady 1890; G.W. Müller 1912; McKenzie 1986). New Caledonia (Maddocks 2007). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

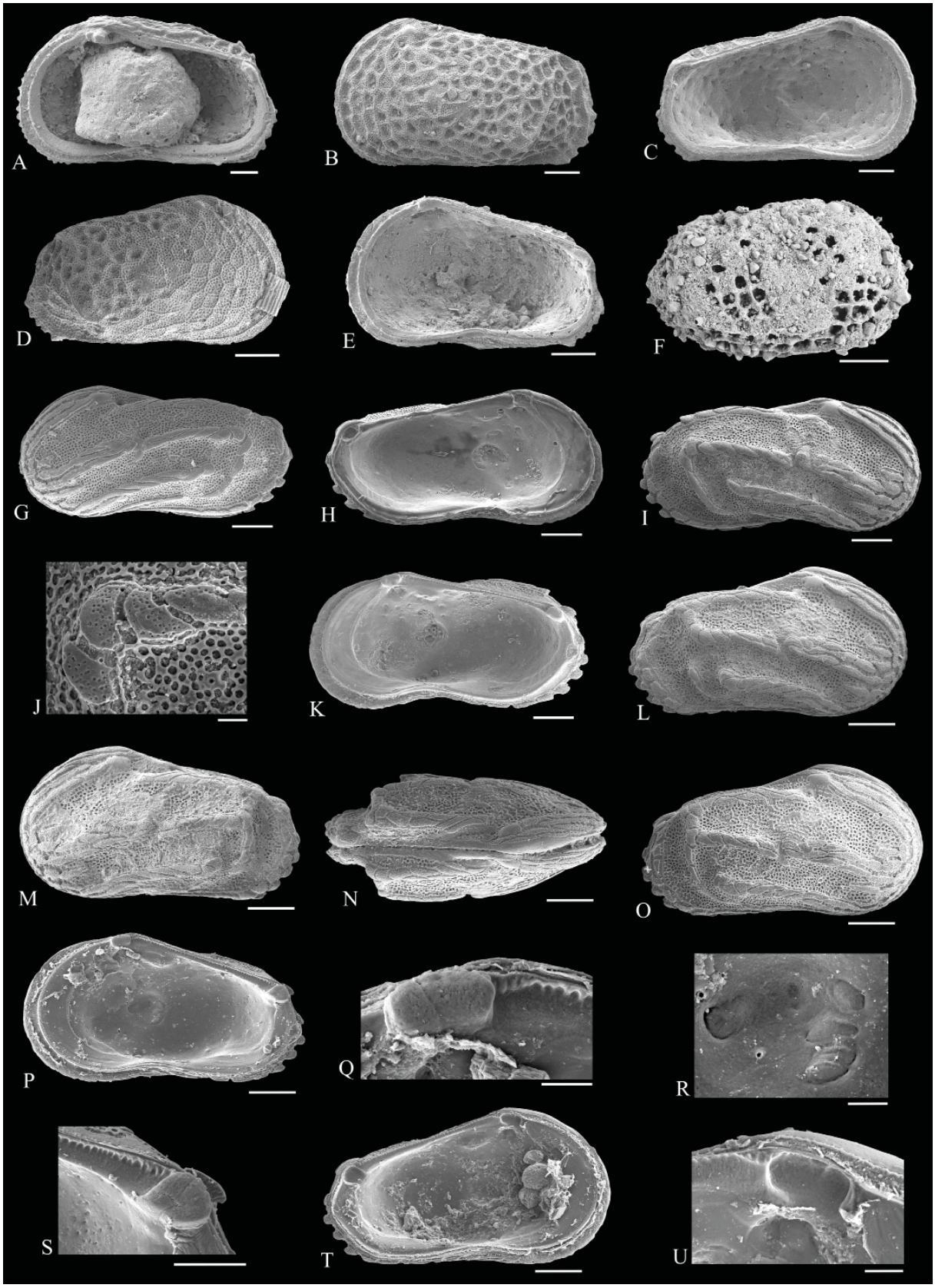
Remarks

Cythere scotti was described by Brady (1890) from the Banc de l'Aiguille off Nouméa, between a water depth of 1 and 2 m. A carapace was designated as lectotype and illustrated by SEM by McKenzie (1986), identified as ?*Thalmannia scotti*. Though the illustration is of good quality, the specimen is tilted ventrally, making it hard to fully assess its characteristics and confirm its generic attribution. Recently, Maddocks (2007) placed *Cythere scotti* in the genus *Lankacythere* Bhatia & Kumar, 1979, without discussion. *Cythere scotti* being rather rare, this generic re-attribution has not been discussed since. To the best of our knowledge, this species has not been re-illustrated since McKenzie (1986), justifying the need of an in-depth re-illustration for its full comprehension and generic attribution, as well as an emendation of its description. We also provide a diagnosis for this species.

The genus *Thalmannia* Le Roy, 1939 (type species *Thalmannia sumatrensis* Le Roy, 1939) was established for species from Miocene deposits of central Sumatra (rather indicated from the Pliocene by Keij 1964) characterized by an elongate, roundly quadrangular carapace, LV larger than RV, denticulate anterior and posterior margins, AMS composed of three to four closely packed scars, and a hinge in LV composed of 1) an elongate, notched anterior socket; 2) a small, rounded tooth; 3) a finely crenulate bar; and 4) an elongated posterior socket. The description of the genus doesn't mention the nature of the valve surface, which is nonetheless described as smooth, covered with large, uniformly spaced, somewhat elliptically shaped, shallow, aligned pits on the type species (Le Roy 1939). A number of recent species have been tentatively attributed to *Thalmannia*, notably *Cythere darwinii* Brady, 1868 [since re-attributed to *Venericythere* Mostafawi, 1992 by Mostafawi (1992)] and *Cythere kloempritensis* Kingma, 1948 [since re-attributed to *Keijella* Ruggieri, 1967 by Zhao & Whatley (1988)]. Today, this genus accommodates five species, four of which are fossil, from Neogene deposits of Bangladesh (Ahmed 1994) and Pliocene-Pleistocene deposits of Vietnam (Herrig 1977), as well as the extant *Cythere hodgii* Brady, 1866 described from the Levant and re-attributed to *Thalmannia* by McKenzie & Sudijono (1981), a re-attribution which would likely need a revision. *Cythere scotti* differs from the type species of *Thalmannia* by its considerably less round and more rectangular outline, larger posterior end, ornamentation and hinge.

A number of genera can be evoked to accommodate *Cythere hodgii* based on the new observations presented here. Among them, *Puricythereis* Bonaduce, Masoli & Pugliese, 1976, described from the

Fig. 16 (next page). SEM micrographs of ostracods from New Caledonia. **A–E**. *Lankacythere scotti* (Brady, 1890) emend., station A. **A**. Same specimen as Fig. 14V (MNHN.F.F73420), inner view. **B–C**. A-1, LV (MNHN.F.F73421). **B**. Outer view. **C**. Inner view. **D–E**. A-2, RV (MNHN.F.F73422). **D**. Outer view. **E**. Inner view. **F**. *Pistocythereis* sp., juvenile, C, right view, station B (MNHN.F.F73423). **G–U**. *Ponticocythereis impressionista* Forel sp. nov., station 11. **G–H**. Holotype, adult, LV (MNHN.F.F73413). **G**. Outer view. **H**. Inner view. **I–K**. Paratype, adult, RV (MNHN.F.F73414). **I**. Outer view. **J**. Details of ornamentation and normal pores. **K**. Inner view. **L–N**. C (Apostolescu 1967: pl. 2 figs 46–48) (MNHN.F.F73315). **L**. Right view. **M**. Left view. **N**. Dorsal view. **O–U**. C in right view (O) with dissociated RV (P–S) and LV (T–U), station 11. **O–S**. Dissociated RV (MNHN.F.F73415). **O**. Outer view. **P**. Inner view. **Q**. Detail of anterior end of hinge. **R**. Detail of AMS (see interpretative sketch in Fig. 18G). **S**. Detail of posterior end of hinge. **T–U**. Dissociated LV (MNHN.F.F73416). **T**. Inner view. **U**. Detail of anterior end of hinge. Scale bars: A–I, K–P, T = 100 µm; J, Q–R, U = 20 µm; S = 50 µm.


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Red Sea (Bonaduce *et al.* 1976), differs from the present specimens by its irregularly shaped fossae with ingrowing spines (polifoliate foveolae), posterior margin bordered by spines and smooth median element of hinge. *Hemitrachyleberis* Hartmann, 1974, described from Angola (Hartmann 1974), has an amphidont hinge, a large anterior vestibule, as well as a different outline and ridge pattern. *Angolacythereis* Hartmann, 1974, also described from Angola (Hartmann 1974), has an amphidont hinge and lacks ridges superimposed on the reticulation. Although resemblances could be evoked with the genus *Urocythereis* Ruggieri, 1950, described from the Mediterranean Sea, it is a hemicytherid with an amphidont hinge, lacking ridges, and is today considered to be restricted to the eastern Atlantic-Mediterranean area (Aiello *et al.* 2016). Overall, *Ruggieria* Keij, 1957, *Keijella* Ruggieri, 1967, *Bicornucythere* Schorninkov & Shaitarov, 1979, *Borneocythere* Mostafawi, 1992 and *Venericythere* Mostafawi, 1992 are excluded because, among other characters that can be found summarized in Yamaguchi *et al.* (2015), they all display a postero-ventral spine, which is absent in the present species. *Pistocythereis* Gou in Gou, Zheng & Huang, 1983 shares morphological similarities with the present species, including the general outline, reticulation, anterior and posterior marginal denticles and the absence of postero-ventral spine. However, it lacks the dorsal and postero-ventral ridges and the anterior element of its hinge in the RV is composed of an elongated, crenulate tooth and round socket (see summary in Yamaguchi *et al.* 2015). Based on the present in-depth observations of the available specimens, we consider *Lankacythere*, as proposed by Maddocks (2007), to be the most appropriate generic placement, considering their reticulate surface with deep fossae, the presence of dorsal and postero-ventral ridges, and their holamphidont hinge. It differs from most species of the genus by lacking longitudinal ridges and by its relatively poorly developed dorsal ridge, as also seen in *Lankacythere euplectella* (Brady, 1869).

Genus ***Pistocythereis*** Gou in Gou, Zheng & Huang, 1983

Type species

Echinocythereis bradyi Ishizaki, 1968, by original designation.

Pistocythereis sp.

Figs 3, 16F

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 C; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73423 (Fig. 16F).

Dimensions (illustrated specimen)

Fig. 16F. Juvenile C: L = 540 μm; H = 325 μm.

Stratigraphical and geographical distribution

Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

Maddocks (2007) mentioned the occurrence of *Pistocythereis cribriformis* (Brady, 1866) in New Caledonian waters. In the course of this analysis, only one very encrusted carapace attributable to *Pistocythereis* was found from the PBHF, precluding its formal identification at the species level. The present specimen is notably small, compared to other published specimens attributed to *Pistocythereis cribriformis*, such as those illustrated by Whatley & Zhao (1988), who re-assigned this species from its original placement in *Cythere* to *Pistocythereis*. The dimensions of the specimen from Prony are comparable to those of the A-1 stage of *Pistocythereis bradyformis* (Ishizaki, 1968) and intermediate between the A-2 and A-1 stages of *Pistocythereis bradyi* (Ishizaki, 1968) from Japan, as shown in Tanaka *et al.* (2025).

Genus ***Ponticocythereis*** McKenzie, 1967

Type species

Cythereis militaris Brady, 1866, by original designation.

Ponticocythereis impressionista Forel sp. nov.
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Figs 2, 15C, 16G–U, 17A–F, 18G; Table 8

Puriana sp. a – Apostolescu 1967: pl. 2 fig. 46–49, table 1.
?*Australimoosella* sp. – Hoibian *et al.* 2000 : pl. 1 fig. 20.

pars *Australimoosella* sp. A (Apostolescu), ornamented morphotype – Hoibian *et al.* 2002: pl. 1 fig. 8, non fig. 7 [= *Paracytheridea remanei* Hartmann, 1964].

Diagnosis

A species of *Ponticocythereis* with seven ridges composed of serially arranged elongate low foveolate clavae that are only slightly undercut: ocular, posterior and subposterior ridges, and four parallel oblique ridges (dorsal, median, ventral, margino-ventral). Ridges interrupted by post-ocular sinus and median sulcus. Interridge areas uniformly punctate.

Etymology

The species is named in reference to the impressionist artistic movement, characterized by the juxtaposition of short strokes, reminiscent of the clavae composing the ridges of the new species.

Type material

Holotype

NEW CALEDONIA – **Saint-Vincent Bay** • adult LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73413 (Fig. 16G–H).

Paratype

NEW CALEDONIA – **Saint-Vincent Bay** • 1 adult RV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73414 (Fig. 16I–K).

Additional material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C, 1 RV, 1 LV; 22°02′41″ S, 165°59′48″ E; depth 18 m; 9 Dec. 1961; Singer-Polignac expedition station 9; detrital soft coral; MNHN MNHN.F.F73418 (Fig. 17F) • 2 C, 7 RV, 5 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73315 (Apostolescu 1967: pl. 2 figs 46–48 (C), re-illustrated as Fig. 16L–N), MNHN.F.F73415 (Fig. 16O–S), MNHN.F.F73416 (Figs 16T–U, 17A–C), MNHN.F.F73417 (Fig. 17D–E).

Description

Carapace large, subrectangular in lateral view with Hmax at ACA and Lmax at mid-L in both valves. LV larger than RV, overlapping it in front of ACA, at PCA and behind it. Anterior margin broad, equicurvate. DB sloping straight towards PCA at an angle of ca 20°, posteriorly overhung by a dorsal ridge. Behind PCA, upper outline gently concave and short, joining a convex lower outline into a short and subtriangular PB around mid-H. Lower outline bordered by five large, short, striate and foveolate teeth.

Posterior end laterally compressed behind vertical branch of dorsal ridge. Ventral margin with marked oral concavity slightly in front of mid-L in both valves. Eye-tubercle subrectangular, smooth, below ACA. In dorsal view, outline lanceolate with Wmax behind mid-L and strongly compressed posterior end behind vertical branch of dorsal ridge (Fig. 16N).

Lateral surface displaying seven discontinuous ridges (Fig. 15C), composed of serially arranged foveolate clavae only slightly undercut, separated by deep, smooth incisures (Fig. 16J):
- dorsal ridge starting on the lateral surface, posterior and ventral to the eye-tubercle, from which it is separated by a post-ocular sinus. It overhangs the dorsal margin posteriorly and terminates in front of PCA. Posteriorly, it bifurcates into the posterior ridge and the sub-posterior ridge (Fig. 16N);
- posterior ridge extending along the posterior and ventral edges of the carapace, fusing antero-ventrally with the ventral ridge; origin from the dorsal ridge not always well expressed (e.g., Fig. 16I);
- margino-ventral ridge thin and short, originating at the margin anterior to the oral concavity, extending upward below and parallel to the ventral ridge. Its distal end lies very close to the ventral end of the subposterior ridge (e.g., Fig. 16O);
- ventral ridge inclined anteriorly between margino-ventral and median ridges, fusing antero-ventrally with the ocular ridge;
- median ridge inclined anteriorly, originating from the upper part of the subposterior ridge and fusing antero-ventrally with the ocular ridge. The point of fusion is marked by one supplementary lateral clava on each side. It is subdivided into posterior and anterior branches by a median sulcus around mid-L, where smooth muscle scars are visible. V-shaped frontal scar visible in front of the median sulcus;
- subposterior ridge transverse, originating from posterior bifurcation of dorsal ridge in front of PCA. Its upper portion is straight and subvertical, becoming progressively thinner ventrally and curving between the ventral and margino-ventral ridges. The fusion with the dorsal margin forms an angular postero-dorsal shoulder in front of PCA. In a few specimens, its ventral end is disconnected from the upper portion below the median ridge (Fig. 16L) or the upper portion is lacking (Fig. 16I);
- ocular ridge thick, composed of long clavae, extending from eye-tubercle along anterior margin.

Dorsal, median, ventral and margino-ventral ridges parallel. Interridge areas entirely punctate. Simple pores scattered over the surface, including in interridge area, deep incisures between and on clavae (Fig. 16J).

In inner view, calcified inner lamella wide anteriorly and posteriorly, avestibulate. Hinge holamphidont. In RV (Fig. 16Q, S): 1) anterior tooth subrectangular, slightly lobate dorsally, 2) small triangular, denticulate secondary tooth overhanging the anterior end of median bar, 3) straight, smooth median socket, dorsally denticulate, 4) spatulate posterior tooth, slightly lobate dorsally. Symmetrical in LV with anterior and posterior sockets open to interior (Figs 16U, 17A). Eye sinus below anterior tooth in RV and anterior socket in LV. Muscular platform behind ACA in both valves. AMS below muscular platform, composed of 4 scars in a curvate row, upper one ovoid and inclined, second one subtriangular elongate (Figs 16R, 18G). At posterior tip of RV, subovoid serration. Marginal pore canals straight, unbranching, denser anteriorly (Fig. 17B–C).

Dimensions

Fig. 15C, Table 8.

Stratigraphical and geographical distribution

Néra Delta, western New Caledonia (Hoibian *et al.* 2000). Roche Percée Bay, western New Caledonia (Hoibian *et al.* 2002). Stations 9 and 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

The morphology of the new species is close to that of the trachyleberid *Bradyleberis* McKenzie in Howe & McKenzie, 1968, which is so far restricted to northern Australia, where it has been recorded from the latest Miocene (Warne 1989; McDonald & Warne 2022) to Recent nearshore environments (Brady 1880; Puri & Hulings 1976; Howe & McKenzie 1989; Warne *et al.* 2006). The genus is known from only two rare species: the Recent *Bradyleberis cristatella* (Brady, 1880), type species of the genus, and the Miocene *Bradyleberis praecristatella* McDonald & Warne, 2022. *Bradyleberis* displays an elongate

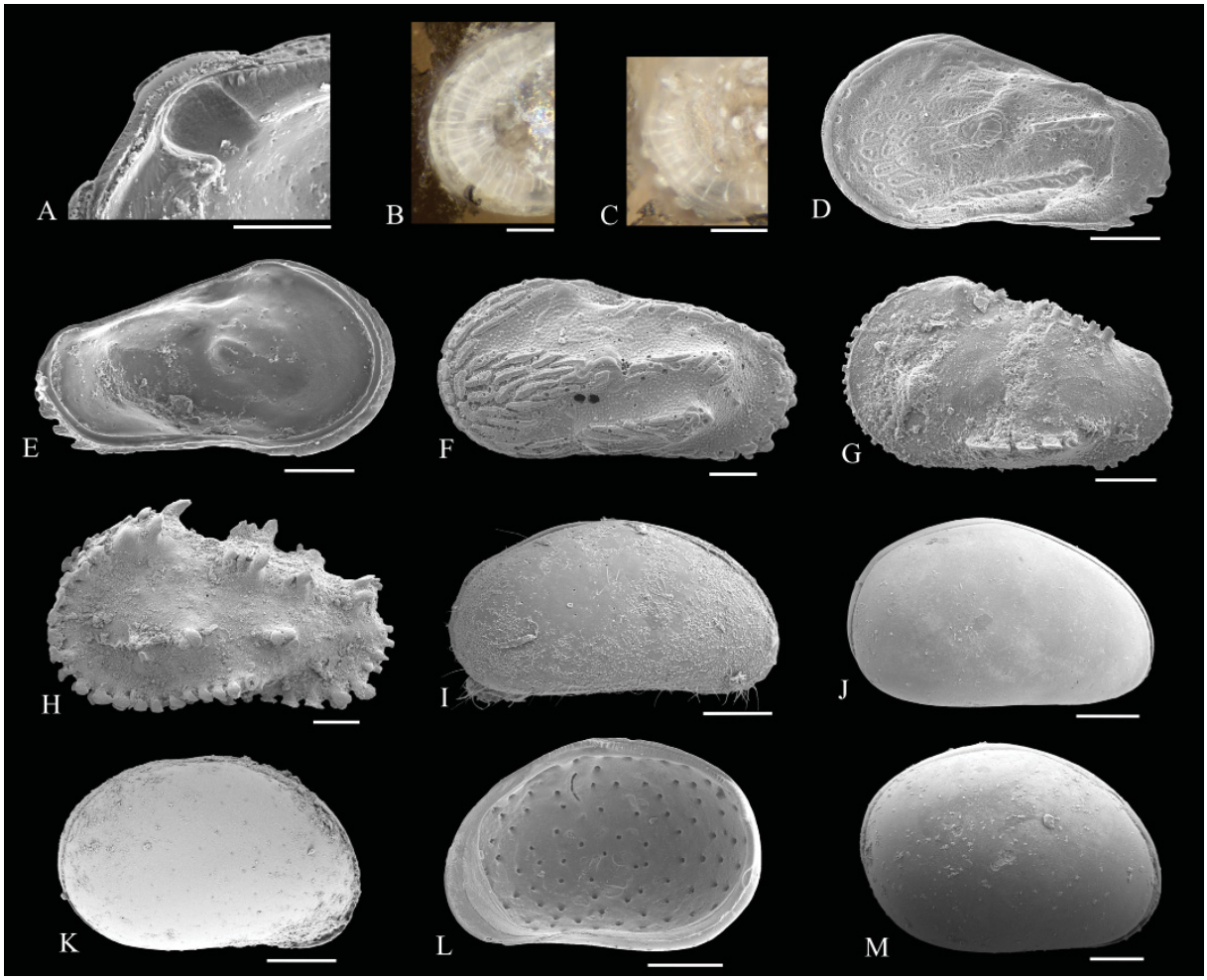


Fig. 17. SEM micrographs of ostracods from New Caledonia, except B–C in optical microscopy. **A–F**. *Ponticocythereis impressionista* Forel sp. nov., station 11. **A–C**. Same specimen as Fig. 16T–U (MNHN.F.F73416). **A**. Detail of posterior end of hinge. **B**. Anterior marginal pore canals in optical microscopy. **C**. Posterior marginal pore canals in optical microscopy. **D–E**. Juvenile, LV, station 11 (MNHN.F.F73417). **D**. Outer view. **E**. Inner view. **F**. Gerontic, LV, outer view, station 9 (MNHN.F.F73418). **G**. *Ponticocythereis costata* (Hartmann, 1978), LV, outer view, station B (MNHN.F.F73424). **H**. *Ponticocythereis quadriserialis* (Brady, 1890), C, left view, station B (MNHN.F.F73425). **I**. *Xestoleberis granulosa* Brady, 1880, C, right view, station 4 (MNHN.F.F73426). **J**. *Xestoleberis tumefacta* Brady, 1880, C, right view, station 8 (Apostolescu 1967: pl. 2 figs 26–27) (MNHN.F.F73341). **K–L**. *Xestoleberis variegata* Brady, 1880, station 7. **K**. C, right view (Apostolescu 1967: pl. 2 figs 23–25) (MNHN.F.F73342). **L**. RV, inner view (MNHN.F.F73427). **M**. *Xestoleberis* sp., C, right view, station A (MNHN.F.F73428). Scale bars: A = 50 µm; B–M = 100 µm.

Table 8. Dimensions of the type and figured specimens of *Ponticocythereis impressionista* Forel sp. nov. Abbreviation: na = not available.

	RV		LV	
	L (µm)	**H (µm)**	**L (µm)**	**H (µm)**
Holotype (Fig. 16G–H)	na	na	666	324
Paratype (Fig. 16I–K)	656	324	na	na
Fig. 16L–N	582	305	594	320
Fig. 16O–S (RV), Figs 16T–U, 17A–C (LV)	596	316	608	333
Fig. 17D–E	na	na	606	336
Fig. 17F	na	na	500	282

subrectangular carapace, with denticulate anterior and postero-ventral margins, a micropunctate surface, low marginal ridges around the entire carapace, and a median ridge terminating in a weakly developed subcentral tubercle. The discovery of *Bradyleberis praecristatella*, however, has demonstrated that this ridge may extend farther anteriorly. Its hinge is amphidont, and its AMS comprises four scars arranged in a subvertical row, with a V-shaped frontal scar and two small mandibular scars. The general ridge pattern of the specimens from New Caledonia is similar to that of *Bradyleberis*, but they differ notably in lacking denticulation along the anterior margin, irrespective of ontogenetic stage or preservation state. The hinge is the most important differentiating feature between *Bradyleberis* and the specimens examined here, although the hinge of *Bradyleberis* would benefit from re-illustration and re-description.

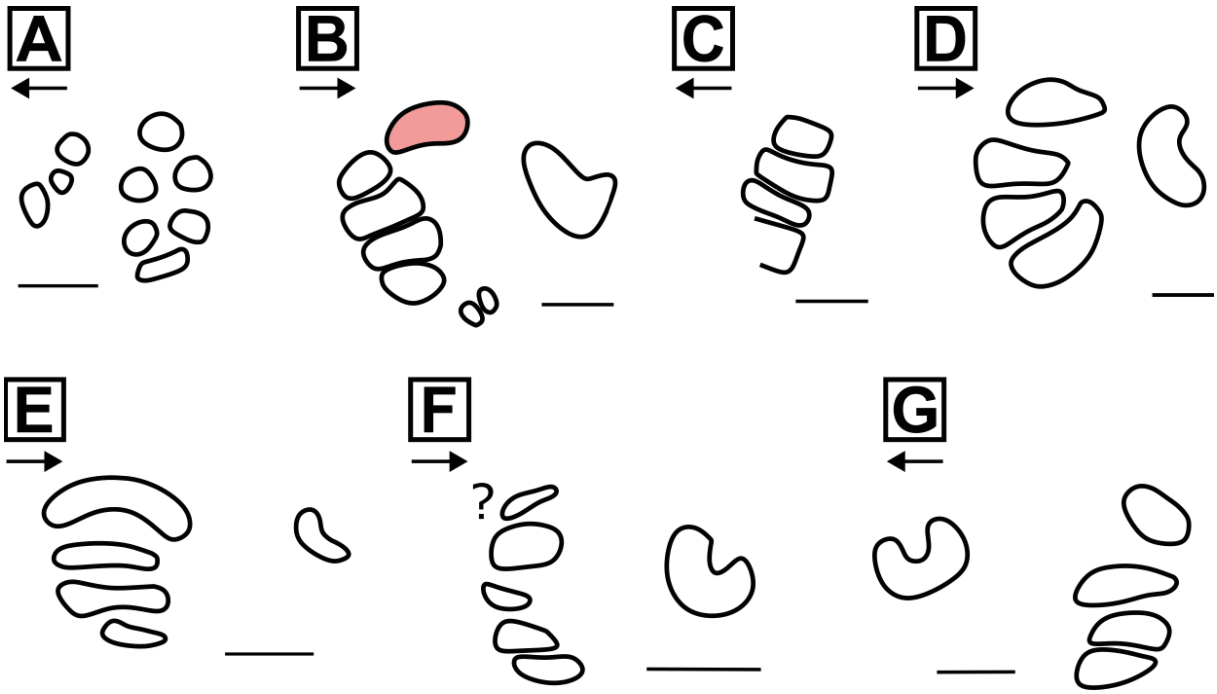


Fig. 18. Interpretative sketches of adductor muscle scars of the newly described and emended species, when visible. **A**. *Auradilus mediumiugum* Forel sp. nov. **B**. *Callistocythere angelina* Forel sp. nov. **C**. *Gambiella*? *toxica* Forel & Bergue sp. nov. **D**. *Loxoconcha charbonnieri* Forel sp. nov. **E**. *Loxoconchella honoluliensis* (Brady, 1880) emend. **F**. *Adencythere torticollis* (Brady, 1890) emend. **G**. *Ponticocythereis impressionista* Forel sp. nov. Red = fulcral point. Scale bars: A–B, D–E, G = 20 µm; C = 10 µm; F = 50 µm.

All elements of the hinge of *Bradyleberis* appear smooth in the illustrations of Howe & McKenzie (1989), whereas those of the specimens studied here range from lobate to denticulate. In detail, the LV hinge of *Bradyleberis* appears to comprise: 1) a round, smooth, open anterior socket, 2) a thick, smooth, well-developed anterior tooth, 3) a smooth median bar, and 4) a round, smooth, open posterior socket. In the present specimens, the LV hinge comprises: 1) a dorsally lobate subrectangular anterior socket, 2) a denticulate, small, low, triangular anterior socket, restricted dorsally to the anteriormost part of the median bar, 3) a dorsally denticulate median bar, and 4) a spatulate, slightly lobate posterior socket.

We favor a generic attribution to *Ponticocythereis* McKenzie, 1967, which has been restricted to the south-east Pacific and Australia since the early Middle Miocene (Warne 1987). *Ponticocythereis* has a strong subquadrate carapace with numerous pointed or blade-like spines positioned continuously or around the entire margin and a median ridge, a holamphidont hinge, radial pores tending to group, a moderately broad inner lamella, and lacks a vestibule. While the intercostal area was originally defined as smooth, Whatley & Titterton (1981) modified the definition of the genus to accommodate species with spines, micropunctae, micropapillae or a delicate open reticulation between the ridges. Warne & Whatley (1996) summarized the diagnostic characters of this genus: three spinose ridges (dorsal, median, ventral), blade or scale-like spines, posteriorly pointing spines, an oval pit on the posterior calcified inner lamella of one valve with corresponding knob on the opposite one, a strongly developed shelf-like structure below the anterior part of the hinge, a small tooth in front of the antero-terminal socket of the hinge in the LV and a denticulate postero-median bar elevated and expanded posteriorly. *Ponticocythereis impressionista* sp. nov. conforms to these characters, with the difference that the tooth in front of the anterior socket of the hinge in the LV is lacking. It is rather unique among species of the genus by its low clavae only slightly undercut, by the presence of a subposterior ridge, by the lack of a supplementary tooth in front of the anterior socket in the hinge of the LV and by the presence of a denticulate supplementary tooth directly behind the anterior tooth of the hinge in the RV.

Ponticocythereis impressionista sp. nov. has been known from New Caledonia since Apostolescu (1967) but was not properly identified or described until the present work. It was first identified as *Puriana* sp. a by Apostolescu (1967) and later as *Australimoosella* sp. by Hoibian *et al.* (2000, 2002). Of note, those latter authors did not provide scale bars for the illustrated specimens so that they could not be measured in the present analysis. *Ponticocythereis impressionista* is thus far only known in western New Caledonia.

This species is conservative in terms of outline and ornamentation, with the exception of the subposterior ridge which is subdivided in rare specimens. These two morphologies are not related to ontogeny, as they both occur in adults and/or submature specimens. They may conversely be related to sexual dimorphism as the pattern of a subposterior ridge disconnected from the dorsal one occurs in specimens with longer and lower carapaces (Fig. 15B), that may correspond to males (Hartmann 1978, 1979).

The juveniles available (Fig. 17D–E) demonstrate that the ontogeny of this species is marked by a diachronic development of the ridges. The ventral ridge appears first in the development and the first stage of the ocular ridge lacks clavae, occurring as a large and smooth marginal strip. With the exception of the ocular ridge, the lateral extension of all ridges is itself diachronic, beginning distally, and undeveloped segments of ridges only visible as premises of clavae. The juvenile lacks eye-tubercles and its surface is very finely punctate, interspersed with larger punctae. Internally, the anterior and posterior teeth of the hinge are finely denticulate dorsally. On the opposite, the largest LV (Fig. 17F) lacks a subposterior ridge and has numerous supplementary clavae at the junction between the median and ocular ridges. It displays all other diagnostic characters of *Ponticocythereis impressionista* sp. nov. and may correspond to a gerontic specimen.

Apostolescu (1967) identified this species as *Puriana* sp. a; however, notes accompanying the collection indicate that he also considered assigning it to the genus *Pseudocytheromorpha* Puri, 1957. This species was recorded at stations 9 and 11 and illustrated from both; however, only one specimen could be confidently identified in the collection (Fig. 16L–N). This slide associated with Apostolescu (1967) also contains 1 LV and 3 RV, all from station 11, among which the holotype has been chosen. The re-observation of the unidentified picked specimens in his collection reveals the presence of this species at station 9.

Ponticocythereis costata (Hartmann, 1978)
Figs 3, 17G

Actinocythereis scutigera (Brady, 1868) *costata* Hartmann, 1978: 87, figs 154–156, pl. 5 figs 6–9 [not *Actinocythereis scutigera* (Brady, 1868)].

Actinocythereis scutigera costata – Hartmann 1979: 231, fig. 42, pl. 5 figs 1–8.
Actinocythereis scutigera – Yassini & Kendrick 1988: 112, figs 4C–G.
Ponticocythereis costata – Howe & McKenzie 1989: 41, figs 127–130.
Actinocythereis costata – Warne *et al.* 2006; 143, pl. 7 figs 15–16.

Selected material examined

NEW CALEDONIA – **Prony Bay** • 1 LV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73424 (Fig. 17G).

Dimensions (illustrated specimen)

Fig. 17G. LV: L = 550 μm; H = 320 μm.

Stratigraphical and geographical distribution

Holocene of Point Waylen, Swan River Estuary, southwestern Australia (Yassini & Kendrick 1988). Northwestern Australia (Hartmann 1978; Howe & McKenzie 1989). Southwestern Australia (Hartmann 1979). Port Darwin, Northern Australia (Warne *et al.* 2006). Station B, PBHF, southern New Caledonia (this work) (Fig. 3).

Remarks

The available specimen is small for the genus and corresponds to a juvenile. It is consistent with the juvenile morphology of *Actinocythereis costata* Khalaf, 1989 shown in Hartmann (1979).

Hartmann (1978) described the new subspecies *costata* for *Actinocythereis scutigera* (Brady, 1868), but the examination of Brady's type material led Howe & McKenzie (1989) to consider that Hartmann's specimens are not conspecific with *scutigera*. Howe & McKenzie (1989) furthermore considered that the characters of Hartmann's specimens do not correspond to *Actinocythereis* Puri, 1953 but to *Ponticocythereis*, recombining this species as *Ponticocythereis costata*. Warne (2001) considered that the adult morphology of *costata* falls outside the morphological limits of *Ponticocythereis* as defined in Warne & Whatley (1996), without, however, proposing an alternative generic assignment. Warne *et al.* (2006) finally attributed this species to *Actinocythereis*. Of note, such a re-attribution would imply that *Actinocythereis costata* from the Miocene of northern Iraq is a junior homonym of Hartmann's species that should be given a replacement name. The attribution of a number of species to *Actinocythereis* is not widely accepted, as for instance in Maddocks (2007) or Titterton & Whatley (2009a). We here still consider this species as a member of *Ponticocythereis*.

Ponticocythereis quadriserialis (Brady, 1890)
Figs 3, 17H

Cythere quadriserialis Brady, 1890: 504, pl. 2 figs 27–28.

Cythere quadriserialis – Benson 1964: 15 (not illustrated).
Ponticocythereis quadriserialis – McKenzie 1986: pl. 2 fig. 13. — Maddocks 2007: 273 (not illustrated).

Selected material examined

NEW CALEDONIA – **Prony Bay** • 5 C, 1 RV; PBHF; Aiguille de Prony; geographical coordinates unknown; depth 35 m; 15 Apr. 1981; Pierre Laboute station B; lutite; MNHN MNHN.F.F73425 (Fig. 17H).

Dimensions (illustrated specimen)

Fig. 17H. RV: L = 725 µm; H = 420 µm. LV: 730 µm; H = 450 µm.

Stratigraphical and geographical distribution

Nouméa, southwestern New Caledonia (Brady 1890; McKenzie 1986). Fiji (Benson 1964). New Caledonia (Maddocks 2007). Station B, PBHF, south New Caledonia (this work) (Fig. 3).

Remarks

McKenzie (1986) indicated that the lectotype of *Ponticocythereis quadriserialis* (Brady, 1890) was collected from shore sand collected at Artillery Point, Nouméa. The generic attribution of this species to *Ponticocythereis* is widely accepted. McKenzie (1986) suggested that *Ponticocythereis spinosa* Whatley & Titterton, 1981, described from Australia, should be considered as a junior synonym of *Ponticocythereis quadriserialis*. This synonymy was rejected by Titterton & Whatley (2009a) based on the very different adult sizes of both species.

Family Xestoleberididae Sars, 1928

Genus ***Xestoleberis*** Sars, 1866

Type species

Cythere aurantia Baird, 1838, subsequently designated by Brady & Norman (1889).

Xestoleberis granulosa Brady, 1880
Figs 2, 17I

Xestoleberis granulosa Brady, 1880: 125, pl. 30 fig. 5a–d.

Xestoleberis granulosa – Brady 1890: 508. — Egger 1902: 455 (not illustrated). — Kingma 1948: 98, pl. 8 fig. 8. — Benson 1964: 18 (not illustrated). — McKenzie 1964: 448 (not illustrated); 1969: 12 (not illustrated). — Kaesler & Waters 1972: 14, figs 9, 33, 37. — Puri & Hulings 1976: 300, pl. 19 figs 17–18. — De Deckker & Jones 1978: 150 (not illustrated).

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C; geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral; MNHN MNHN.F.F73426 (Fig. 17I).

Dimensions (illustrated specimen)

Fig. 17I. RV: L=474 μm; H=253 μm. LV: L=482 μm; H=255 μm.

Stratigraphical and geographical distribution

Cenozoic of Java (Kingma 1948). East of Montcœur Island, Bass Strait (Brady 1880; Puri & Hulings 1976). Port Jackson, Australia (Brady 1880; Puri & Hulings 1976; De Deckker & Jones 1978). Nouméa harbor, southwestern New Caledonia (Brady 1890). Mermaid reef, northwestern Australia (Egger 1902). Oyster Harbour, western Australia (McKenzie 1964, 1969). Tasmania to New Caledonia (Benson 1964). Station 4, Saint-Vincent Bay, southwestern New Caledonia (this work) (Fig. 2).

Remarks

The unique carapace available is attributed to *Xestoleberis granulosa* Brady, 1880 based on its low, slender outline and papillate surface. The available specimen is significantly smaller than the lectotype (RV: L=600 μm; H=330 μm, LV: L=630 μm; H=350 μm; Puri & Hulings 1976) and may be a juvenile. *Xestoleberis granulosa* species was not mentioned in Apostolescu (1967), but the re-observation of unidentified picked specimens in his collection reveals its presence at station 4. *Xestoleberis* cf. *granulosa* was reported from the Néra Delta in western New Caledonia; however, the illustrated RV is significantly higher than that of *Xestoleberis granulosa* and lacks the diagnostic papillae (Hoibian *et al.* 2020: pl. 1 fig. 6).

Xestoleberis tumefacta Brady, 1880
Figs 2, 17J

Xestoleberis tumefacta Brady, 1880: 128, pl. 31 figs 4a–d.

Xestoleberis tumefacta – Brady 1890: 508, pl. 3 figs 7–8. — Puri & Hulings 1976: 302, pl. 20 figs 12–13, pl. 26 figs 1–3. — De Deckker & Jones 1978: 152 (not illustrated).
Xestoleberis aff. *curta* – Apostolescu 1967: pl. 2 figs 26–27, table 1.

? *Xestoleberis tumefacta* – Holden 1976: F34, pl. 16 figs 4–7.

non *Xestoleberis* aff. *tumefacta* Brady, 1880 – Apostolescu 1967: pl. 2 figs 23–25, table 1 [= *Xestobeleris variegata* Brady, 1880].

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 C; geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral; MNHN MNHN.F.F73512 • 1 C; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73513 • 2 C, 1 LV; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral; MNHN MNHN.F.F73341 (Apostolescu 1967: pl. 2 fig. 26–27 (C), re-illustrated as Fig. 17J).

Dimensions (illustrated specimen)

Fig. 17J. RV: L=471 μm; H=291 μm. LV: L=483 μm; H=300 μm.

Stratigraphical and geographical distribution

?Miocene and Pleistocene of Midway Island (Holden 1976). Nares harbor, Admiralty Islands (Brady 1880; Puri & Hulings 1976; De Deckker & Jones 1978). Nouméa, southwestern New Caledonia (Brady 1890; Puri & Hulings 1976). Stations 4, 7 and 8, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2).

Remarks

Apostolescu (1967) illustrated 1 C, his associated slide containing 3 C and 1 LV. Apostolescu (1967) mentioned this species in stations 8 and 9 within Saint-Vincent Bay (Fig. 2), without indicating the exact provenance of the illustrated carapace. Notes in the collection indicate that it was sampled at station 8. One of the carapaces in the collection, identified as *Xestoleberis* aff. *tumefacta* Brady, 1880 and not illustrated in Apostolescu (1967), is here re-attributed to *Xestoleberis tumefacta*, adding station 7 to the known provenance of this species.

The carapace illustrated here is smaller than the neotype designated by Puri & Hulings (1976), which measures 540 µm in length and 330 µm in height, suggesting that the specimen from New Caledonia may be juvenile. The specimen illustrated by Holden (1976) from Miocene and Pleistocene deposits of Midway Island displays a markedly different outline, and its attribution to *Xestoleberis tumefacta* is therefore considered uncertain.

Xestoleberis variegata Brady, 1880
Figs 2–3, 17K–L

Xestoleberis variegata Brady, 1880: 129, pl. 31 figs 8a–g.

Xestoleberis variegata – Brady 1890: 508 (not illustrated). — Chapman 1914: 43, pl. 8 fig. 33; 1915: 46 (not illustrated); 1916: 46 (not illustrated); 1941: 202 (not illustrated). — Chapman & Parr 1935: 4 (not illustrated). — Crespin 1943: 101 (not illustrated). — Benson 1964: 19 (not illustrated). — McKenzie 1964: 448 (not illustrated); 1969: 112 (not illustrated). — Kaesler & Waters 1972: 17, pl. 10 figs 6–9. — Puri & Hulings 1976: 302, pl. 20 figs 16–18. — De Deckker & Jones 1978: 151 (not illustrated). — Mostafawi 1992: 165, pl. 6 fig. 136. — Hussain 1998: 13, pl. 3 figs 8–10. — Mohan *et al.* 2001: pl. 4 figs 11–12. — Sridhar *et al.* 2002: 33, pl. 4 figs 9–10. — Mohammed 2004: 65, pl. 6 figs 6–7. — Gopalakrishna *et al.* 2007: 4, fig. 5. — Mohammed *et al.* 2012: 166, pl. 6 fig. 100. — Wang *et al.* 2019: appendix 1 (not illustrated). — Keyser & Mohammed 2021: 13, pl. 5 fig. 85–87. — Tabita Symphonia & Nathan 2021: 5, fig. 4.15.
Xestoleberis aff. *tumefacta* – Apostolescu 1967: pl. 2 figs 23–25.

Selected material examined

NEW CALEDONIA – **Saint-Vincent Bay** • 1 LV; geographic coordinates unknown; depth 4–5 m; 9 Dec. 1961; Singer-Polignac expedition station 4; detrital soft coral; MNHN MNHN.F.F73514 • 1 C, 1 RV; 22°02′54″ S, 165°59′16″ E; depth 7–8 m; 7 Dec. 1961; Singer-Polignac expedition station 7; detrital soft coral; MNHN MNHN.F.F73342 (Apostolescu 1967: pl. 2 fig. 23–25 (C), re-illustrated as Fig. 17K), MNHN.F.F73427 (Fig. 17L) • 1 RV; 22°02′50″ S, 165°59′24″ E; depth 13–14 m; 8 Dec. 1961; Singer-Polignac expedition station 8; detrital soft coral; MNHN MNHN.F.F73515 • 1 LV; 22°02′36″ S, 166°01′00″ E; depth 15–17 m; 10 Dec. 1961; Singer-Polignac expedition station 11; muddy-sandy sediment; MNHN MNHN.F.F73516 – **Nouméa lagoon** • 1 C; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73517.

Dimensions (illustrated specimens)

Fig. 17K. RV: L = 519 µm; H = 366 µm. LV: L = 540 µm; H = 379 µm.

Fig. 17L. RV: L = 420 µm; H = 281 µm.

Stratigraphical and geographical distribution

Oligocene to Pliocene, Australia (Chapman 1914, 1916; Crespin 1943). Holocene, Hang Hau Formation, Hong-Kong (Wang *et al.* 2019). St Vincent, Cape Verde (Brady 1880; Puri & Hulings 1976). Tongatabu, Tonga (Brady 1880; Puri & Hulings 1976). Nouméa, southwestern New Caledonia (Brady 1890). Suva, Levuka, Vanua Levu, Taviuni, Rambe Island, Loma-Loma, Fiji (Brady 1890). Apia, Lufi-Lufi, Upolu, Samoa (Brady 1890). Cape Wiles, southern Australia (Chapman 1914, 1915, 1941). Great Australian Bight, southern Australia (Chapman & Parr 1935). Oyster Harbour, western Australia (McKenzie 1964, 1969). Sunda Shelf (Mostafawi 1992). Gulf of Mannar, southeastern India (Hussain 1998). Bay of Bengal, southeastern India (Mohan *et al.* 2001). Palk Bay, southeastern India (Sridhar *et al.* 2002). Southwestern Yemen (Mohammed 2004). Malabar Coast, Kerala, southwestern India (Gopalakrishna *et al.* 2007). Northern Socotra Island, Indian Ocean (Mohammed *et al.* 2012). Al-Hudeida City, Yemen, Red Sea (Keyser & Mohammed 2021). Eastern Indian shelf (Tabita Symphonia & Nathan 2021). Stations 4, 7, 8, 11, Saint-Vincent Bay, southwestern New Caledonia (Apostolescu 1967; this work) (Fig. 2). Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Remarks

Holden (1976) considered the specimens identified as *Xestoleberis* aff. *tumefacta* Brady, 1880 in Apostolescu (1967) as belonging to *Xestoleberis tumefacta*. The re-examination of these specimens and comparison with the lectotype and other original specimens from Brady (1880) lead us to rather attribute them to *Xestoleberis variegata* Brady, 1880. Apostolescu (1967) illustrated 1 C of this species reported from stations 4 and 7 within Saint-Vincent Bay, without indicating its precise provenance. Notes in the collection indicate that this carapace, here re-illustrated (Fig. 17K), was sampled at station 7. One of the RV in the collection, identified as *Xestoleberis* aff. *curta* (Brady, 1866) and not illustrated in Apostolescu (1967), is here re-attributed to *Xestoleberis variegata*, adding station 8 to the known provenance of this species. In total, the Apostolescu collection contains 1 C and 2 RV.

Xestoleberis sp.
Figs 3, 17M

Selected material examined

NEW CALEDONIA – **Nouméa lagoon** • 2 C; La Prévoyante beacon; geographical coordinates unknown; depth 20 m; 14 Apr. 1981; Pierre Laboute station A; detrital soft coral; MNHN MNHN.F.F73428 (Fig. 17M).

Dimensions (illustrated specimen)

Fig. 17M. RV: L = 424 μm; H = 270 μm. LV: L = 438 μm; H = 278 μm.

Stratigraphical and geographical distribution

Station A, Nouméa lagoon, southwestern New Caledonia (this work) (Fig. 3).

Discussion

The first record of ostracods from New Caledonia dates back to Brady (1868), and since then, only limited additional data have been published. In her review, Maddocks (2007: 269) noted that "although some authors state that the Ostracoda of the Indo-Pacific realm are both wide-ranging and well-known, there is remarkably little evidence of exactly how New Caledonia fits into this nexus". Although several hundred species of ostracods are likely to inhabit the marine waters surrounding New Caledonia, only 49 podocopid and platycopid species had, at that time, been regarded as validly recorded from the region (Maddocks 2007) (Table 9). In the same year, Kornicker (2007) listed seven

Table 9 (continued on next four pages). Summary of marine ostracod species confirmed from New Caledonia.

	Species	Maddocks (2007)	Kornicker (2007)	This work
Platycopida	*Cytherella* aff. *ponderosa* Witte, 1993			x
	Cytherella hemipuncta Swanson, 1969			x
	Cytherella semitalis Brady, 1868	x		
	Cytherella sp.			x
	Cytherella sp. a in Apostolescu, 1967			x
Podocopida	*Actinocythereis tetrica* (Brady, 1880)	x		
	Alocopocythere kendengensis (Kingma, 1948)	x		
	Anchistrocheles fumata Brady, 1890	x		
	Auradilus mediumiugum Forel sp. nov.			x
	Auradilus packardi (Brady, 1880)	x		x
	Ponticocythereis impressionista Forel sp. nov.			x
	Bairdoppilata sp. 1			x
	Bairdoppilata sp. 2			x
	Bythocytheridae gen. et sp. indet. 1			x
	Bythocytheridae gen. et sp. indet. 2			x
	Callistocythere crenata (Brady, 1890)	x		
	Callistocythere keiji (Hartmann, 1978)	? (see systematic chapter)		
	Callistocythere parakeiji Titterton & Whatley, 2007			x
	Callistocythere punctatuberculata Titterton & Whatley, 2007			x
	Caudites javana Kingma, 1948	x		x
	Caudites litusorienticola Hartmann, 1981	x		
	Adencythere torticollis (Brady, 1890) emend.	x as *Coquimba torticollis* (Brady, 1890) (see systematic chapter)		x
	Cyprideis australiensis Hartmann, 1978	x		

Table 9 (continued). Summary of marine ostracod species confirmed from New Caledonia.

Species	Maddocks (2007)	Kornicker (2007)	This work
Cyprideis consobrina (Brady, 1890)	x		
Cytherois sp.			x
Cytheropteron sp.			x
Kangarina? sp. A in Titterton & Whatley, 2006b			x
Keijia demissa (Brady, 1868)	x		x
Kotoracythere inconspicua (Brady, 1880)	x		x
Lankacythere scotti (Brady, 1890) emend.	x		x
Callistocythere angelina Forel sp. nov.			x
Leptocythere pulchra Zhao & Whatley, 1989			x
Loxoconcha australis Brady, 1880	x as *Loxoconcha dampierensis* Hartmann, 1978 (see systematic chapter)		x
Loxoconcha charbonnieri Forel sp. nov.			x
Loxoconcha venenosa Forel sp. nov.			x
Loxoconcha georgei Hartmann, 1978	x		x
Loxoconcha gracilis Brady, 1890	x		
Loxoconcha heronislandensis Hartmann, 1981	x		
Loxoconcha huahineensis Hartmann, 1984	x		
Loxoconcha parahuahineensis Behrens, 1991	x		x
Loxoconcha pumicosa (Brady, 1880)	x		x
Loxoconchella anomala (Brady, 1880)	x		
Loxoconchella honoluliensis (Brady, 1880) emend.	x		x
Neobuntonia cf. *guttata* (Brady, 1890)			x
Neobuntonia guttata (Brady, 1890)	x		
Neobuntonia sp. 1			x

Table 9 (continued). Summary of marine ostracod species confirmed from New Caledonia.

Species	Maddocks (2007)	Kornicker (2007)	This work
Neobuntonia sp. 2			x
Neocyprideis spinulosa (Brady, 1868)	x		x
Neocyprideis timorensis (Fyan, 1916)	x		
Neohornibrookella sp.			x
Neomonoceratina entomon (Brady, 1890)	x		
Neonesidea schulzi (Hartmann, 1964)	x		x
Neonesidea tenera (Brady, 1886)			x
Oculocytheropteron sp. 1			x
Oculocytheropteron sp. 2			x
Paracypris bradyi McKenzie, 1967			x
Paracytheridea remanei Hartmann, 1964	x as *Paracytheridea gynaikokratia* Behrens, 1991 (see systematic chapter)		x
Paracytheridea trilobites (Brady, 1890)	x		x
Paracytheroma arenicola Hartmann, 1978	x		x
Paradoxostoma lizardensis Behrens, 1991	x		
Paradoxostoma novaecaledoniae Brady, 1890	x		x
Paradoxostoma sp.			x
Parakrithella flavescens (Brady, 1890)	x		x
Paranesidea algicola Maddocks, 1969	x		
Paranesidea conulifera (Bonaduce *et al.*, 1976)	x		x
Paranesidea sp.			x
Pectocythere? sp.			x
Pistocythereis cribriformis (Brady, 1866)	x		
Pistocythereis sp.			x

Table 9 (continued). Summary of marine ostracod species confirmed from New Caledonia.

Species	Maddocks (2007)	Kornicker (2007)	This work
Ponticocythereis costata (Hartmann, 1978)			x
Ponticocythereis ichthyoderma (Brady, 1890)	x		
Ponticocythereis manis Whatley & Titterton, 1981	x		
Ponticocythereis quadriserialis (Brady, 1890)	x		x
Gambiella? *toxica* Forel & Bergue sp. nov.			x
Semicytherura sp.			x
Tanella ochracea (Brady, 1890)	x		
Bosasella cf. *gigas* (Jellinek, 1993)			x
Tenedocythere deltoides (Brady, 1890)	x (*Neohornibrookella* according to Warne & Whatley 2016)		
Bosasella elongata (Hu, 1979)	x		x
Tenedocythere transoceanica (Teeter, 1975)	x (*Neohornibrookella* according to Warne & Whatley 2016)		
Triebelina bradyi Triebel, 1948	x		
Triebelina numensis (Müller, 1912)	x		
Triebelina sertata Triebel, 1948	x		x
Venericythere darwini (Brady, 1868)	x		
Xestoleberis granulosa Brady, 1880			x
Xestoleberis sp.			x
Xestoleberis tumefacta Brady, 1880			x
Xestoleberis variegata Brady, 1880			x

Table 9 (continued). Summary of marine ostracod species confirmed from New Caledonia.

	Species	Maddocks (2007)	Kornicker (2007)	This work
Myodocopa	*Anscottiella* sp.			x
	Pleoschisma moroides Brady, 1890		x *Euphilomedes moroides* (Brady, 1890) according to Poulsen (1962)	
	Sarsiella sculpta Brady, 1890		x *Eusarsiella sculpta* (Brady, 1890) according to Kornicker (1986)	
	Parapolycope sp.			x
	Asterope australis Brady, 1890		x *Parasterope australis* according to Eagar (1971)	
	Rutiderma (*Alternochelata*) sp. in McKenzie (1986)		x	
	Sarsiella foveata Brady, 1890		x	
	Sarsiella simplex Brady, 1890		x	
	Streptoleberis crenulata Brady, 1890		x	

myodocope species collected around New Caledonia, mainly in the vicinity of Nouméa (Table 9). Excluding *Azygocypridina brynmawria* Diamond *et al.*, 2008, which was described from the Coral Sea approximately 400 km southwest of New Caledonia, a total of 56 ostracod species were therefore known from the region prior to the present study (Table 9).

The present work substantially expands this knowledge through the re-examination of micropaleontological collections from New Caledonia housed at the Muséum national d'Histoire naturelle (Paris, France). Particular attention was given to ostracods collected during the 1961 Singer-Polignac expedition in Saint-Vincent Bay, southwestern New Caledonia. Because the original illustrations by Vespasian Apostolescu have led to considerable uncertainty concerning the taxonomic attribution of several specimens, all were re-illustrated using SEM. With the exception of nine specimens considered lost (see Supp. file 1), all remaining material was re-examined and its taxonomic attribution revised. This revision was complemented by the study of previously undetermined specimens from the same expedition, as well as sediment samples collected in 1981 from the Nouméa Lagoon and the Prony Bay Hydrothermal Field that had not previously been investigated.

In total, 63 species are reported and illustrated from southern and southwestern New Caledonia, of which 23 had been previously recorded from the region. Seven species previously known from other localities are recorded from New Caledonia for the first time: *Cytherella hemipuncta*, *Neonesidea tenera*, *Paracypris bradyi*, *Callistocythere punctatuberculata* Titterton & Whatley, 2007, *Leptocythere pulchra*, *Ponticocythereis costata*, and *Kangarina*? sp. A in Titterton & Whatley (2006b). Six species are newly described: *Auradilus mediumiugum* sp. nov., *Callistocythere angelina* sp. nov., *Loxoconcha charbonnieri* sp. nov., *Loxoconcha venenosa* sp. nov., *Australimoosella impressionista* sp. nov., and *Gambiella*? *toxica* sp. nov. Twenty-three species are left in open nomenclature because the available specimens are either too few to allow identification at the species level or consist exclusively of juveniles lacking sufficient diagnostic characters. Although the available material was limited by the small number of samples and the near absence of specimens bearing soft parts and appendages, it nevertheless highlights the extent of taxonomic diversity that remains to be clarified in New Caledonian marine waters.

The present material further provides an opportunity to thoroughly illustrate and revise three poorly known species originally described by Brady in the late 19th century: *Cythere torticollis*, here re-attributed to *Adencythere*, *Cythere scotti*, placed in *Lankacythere* following Maddocks (2007) and *Loxoconcha honoluliensis*, since placed in *Loxoconchella*. The revision also resolves several long-standing taxonomic uncertainties. All occurrences of *Loxoconcha dampierensis* from New Caledonia are here re-assigned to *Loxoconcha australis*, while *Paracytheridea gynaikokratia* is regarded as a junior synonym of *Paracytheridea remanei*. The occurrence of *Callistocythere keiji* in New Caledonia is considered uncertain. In addition, the re-examination of material attributed by Apostolescu (1967) to *Cytheropteron* has clarified the status of this genus in New Caledonia. The specimens tentatively identified as *Cytheropteron*? sp. a could not be located in the collection, whereas material previously assigned to a second species of *Cytheropteron* is here re-assigned to two distinct species of *Oculocytheropteron*. Consequently, the present identification of *Cytheropteron* based on specimens from Prony Bay (Laboute collection) represents the first confirmed occurrence of the genus in New Caledonia.

At the supra-specific level, the present re-examination considerably broadens the known ostracod diversity of the region. Eleven genera are recorded from New Caledonia for the first time: *Anscottiella*, *Bairdoppilata*, *Cytherois*, *Cytheropteron*, *Gambiella*?, *Kangarina*? (likely representing a new genus), *Neohornibrookella*, *Oculocytheropteron*, *Parapolycope*, *Pectocythere*? (though this generic attribution based on a juvenile is uncertain), and *Semicytherura*. The species previously identified as *Polycope*? sp. a by Apostolescu (1967) is here reassigned to the sarsiellid genus *Anscottiella*.

Beyond resolving individual taxonomic problems, the results demonstrate the considerable value of revisiting historical museum collections for regions that remain poorly documented. The combination of re-examined historical material, previously undetermined specimens, and unprocessed sediment samples not only resolves long-standing uncertainties but also reveals a substantial overlooked diversity. The discovery of *Gambiella*? *toxica* sp. nov. and *Loxoconcha venenosa* sp. nov. from the Prony Bay Hydrothermal Field is particularly significant in this respect and provides a solid basis for a more detailed analysis of ostracod communities associated with shallow-water hydrothermal systems, which will be addressed in the second part of this study. Overall, the present work significantly expands our current knowledge of the ostracod biodiversity in New Caledonia while establishing a robust taxonomic framework for future ecological and biogeographical investigations of the region.

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Author contribution

Conceptualization: MBF. Data curation: MBF. Formal analysis: MBF, CTB, TP. Investigation & Validation: MBF, CTB. Methodology: MBF, CTB. Project administration: MBF, CTB. Supervision: MBF. Visualization: MBF, CTB. Writing - original draft: MBF. Writing - review and editing: MBF, CTB, TP.

References

Ahmed S.T. 1994. Calcareous micropaleontology of the Neogene of Cox's. Bazar, Bangladesh. *Revista Española de Micropaleontologia* 26: 31–67.

Aiello G., Barra D. & Parisi R. 2016. Intra- and interspecific shell variability of the genus *Urocythereis* Ruggieri, 1950 (Ostracoda: Hemicytheridae) in the La Strea Bay (Ionian Sea, Italy). *European Journal of Taxonomy* 193: 1–35. https://doi.org/10.5852/ejt.2016.193

Allison E.C. & Holden J.C. 1971. Recent ostracodes from Clipperton Island eastern Tropical Pacific. *Transactions of the San Diego Society of Natural History* 16: 165–214. https://doi.org/10.5962/bhl.part.15458

Antonietto L.S., Machado C.P., Do Carmo A. & Rosa J.W.C. 2012. Recent Ostracoda (Arthropoda, Crustacea) from São Petro—São Paulo Archipelago, Brazil: a preliminary approach. *Zootaxa* 3335 (1): 29–53. https://doi.org/10.11646/zootaxa.3335.1.2

Apostolescu V. 1956. Contribution à l'étude des ostracodes de l'Éocène inférieur (s.l.) du Bassin de Paris. *Revue de l'Institut Français du Pétrole et Annales des Combustibles Liquides* 11 (11) : 1327–1352.

Apostolescu V. 1967. Détermination des ostracodes de la mission Singer-Polignac en Nouvelle-Calédonie. *Edition de la Fondation Singer-Polignac* 2: 121–125.

Athersuch J. 1977. On *Loxoconcha alata* Brady. *Stereo-Atlas of Ostracod Shells* 4 (17): 99–106. Available from https://www.biodiversitylibrary.org/item/210747#page/26/mode/1up [accessed 28 Feb. 2026].

Avias J. 1967. Overthrust structure of the main ultrabasic new Caledonian massives. *Tectonophysics* 4 : 531–541. https://doi.org/10.1016/0040-1951(67)90017-0

Babinot J.-F. & Degaugue-Michalski F. 1996. Lagoonal to reefal ostracod assemblages from Holocene and Recent deposits, Chesterfield Islands and northern New Caledonia (southwestern Pacific). *Micropaleontology* 42: 351–362. https://doi.org/10.2307/1485957

Babinot J.-F. & Kouyoumontzakis G. 1995. Associations d'ostracodes d'un environnement récifal envasé : le lagon de l'île de Mayotte (Archipel des Comores, Océan Indien occidental). *Geobios* 18: 17–38. https://doi.org/10.1016/s0016-6995(95)80150-2

Baird W. 1835. List of Entomostraca found in Berwickshire. *History of the Berwickshire Naturalists' Club, Edinburgh* 1: 95–100. Available from https://www.biodiversitylibrary.org/page/18200866 [accessed 28 Feb. 2026].

Baird W. 1838. The natural history of the British Entomostraca. *Magazine of Zoology and Botany* 2: 132–144, 400–412. Available from https://archive.org/details/naturalhistoryof00bair/page/n9/mode/2up [accessed 25 Oct. 2026].

Baird W. 1845. Arrangement of the British Entomostraca, with a list of species, particularly noticing those which have as yet been discovered within the bounds of the Club. *Transactions of the Berwickshire Naturalist's Club* 2 (13): 145–158.

Baird W. 1850. *The Natural History of the British Entomostraca*. Ray Society, London. https://doi.org/10.5962/bhl.title.1807

Baltzer F. 1970. Étude sédimentologique du Marais de Mara (côte ouest de la Nouvelle-Calédonie) et des formations quaternaires voisines. *Expédition française sur les récifs coralliens de la Nouvelle-Calédonie organisée sous l'égide de la Fondation Singer-Polignac* 4: 1–146. Available from https://horizon.documentation.ird.fr/exl-doc/pleins_textes/2024-10/04568.pdf [accessed 28 Feb. 2026].

Barge L.M. & Price R.E. 2022. Diverse geochemical conditions for prebiotic chemistry in shallow-sea alkaline hydrothermal vents. *Nature Geoscience* 15: 976–981. https://doi.org/10.1038/s41561-022-01067-1

Basha S.H. 1983. Foraminifera and Ostracoda from Holocene sediments in the Jordanian part of the Gulf of Aqaba. *Dirasat* 5 (1): 109–127.

Bate R.H. 1963. The Ostracoda collected during the voyage of H.M.S. Challenger. *Micropaleontology* 9 (1): 79–84. https://doi.org/10.2307/1484610

Bate R.H. 1971. The distribution of Recent Ostracoda in the Abu Dhabi Lagoon, Persian Gulf. *In*: Oertli H.J. (ed.) *Paléoécologie des Ostracodes*: 239–225. Bulletin du Centre de Recherches Pau-SNPA 5.

Bate R.H. 1972. Upper Cretaceous Ostracoda from the Carnarvon Basin, Western Australia. *Special Papers in Palaeontology* 10: 1–85. https://doi.org/10.1017/s0016756800039893

Bate R.H., Whittaker J.E. & Mayes C.A. 1981. Marine Ostracoda of the Galapagos Islands and Ecuador. *Zoological Journal of the Linnean Society* 73: 1–79. https://doi.org/10.1111/j.1096-3642.1981.tb01579.x

Behrens P. 1991. Ostracoda (Crustacea) from Lizard Island, northern Great Barrier Reef, Australia. I. Families: Cytherellidae, Loxoconchidae, Cytherideidae, Krithidae, Cytheromatidae, Bythocytheridae, Cytheridae. *Helgoländer Meeresuntersuchungen* 45: 107–142. https://doi.org/10.1007/bf02365639

Benson R.H. 1964. Recent marine podocopid and platycopid Ostracodes of the Pacific. *Pubblicazioni Della Stazione Zoologica Di Napoli* 33: 387–420.

Benson R.H. 1972. The *Bradleya* problem, with descriptions of two new psychrospheric ostracode *Agrenocythere* and *Poseidonamicus* (Ostracoda: Crustacea). *Smithsonian Contributions to Palaeobiology* 33 (1–3): 1–138. https://doi.org/10.5479/si.00810266.12.1

Benson R.H. & Coleman G.L. 1963. Recent marine Ostracodes from the eastern Gulf of Mexico. *The University of Kansas Paleontological Contributions* 31 (2): 1–52.

Benson R.H., Berdan J.M., van den Bold W.A., Hanai T., Hessland I., Howe H.V., Kesling R. V., Levinson S.A., Reyment R.A., Moore R.C., Scott H.W., Shaver R.H., Sohn I.G., Stover E., Swain F.M. & Sylvester-Bradley P.C. 1961. Systematic descriptions. *In*: Moore R.C. (ed.) *Treatise on Invertebrate Paleontology, Part Q, Arthropoda* 3: Q99–Q421. Geological Society of America, New York and University of Kansas Press, Lawrence.

Bergue C.T. & Coimbra J.C. 2007. *Javanella sanfordae*, a new Cytheridae (Crustacea: Ostracoda) species with a discussion on the validity of the genus *Javanella* Kingma. *Revista Brasileira de Paleontologia* 10 (3) : 151–156. https://doi.org/10.4072/rbp.2007.3.02

Bergue C.T., de Santana dos Anjos-Zerfass G. & Forel M.-B. 2023. Holocene deep-sea ostracods of the São Paulo Ridge, São Paulo Plateau, and Rio Grande Rise, southwestern Atlantic Ocean. *Marine Biodiversity* 53 (44): 1–28. https://doi.org/10.1007/s12526-022-01331-y

Bergue C.T., Forel M.-B., de Santana dos Anjos-Zerfass G. & Brandão S.N. 2025. Holocene Bythocytheridae (Ostracoda: Podocopida) from Southwestern Atlantic deep-sea sediments off Brazil. Part 1: tribes Bythocytherini Sars, 1926 and Jonesini Schornikov, 1981. *Nauplius* 33: e20240539. https://doi.org/10.1590/2358-2936e20240539

Bhatia S.B. & Kumar S. 1979. Recent Ostracoda from off Karwar, west coast of India. *In*: Krstic N. (ed.) *Taxonomy, Biostratigraphy and Distribution of Ostracodes*: 173–178. Proceedings of VII International Symposium on Ostracodes, Belgrade, Serbian Geological Society.

Bold van den W.A. 1946. *Contribution to the Study of Ostracoda with Special Reference to the Tertiary and Cretaceous Microfauna of the Caribbean Region*. PhD thesis. Utrecht University, Utrecht, The Netherlands.

Bold van den W.A. 1950. *Hemikrithe*, a new genus of Ostracoda from the Indopacific. *Annals and Magazine of Natural History* 12: 900–904. https://doi.org/10.1080/00222935008654722

Bonaduce G. 1985. *Bosasella*, a new marine ostracod genus from Somalia. *Bollettino della Societa dei Naturalisti in Napoli* 93: 3–11.

Bonaduce G., Masoli M. & Pugliese N. 1976. Ostracoda from the Gulf of Aqaba (Red Sea). *Pubblicazioni Della Stazione Zoologica Di Napoli* 40: 372–428.

Bonaduce G., Masoli M., Minichelli G. & Pugliese N. 1980. Some new benthic marine ostracoda species from the Gulf of Aqaba (Red Sea). *Bollettino della Società Paleontologica Italiana* 19 (1): 143–178. Available from https://www.paleoitalia.it/wp-content/uploads/2023/03/8-Bonaduce-et-al.pdf [accessed 28 Feb. 2026].

Bonaduce G., Ciliberto B., Minichelli G., Masoli M. & Pugliese N. 1983. The Red Sea benthic ostracodes and their geographical distribution. *In*: Maddocks R.F. (ed.) *Applications of Ostracoda*: 472–491. University of Houston, Department of Geosciences.

Bonvallot J., Gay J.C. & Habert E. 2012. *Atlas de la Nouvelle Calédonie*. IRD, Congrès de la Nouvelle-Calédonie, Marseille/Nouméa. Available from https://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers20-04/010058377.pdf [accessed 28 Feb. 2026].

Bosquet J. 1852. Description des Entomostracés fossiles des terrains tertiaires de la France et Belgique. *Mémoires Couronnés et Mémoires des Savants Étrangers* 24: 1–142. https://doi.org/10.3406/marb.1852.1413

Boyd E.S., Schut G.J., Adams M.W. & Peters J.W. 2014. Hydrogen metabolism and the evolution of biological respiration. *Microbe* 9: 361–367. https://doi.org/10.1128/microbe.9.361.1

Brady G.S. 1866. On new or imperfectly known species of marine Ostracoda. *Transactions of the Zoological Society of London* 5: 359–393. https://doi.org/10.1111/j.1096-3642.1866.tb00649.x

Brady G.S. 1868a. Contributions to the study of the Entomostraca II. Marine Ostracoda from the Mauritius. *Annals and Magazine of Natural History* 4 (2): 178–184. Available from https://www.marinespecies.org/ostracoda/aphia.php?p=sourceget&id=173583 [accessed 28 Feb. 2026].

Brady G.S. 1868b. A monograph of the Recent British Ostracoda. *Transactions of the Linnean Society of London* 26 (2): 353–495. https://doi.org/10.1111/j.1096-3642.1968.tb00199.x

Brady G.S. 1868c. Contributions to the study of the Entomostraca III. Marine Ostracoda from Tenedos. *Annals and Magazine of Natural History* 4 (2): 220–225. https://doi.org/10.1080/00222936808695785

Brady G.S. 1869. Description of Ostracoda. *In*: de Folin L. & Périer L. (eds) *Les Fonds de la Mer*: 113–176. Available from http://www.biodiversitylibrary.org/item/108784 [accessed 28 Feb. 2026].

Brady G.S. 1870. Notes on Entomostraca taken chiefly in the Northumberland and Durham District (1869). *Transactions of the Natural History Society of Northumberland and Durham* 3: 361–373. Available from https://www.marinespecies.org/aphia.php?p=sourceget&id=173587 [accessed 28 Feb. 2026].

Brady G.S. 1880. Report on the Ostracoda dredged by H.M.S. Challenger during the years 1873-1876. *Report on the Scientific Results of the Voyage of H.M.S. Challenger During the Years 1873–76. Zoology* 1 (part 3): 1–184. Available from http://www.19thcenturyscience.org/HMSC/HMSC-Reports/Zool-03/README.htm [accessed 28 Feb. 2026].

Brady G.S. 1886. Notes on Entomostraca collected by Mr. A. Haly in Ceylon. *The Journal of the Linnean Society of London, Zoology* 19: 293–317. https://doi.org/10.1111/j.1096-3642.1886.tb02227.x

Brady G.S. 1890. On Ostracoda collected by H.B. Brady, Esq., L. L. D., F. R. S. in the South Sea islands. *Transactions of the Royal Society of Edinburgh, Earth Sciences* 35 (2): 489–525. https://doi.org/10.1017/s0080456800017749

Brady G.S. & Norman A.M. 1889. A monograph of the marine and fresh-water Ostracoda of the North Atlantic and of northwestern Europe. Section I: Podocopa. *Scientific Transactions of the Royal Dublin Society* 4: 63–270.

Bubikyan S.A. 1958. Ostracods of the Paleogene deposits of the Erivan Basin. *Izvestiya Akademii Nauk Armyanskoy SSR, Seriya Geolgiya-Geografiya* 11: 3–16.

Cabioch G. 1988. *Récifs frangeants de la Nouvelle-Calédonie (Pacifique sud-ouest). Structure interne et influences de l'eustatisme et de la néotectonique*. PhD thesis. Université de Provence, Aix-en-Provence, France. Available from https://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers17-06/27963.pdf [accessed 28 Feb. 2026].

Cabioch G., Anglada R. & Babinot J.F. 1986. Microfaunes et paléoenvironnements des récifs frangeants quaternaires de Mamié et Ricaudy (Nouvelle-Calédonie). *Cahiers de Micropaléontologie* 1 (1–2): 5–36. Available from https://horizon.documentation.ird.fr/exl-doc/pleins_textes/pleins_textes_5/b_fdi_18-19/25430.pdf [accessed 28 Feb. 2026].

Chapman F. 1901. On some fossils of Wenlock age from Mulde, near Klinteberg, Gotland. *Annals and Magazine of Natural History* [Seventh Series] 7(38), 141–160.
https://www.biodiversitylibrary.org/page/24345007

Chapman F. 1902. On some Ostracoda from Funafuti. *The Journal of the Linnean Society, Zoology* 28: 417–433. https://doi.org/10.1111/j.1096-3642.1902.tb01548.x

Chapman F. 1914. Description of new and rare fossils obtained by deep boring in the Mallee. Part III. Ostracoda to Fishes. With a complete list found in the borings. *Proceedings of the Royal Society of Victoria* 27 (1): 28–71. Available from http://www.biodiversitylibrary.org/page/8499749 [accessed 9 Aug. 2026].

Chapman F. 1915. Report on the Foraminifera and Ostracoda. *In*: *Zoological Results of the Fishing Experiments carried on by the F.I.S. 'Endeavour' 1909-14. Fisheries Vol. 3*: 1–51. Department of Trade and Customs, Sydney. Available from http://www.biodiversitylibrary.org/page/8499749 [accessed 9 Aug. 2026].

Chapman F. 1916. Report on the Foraminifera and Ostracoda from elevated deposits on the shores of the Ross Sea. *In*: Benson W.N., Chapman F., Cohen F., Cotton L.A., Hedley C., Jensen H.I., Mawson D., Skeats E.W., Thomson J.A., Walkom A.B., & Woolnough W.G. (eds.) *British Antarctic Expedition 1907-9 under the Command of Sir E. H. Shackleton, C.V.O., Reports on the Scientific Investigations, Geology, Vol. II - Contributions to the Palaeontology and Petrology of South Victoria Land*: 25–51. William Heinemann, London. https://doi.org/10.5962/bhl.title.22427

Chapman F. 1931. A report on samples obtained by borings into Michaelmas Reef, about 22 miles N.E. of Cairns, Queensland. *Reports of Great Barrier Reef Committee* 3: 32–42.
Available from https://espace.library.uq.edu.au/view/UQ:689186 [accessed 9 Aug. 2026].

Chapman F. 1941. Report on foraminiferal soundings and dredgings of the F.I.S. *Endeavour* along the continental shelf of the South East coast of Australia. *Transactions of the Royal Society of South Australia* 65 (2): 145–211.
Available from https://www.biodiversitylibrary.org/page/41563756#page/175/mode/1up [accessed 9 Aug. 2026].

Chapman F. & Crespin I. 1928. Part 3. Descriptions of new or rare species. *In*: Chapman F., Crespin I. & Keble R.A. (eds) The Sorrento Bore, Mornington Peninsula, with description of new or little-known fossils. *Records of the Geological Survey of Victoria* 5 (1): 1–195.

Chapman F. & Parr W.J. 1935. Foraminifera and Ostracoda from soundings made by the trawler Bonthorpe in The Great Australian Bight. *Journal of the Royal Society of Western Australia* 21: 1–7. Available from http://www.biodiversitylibrary.org/page/43753290 [accessed 9 Aug. 2026].

Chavtur V.G. 1981. On the systematic position of the modern Ostracoda in the family Polycopidae (Ostracoda, Cladocopina). *Transactions of the Institute of Oceanology, Academy of Science of the USSR* 115: 53–60.

Chavtur V.G. 1983. *Ostrakody Myodocopina, ClaIocopina umerennykh i kholodnykh vod Severnogo polusharila*. [*Ostracods (Myodocopina, Cladocopina) of Temperate and Cold Waters of the Northern Hemisphere*]. Academy of Sciences of the USSR, Far-Eastern Science Center, Institute of Marine Biology, Vladivostok.

Chevalier J.P. 1968. Géomorphologie de l'île de Maré. Les récifs de l'île de Maré. *Expédition française sur les récifs coralliens de la Nouvelle-Calédonie organisée sous l'égide de la Fondation Singer-Polignac* 3: 1–158.

Chevalier J.P. 1971. Les Scléractiniaires de la Mélanésie Française (II^{ème} partie). *Expédition française sur les récifs coralliens de la Nouvelle-Calédonie organisée sous l'égide de la Fondation Singer-Polignac* 4: 7–307.

Chevillon C. & Richer de Forges B. 1988. Sediments and bionomic mapping on soft bottoms in the south-western lagoon of New Caledonia. *Proceedings of the 6th International Coral Reef Symposium, Australia 1988* 2: 589–594.

Cluzel D., Aitchison J.C. & Picard C. 2001. Tectonic accretion and underplating of mafic terranes in the Late Eocene intraoceanic fore-arc of New Caledonia (Southwest Pacific): geodynamic implication s. *Tectonophysics* 340: 23–59. https://doi.org/10.1016/s0040-1951(01)00148-2

Coimbra J.C. & Carreño A.L. 2002. Sub-recent Bairdiinae (Crustacea, Ostracoda) from the Brazilian equatorial shelf. *Revista española de Micropaleontologia* 34 (2): 187–199.

Coimbra J.C. & Carreño A.L. 2012. Richness and palaeo-zoogeographical significance of the benthic Ostracoda (Crustacea) from the oceanic island of Trindade and Rocas atoll, Brazil. *Revista Brasileira de Paleontologia* 15 (2): 189–202. https://doi.org/10.4072/rbp.2012.2.07

Coimbra J.C. & Fauth G. 2002. The families Bythocytheridae Sars, 1866 and Leptocytheridae Hanai, 1957 (Ostracoda) on the Brazilian equatorial shelf. *Neues Jahrbuch für Geologie und Paläontologie - Monatshefte* 9: 562–576. https://doi.org/10.1127/njgpm/2002/2002/562

Coimbra J.C. & Ornellas de L.P. 1987. The Subfamily Orionininae Puri, 1973 (Ostracoda; Hemicytheridae) in the Brazilian Continental Shelf, part II. Sistematic of the Genus *Caudites* Coryell & Fields, 1973. *Pesquisas em Geociências* 19 (19): 55–80. https://doi.org/10.22456/1807-9806.21682

Coimbra J.C., Ramos M.I.F. & Sanguinetti Y.T. 1992. Sub-Recent Ostracodes of the Tamandaré Bay, Northeastern Brazil—A preliminary report on biofacies. *Pesquisas em Geociências* 19: 94−105. https://doi.org/10.22456/1807-9806.21326

Coimbra J.C., Pinto I.D., Würding N. & Carmo D.A. 1999. Zoogeography of Holocene Podocopina (Ostracoda) from the Brazilian continental shelf. *Marine Micropaleontology* 37: 365−379. https://doi.org/10.1016/s0377-8398(99)00025-0

Coimbra J.C., Ghilardi V., Casetta G.M. & Bergue C.T. 2009. Ostracodes (Crustacea) da Ilha da Trindade e do Atol das Rocas, Brasil. *In*: Mohr L.V., Castro J.W., Costa P.M.S. & Alves R.V. (eds) *Ilhas Oceânicas Brasileiras: da Pesquisa ao Manejo, Vol. II*: 125–141. SECIRM, Brasília.

Coimbra J.C., Bottezini S.R. & Machado C.P. 2013. Ostracoda (Crustacea) from the Archipelago of São Pedro and São Paulo, Equatorial Atlantic, with emphasis on a new Hemicytheridae genus. *Iheringia, Série Zoologia* 103 (3): 289−301. https://doi.org/10.1590/s0073-47212013000300012

Coryell H.N. & Fields S. 1937. A Gatun ostracode fauna from Cativa, Panama. *American Museum Novitates* 956: 1−18. Available from http://hdl.handle.net/2246/3927 [accessed 28 Feb. 2026].

Coryell H.N., Sample C.H. & Jennings P.H. 1935. *Bairdoppilata*, a new genus of Ostracoda, with two new species. *American Museum Novitates* 777: 1−5.
Available from https://www.biodiversitylibrary.org/item/342842#page/1/mode/1up [accessed 28 Feb. 2026].

Coudray J. 1976. Recherches sur le Néogène et le Quaternaire marins de la Nouvelle Calédonie. Contribution de l'étude sédimentologique à la connaissance de l'histoire géologique post-éocène de la Nouvelle-Calédonie. *Expédition française sur les Récifs Coralliens de Nouvelle Calédonie, Vol. 8. Fondation Singer-Polignac*. Paris, France.

Coudray J. & Margerel J.-P. 1974. Les foraminifères de la série récifale traversée par le sondage Ténia (côte sud-ouest de Nouvelle-Calédonie). *Comptes Rendus hebdomadaires des Séances de l'Académie des sciences, série D* 279: 231−234.

Crespin I. 1943. The stratigraphy of the Tertiary marine rocks in Gippsland, Victoria. *Bureau of Mineral Resources, Geology and Geophysics* 9 (4): 1−101.
Available from https://ecat.ga.gov.au/geonetwork/srv/eng/catalog.search#/metadata/201 [accessed 9 Aug. 2026].

Dana J.D. 1853. Tribe III: Cyproidea = Ostracoda. *In*: *Crustacea of United States. Exploring Expedition during the Years 1838. 1839, 1840, 1841, 1842, under the Command of Charles Wilkes, USA* 14 (2):1277−1304.

Dando P.R. 2010. Biological communities at marine shallow-water vent and seep sites. *In*: Kiel S. (ed.) The vent and seep biota. *Topics in Geobiology* 33: 333−378.
https://doi.org/10.1007/978-90-481-9572-5_11

Danise S. & Dominici S. 2014. A record of fossil shallow-water whale falls from Italy. *Lethaia* 47: 229–243. https://doi.org/10.1111/let.12054

Danise S., Twitchett R. & Matts K. 2014. Ecological succession of a Jurassic shallow-water ichthyosaur fall. *Nature communications* 5: 4789. https://doi.org/10.1038/ncomms5789

Davis P.S. & Horne D.J. 1988. A note on some type specimens of G.S. Brady's South Sea island ostracods. *Journal of Micropalaeontology* 7: 41–42. https://doi.org/10.1144/jm.7.1.41

De Deckker P. & Jones P.J. 1978. Checklist of Ostracoda recorded from Australia and Papua New Guinea, 1845–1973. *Bureau of Mineral Resources, Australia, Report* 195 : 1–184.

Denizot M. 1963. Les algues marines des récifs coralliens et leur milieu. *Science et Nature* 59: 1–8.

Denizot M. 1965. Algues marines de la Nouvelle-Calédonie. I-*Apjohnia laete-virens* Harvey et II-*Bellotia simplex* nov. sp. *Cahiers du Pacifique* 7: 65–68.

Dewi K.T. 1997. Ostracoda from the Java Sea, west of Bawean Island, Indonesia. *Marine Geological Institute, Special Publication* 4: 1–116.

Dewi K.T. 2000. Distribution of recent ostracoda off Tg. Selatan, South Kalimantan, Indonesia. *Bulletin of the Marine Geology* 15 (1): 1–18.

Dewi K.T., Frenzel P., Muller A. & van Harten D. 2004. Recent Ostracoda (Microcrustacean) from a Banda to Timor Sea depth traverse: implications for paleobathymetric studies. *In*: Indonesian Association of Geologists (ed.) *Proceedings of the 33rd Annual Convention and Exhibition: Geology for Geo-Resources Management and Regional Planning*: 42–51. Bandung, Indonesia.

Dewi K.T., Adhirana H., Priohandono Y.A. & Novico L.G.F. 2016. Ostracoda as an indicator of marine environmental changes off Tarahan power plant, Lampung Bay, Sumatera. *Jurnal Geologi Kelautan* 14 (1): 1–12.

Dewi K.T., Latuputty G., Priohandono Y.A. & Purwanto C. 2017. The response of microfauna (Ostracoda) to marine environmental condition off Bangka Island, North Sulawesi. *Jurnal Geologi Kelautan* 15 (1): 1–9. https://doi.org/10.32693/jgk.15.1.2017.375

Diamond E.A., Richer de Forges B. & Kornicker L.S. 2008. *Azygocypridina brynmawria*, a new myodocopid ostracod off Lansdowne Bank, New Caledonia (Crustacea: Ostracoda: Myodocopa: Cypridinidae). *Proceedings of the Biological Society of Washington* 121 (3): 354–364.
https://doi.org/10.2988/07-42.1

Dingle R.V. 1993. Quaternary ostracods from the continental margin off south-western Africa. Part II. Minor taxa. *Annals of the South African Museum* 103 (1): 1–165.
Available from https://www.biodiversitylibrary.org/item/126180#page/3/mode/1up [accessed 28 Feb. 2026].

Doumenge F. & Doumenge J.-P. 1991. *Le Pacifique, l'océan. Ses rivages et ses îles : trente ans de recherche scientifique française dans le Pacifique (1960–1990)*. Actes du colloque organisé le 6 novembre 1990 par la Fondation Singer-Polignac. Institut Océanographique de Monaco.

Dugas F., Debenay J.-P., Fourmanoir P., Launay J. & Rougerie F. 1981. Carte sédimentologique et carte annexe du lagon de Nouvelle-Calédonie à 1/50 000: Feuille Prony. ORSTOM.

Eagar S.H. 1971. A check list of the Ostracoda of New Zealand. *Journal of the Royal Society of New Zealand* 1 (1): 53–64. https://doi.org/10.1080/03036758.1971.10419355

Eagar S.H. 1999. Intraspecific variation in the shell ornamentation of benthic Ostracoda (Crustacea) from Kiribati, Pacific Ocean. *Oceanologica Acta* 22 (6): 603–608.
https://doi.org/10.1016/s0399-1784(00)88951-3

Egger J.G. 1902. Ostrakoden aus Meeresgrundproben gelothet von 1874–1876 von S. M. S. *Gazelle*. *Abhandlungen der Bayerischen Akademie der Wissenschaften, Mathematisch-Physikalische Klasse* 21: 413–477.

Elofson O. 1939. *Cytheridea macrolaminata* n. sp., eine neue arktische Ostracode. *Arkiv för Zoologi* 31: 1–22.

Elofson O. 1941. Zur Kenntnis der marinen Ostracoden Schwedens mit besonderer Beruecksichtigung des Skagerraks. *Zoologiska Bildrag från Uppsala* 19: 215–534.

Faiz N.N. & Omar R. 2009. Ostrakod Baharu di Dalam Sedimen Luar Pantai di Sekitar Pulau Tioman, Pahang. *Sains Malaysiana* 38: 9−20.

Faiz N.N. & Omar R. 2014. Recent benthic Ostracoda of Pahang River Delta, Pahang Darul Makmur. *AIP Conference Proceedings* 1614: 610−615. https://doi.org/10.1063/1.4895272

Faiz N.N. & Omar R. 2016. Distribution of Ostracoda in offshore sediment around Pulau Besar, Johor. *Ekosistem Marin Malaysia: Penyelidikan Pantai Timur Johor Darul Takzim*: 135−162.

Fauzielly L. 2013. Distribusi vertikal Ostracoda dan hubungannya dengan perubahan lingkungan di perairan teluk Jakarta. *Bulletin of Scientific Contribution* 11 (2): 108–117.

Fauzielly L., Irizuki T. & Sampei Y. 2012. Vertical changes of recent ostracode assemblages and environment in the inner part of Jakarta Bay, Indonesia. *Journal of Coastal Development* 16 (1): 11–24.

Fauzielly L., Irizuki T. & Sampei Y. 2013. Spatial distribution of recent ostracode assemblages and depositional environments in Jakarta Bay, Indonesia, with relation to environmental factors. *Paleontological Research* 16 (4): 267–281. https://doi.org/10.2517/1342-8144-16.4.267

Fischer S. 1855. Beitrag zur Kenntnis der Ostracoden. *Abhandlungen der Mathematisch-Physikalischen Classe der königlich-Bayerischen Akademie der Wissenschaften* 7 (3): 635–666.
Available from https://www.biodiversitylibrary.org/page/11391803 [accessed 28 Feb. 2026].

Forel M.-B. 2021. Recent ostracods (Crustacea) from the southwestern coast of Peninsular Thailand (Satun Province), Andaman Sea. *Revue de Micropaléontologie* 72: e100526.
https://doi.org/10.1016/j.revmic.2021.100526

Forel M.-B. 2024. *Triebelina indopacifica* and *Triebelina porinetia* sp. nov. (Ostracoda) from French Polynesia and first insight into their pore systems. *Zootaxa* 5501 (1): 56–78.
https://doi.org/10.11646/zootaxa.5501.1.3

Forel M.-B., Charbonnier S., Gale L., Tribovillard N., Martinez-Soares P., Bergue C.T., Gradstein F.M. & Gaillard C. 2024. A new chemosynthetic community (ostracods, foraminifers, echinoderms) from Late Jurassic hydrocarbon seeps, south-eastern France Basin. *Geobios* 84: 1–24. https://doi.org/10.1016/j.geobios.2023.12.006

Forel M.-B., Charbonnier S., Bergue C.T. & Gaillard C. 2025a. Ostracod communities through a cold fluid seepage during the Late Jurassic: the Sahune site (Drôme, France). *Geodiversitas* 47 (17): 687–703. https://doi.org/10.5252/geodiversitas2025v47a17

Forel M.-B., Charbonnier S., Gaspard D. & Bergue C.T. 2025b. Ostracods, brachiopods (*Peregrinella*) and scolecodonts from the Early Cretaceous cold seep of Curnier, France. *BSGF - Earth Sciences Bulletin* 196: 17. https://doi.org/10.1051/bsgf/2025015

Frouin E., Bes M., Ollivier B., Quéméneur M., Postec A., Debroas D., Armougom F. & Erauso G. 2018. Diversity of rare and abundant prokaryotic phylotypes in the Prony hydrothermal field and comparison with other serpentinite-hosted ecosystems. *Frontiers in Microbiology* 9: 102. https://doi.org/10.3389/fmicb.2018.00102

Fyan E.C. 1916. Eenige jong-pliocene ostracoden van Timor. *Proceedings of the Section of Sciences, Koninklijke Nederlandse Akademie van Wetenschappen te Amsterdam* 24: 1175–1186.

Ganesan P. & Hussain S.M. 2010. Distribution of Recent Benthic Ostracoda in Tamiraparani Estuary, Punnaikayal, near Tuticorin, Southeast Coast of India: Implications for Microenvironments. *Gondwana Geological Magazine* 25 (1): 103–114.

Garnier J. 1871. *Voyage autour du monde, La Nouvelle-Calédonie (côte orientale)*. Plon Ed., Paris.

Gopalakrishna K., Hussain S.M., Maheshbilwa L. & Ayisha V.A. 2007. Recent benthic Ostracoda from the inner-shelf off the Malabar Coast, Kerala, Southwest coast of India. *Journal of the Palaeontological Society of India* 52 (1): 59–68. https://doi.org/10.1177/0971102320070107

Gou Y. 1990. Recent Ostracoda from Hainan island, South China Sea. *Courier Forschungsinstitut Senckenberg* 123: 19–36.

Gou Y., Zheng S. & Huang B. 1983. Pliocene Ostracode fauna of Leizhou Peninsula and northern Hainan Island, Guangdong Province. *Palaeontologia Sinica Series B* 162: 1–157.

Gramann F. 1975. Ostracoda from Tertiary sediments of Burma with reference to living species. *Geologisches Jahrbuch B* 14: 1–46.

Gründel J. 1967. Zur Großgliederung der Ordnung Podocopida G.W. Müller, 1984 (Ostracoda). *Neues Jahrbuch für Geologie und Palaeontologie–Monatshefte* 6: 321–332.

Guha D.K. 1968. On the Recent Ostracoda from Neogene of Andaman Islands. *Journal of the Geological Society of India* 9 (1): 58–66. https://doi.org/10.17491/jgsi/1968/090107

Hall S.J. 1987. New species of *Sarsiella* and *Anscottiella* (Ostracoda: Myodocopina) from Lizard Island, North Queensland. *Journal of Crustacean Biology* 7 (4): 738–763. https://doi.org/10.1163/193724087x00487

Hanai T. 1956. Studies on the Ostracoda from Japan: I Subfamilies Leptocytherinae, N. Subfamilies, 'Toulminiinae', N. Subfamilies, and Cytherurinae, G.W. Müller. LSU Historical Dissertations and Theses 147. Available from https://repository.lsu.edu/gradschool_disstheses/147/ [accessed 03 Aug. 2026].

Hanai T. 1957. Studies on the Ostracoda from Japan. 1 - Subfamily Leptocytherinae, new Subfamily. *Journal of the Faculty of Science, Tokyo University. Section 2* 10: 431–468.

Hanai T. 1959. Studies on the Ostracoda from Japan. 4 - Family Cytheridaeidae, Sars, 1925. *Journal of the Faculty of Science, Tokyo University. Section 2* 11(3): 291–308.

Hartmann G. 1959. Zur Kenntnis der lotischen Lebensbereiche der pazifischen Küste von El Salvador unter besonderer Berücksichtigung seiner Ostracodenfauna. *Kieler Meeresforschungen* 15 (2): 187–241.

Hartmann G. 1964. Zur Kenntnis der Ostracoden des Roten Meeres. *Kieler Meeresforschungen* 20: 35–127.

Hartmann G. 1974. Zur Kenntnis des Eulitorals der afrikanischen Westküste zwischen Angola und Kap der Guten Hoffnung und der afrikanischen Ostküste von Südafrika und Mocambique unter besonderer Berücksichtigung der Polychaeten und Ostracoden Teil 3: Die Ostracoden des Untersuchungsgebiets. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 69: 229–521.

Hartmann G. 1978. Die Ostracoden der Ordnung Podocopida G.W. Müller, 1894 der tropisch-subtropischen Westküste Australiens (zwischen Derby und Perth). Zur Kenntnis des Eulitorals der australischen Küsten unter besonderer Berücksichtigung der Polychaeten und Ostracoden. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 75: 64–219.

Hartmann G. 1979. Zur Kenntnis des Eulitorals der australischen Kusten unter besonderer Berucksichtigung der Polychaeten und Ostracoden (Teil 2 und Teil 3). Teil 3. Die Ostracoden der Ordnung Podocopida G.W. Müller 1894 der warm-temperierten (antiborealen) West- und Sudwestküste. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 76: 219–301.

Hartmann G. 1980. Die Ostracoden der Ordnung Podocopida G.W. Müller 1894 der warmtemperierten und subtropisch-tropischen Küstenabschnitte der Süd- und Südostküste Australiens (zwischen Ceduna im Westen und Lakes Entrance im Osten). *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 77: 111–204.

Hartmann G. 1981. Die Ostracoden der Ordnung Podocopida G.W. Müller, 1894 der subtropisch-tropischen Ostküste Australiens (zwischen Eden im Süden und Heron-Island im Norden). *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 78: 97–149.

Hartmann G. 1984. Zur Kenntnis der Ostracoden der polynesischen Inseln Huahiné (Gesellschaftsinseln) und Rangiroa (Tuamotu-Inseln). *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 81: 117–169.

Hartmann G. 1991. Ostracoden von Hawaii, insbesondere aus dem marinen Interstitial. *Helgoländer Meeresuntersuchungen* 45: 165–198. https://doi.org/10.1007/bf02365641

Hazel J.E. 1967. Classification and distribution of the Recent Hemicytheridae and Trachyleberididae (Ostracoda) off northeastern North America. *Geological Survey Professional Paper* 564: 1–49.

Herrig E. 1977. Neue Ostracoden-Arten aus dem Plio-Pleistozän der Sozialistischen Republik Vietnam. Teil 2. *Zeitschrift für geologische Wissenschaften* 5 (10): 1253–1267.

Hoibian T., Ayress M. & Allenbach M. 2000. Ostracod (Crustacea) populations as environmental indicators of inter-tropical transitional deltaic environments. An example from the Néra Delta, New-Caledonia, South-West Pacific. *Revue de Paléobiologie* 19: 207–225.

Hoibian T., Ayress M. & Allenbach M. 2002. Ostracods [sic] assemblages of Roche Percée Bay and adjacent fringing reef flats - New Caledonia — South-west Pacific. *Revue de Paléobiologie* 21: 177–191.

Holden J.C. 1967. Late Cenozoic Ostracoda from drowned terraces in the Hawaiian Islands. *Pacific Science* 21 (1): 1–50.

Holden J.C. 1976. Late Cenozoic Ostracoda from Midway Islands drill holes. *United States Geological Survey Professional Papers* 680F: 1–43. https://doi.org/10.3133/pp680f

Horne D.J. & Whittaker J.E. 1985. A revision of the genus *Paradoxostoma* Fischer (Crustacea; Ostracoda) in British waters. *Zoological Journal of the Linnean Society* 85(2): 131–203. https://doi.org/10.1111/j.1096-3642.1985.tb01502.x

Hornibrook N.B. 1953. Tertiary and recent marine Ostracoda of New Zealand, their origin affinities and distribution. *New Zealand Geological Survey, Paleontological Bulletin* 18: 1–82.

Howe H.V. & McKenzie K.G. 1989. Recent marine Ostracoda (Crustacea) from Darwin and north-Western Australia. *Monograph Series of the Northern Territory. Museum of Arts and Sciences* 3: 1–50. Available from https://archive.org/details/biostor-241633 [accessed 28 Feb. 2026].

Hu C.H. 1979. Studies on ostracode faunas from the Hengchun Formation, Hengchun Peninsula, Southern Taiwan. *Petroleum Geology of Taiwan* 16: 59–84.

Hu C.H. 1981. New ostracod faunas from the Maanshan mudstone of Hengchun Peninsula, southern Taiwan. *Petroleum Geology of Taiwan* 18: 81–109.

Hu C.H. & Tao H.J. 2008. Studies on the ostracod fauna of Taiwan and its adjacent seas. Part I. *National Taiwan Museum Special Publication Series* 13: 1–655.

Hughes G.W. 1977. *The Geology and foraminiferal Micropalaeontology of the Lungga and Itina Basin areas of Western Guadalcanal, Solomon Islands*. PhD thesis, University of Wales, Aberystwyth, UK.

Huh M. & Whatley R. 1997. New species of Miocene cytheracean Ostracoda from the Pohang Basin, SE Korea. *Journal of Micropalaeontology* 16: 31–40. https://doi.org/10.1144/jm.16.1.31

Hussain S.M. 1998. Recent benthic Ostracoda from the Gulf of Mannar off Tuticornin, southeast coast of India. *Journal of the Palaeontological Society of India* 43: 1–22. https://doi.org/10.1177/0971102319980101

Hussain S.M. & Mohan S.P. 2000. Recent Ostracoda from the Adyar river estuary, Chennai, Tamil Nadu. *Journal of the Palaeontological Society of India* 45: 25–31. https://doi.org/10.1177/0971102320000102

Hussain S.M. & Mohan S.P. 2001. Distribution of recent benthic Ostracoda in Adyar River estuary, east coast of India. *Indian Journal of Marine Sciences* 30: 53–56.

Hussain S.M., Ravi G., Mohan S.P. & Rajeshwara Rao N. 2004. Recent benthic Ostracoda from the inner shelf off Chennai, southeast coast of India – implication on microenvironments. *Environmental Micropaleontology, Microbiology and Meiobenthology* 1: 105–121.

Hussain S.M., Mohan S.P. & Jonathan M.P. 2010. Ostracoda as an aid in identifying 2004 tsunami sediments: a report from SE coast of India. *Natural Hazards* 55: 513–522. https://doi.org/10.1007/s11069-010-9543-4

Isaac M.J. 1996. Geology of the Kaitaia area: scale 1:250,000. Institute of Geological & Nuclear Sciences, Lower Hutt.

Ishizaki K. 1966. Miocene and Pliocene ostracodes from the Sendai area, Japan. *Science Reports of the Tohoku University, Sendai, Second Series (Geology)* 37: 131–163.

Ishizaki K. 1968. Ostracodes from Uranouchi Bay, Kochi Prefecture, Japan. *Science Reports of the Tohoku University, Sendai, Second Series (Geology)* 40: 1–45.

Jadot H. & Boulvain F. 2015. Sedimentology and magnetic susceptibility of recent sediments from New Caledonia. *In*: Da Silva A.C., Whalen M.T., Hladil J., Chadimova L., Chen D., Spassov S., Boulvain F. & Devleeschouwer X. (eds) *Magnetic Susceptibility Application: A Window onto Ancient Environments and Climatic Variations*. Geological Society, London, Special Publications 414. https://doi.org/10.1144/sp414.2

Jain S.P. 1978. Recent Ostracoda from Mandvi Beach, west coast of India. *Bulletin of the Indian Geologists Association* 11 (2): 89–139.

Jain S.P. 1981. Recent Ostracoda from Southwest Kerala Coast, India. *Bulletin of the Indian Geologists Association* 14: 107−119.

Jellinek T. 1993. Zur Ökologie und Systematik rezenter Ostracoden aus dem Bereich des kenianischen Barriere-Riffs. *Senckenbergiana Lethaea* 73: 83−225.

Jellinek T. 1995. The Plio-Pleistocene genus *Mutilus* Neviani 1955 (Ostracoda) and some of its so-called Recent descendants. *Senckenbergiana Lethaea* 75 (1−2): 163−191.

Jones T.R. 1849. A monograph of the Entomostraca of the Cretaceous Formation of England. *Monograph of the Palaeontographical Society London* 3: 1−40. https://doi.org/10.1080/02693445.1850.12088362

Juday C. 1907. Ostracoda of the San Diego region. II: Littoral forms. *University of California Publications in Zoology* 3: 135−156.

Kaesler R.L. & Waters J.A. 1972. A census of Holocene species of *Xestoleberis* (Ostracoda, Podocopida) from the southern oceans. *Paleontological Contributions Kansas University* 60: 1−35.

Karanovic I., Tanaka H. & Tsukagoshi A. 2016. Congruence between male upper lip morphology and molecular phylogeny in *Parapolycope* (Ostracoda), with two new species from Korea. *Invertebrate Systematics* 30: 231–254. https://doi.org/10.1071/is15056

Keeler N. 1981. *Recent Podocopid Ostracoda from Agulhas Bank, South African Continental Margin and Reunion Island, Southern Indian Ocean*. MSc thesis. University College of Wales, Aberystwyth, UK.

Keij A.J. 1953. Preliminary note on the recent ostracods of the Snellius Expedition. *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series B Physical Sciences* 56 (2): 155−168.

Keij A.J. 1954. Ostracoda, identification and description of species. *In*: Van Andel T.J. & Postma H. (eds) Recent sediments of the Gulf of Paria. *Reports of the Orinoco Shelf Expedition* 1: 218−231.

Keij A.J. 1957. Eocene and Oligocene Ostracoda of Belgium. *Mémoire de l'Institut royal des Sciences naturelles de Belgique* 136: 1−210. Available from https://biblio.naturalsciences.be/rbins-publications/memoirs-of-the-royal-belgian-institute-of-natural-sciences-first-series/136-1957/vol-136-024e47x-text1.pdf [accessed 15 Aug. 2026].

Keij A.J. 1964. Neogene to Recent Species of *Cytherelloidea* (Ostracoda) from Northwestern Borneo. *Micropaleontology* 10 (4): 415−430. https://doi.org/10.2307/1484651

Keij A.J. 1974. Review of the Indopacific species of *Triebelina* (Ostracoda). *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen B Physical Sciences* 77: 345–358.

Keij A.J. 1978. Remarks on the Indo-Pacific ostracode genus *Loxoconchella*. *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series B Physical Sciences* 81 (2): 215–229.

Keyser D. & Mohammed M. 2021. Taxonomy of recent shallow marine Ostracods from Al-Hudeida City-Yemen. *Marine Micropaleontology* 164: e101974. https://doi.org/10.1016/j.marmicro.2021.101974

Keyser D. & Schöning C. 2000. Holocene Ostracoda (Crustacea) from Bermuda. *Senckenbergiana lethaea* 80 (2): 567–591. https://doi.org/10.1007/bf03043366

Khalaf S.K. 1989. The ostracod genus *Actinocythereis* from the Middle Miocene of Northern Iraq. *Journal of Micropaleontology* 8 (2): 135–142. https://doi.org/10.1144/jm.8.2.135

Khosla S.C., Mathur A.K. & Pant P.C. 1982. Ecology and distribution of Recent ostracodes in the Miani Lagoon, Saurashtra coast. *Recent Researches in Geology* 9: 361–371.

Kiel S., Wiese F. & Titus A.L. 2012. Shallow-water methane-seep faunas in the Cenomanian Western Interior Seaway: no evidence for onshore-offshore adaptations to deep-sea vents. *Geology* 40 (9): 839–842. https://doi.org/10.1130/g33300.1

Kingma J.T. 1948. *Contributions to the Knowledge of the Young-Caenozoic Ostracoda from the Malayan region*. PhD thesis. University of Utrecht, Utrecht, The Netherlands.

Kisseih A., Higuti J. & Martens K. 2020. Re-description of *Strandesia sanoamuangae* (Savatenalinton & Martens, 2010) and description of a new species of *Strandesia* (Crustacea, Ostracoda) from Grande Terre, New Caledonia. *European Journal of Taxonomy* 627: 1–28. https://doi.org/10.5852/ejt.2020.627

Klie W. 1936. Zur Kenntnis der Ostracoden–Familie Polycopidae. *Zoologische Jahrbücher. Abteilung für Systematik, Ökologie und Geographie der Tiere* 68: 517–532.

Kollmann K. 1960. Cytherideinae und Schulerideinae n. subfam. (Ostracoda) aus dem Neogen des östlichen Österreich. *Mitteilungen der Geologischen Gesellschaft in Wien* 51 (4): 89–195.

Kornicker L.S. 1958. Ecology and taxonomy of recent marine ostracodes in the Bimini area, Great Bahama Bank. *Publications of the Institute of Marine Science, University of Texas* 5: 194–300. Available from https://repository.si.edu/server/api/core/bitstreams/acf4819a-009d-4b78-938d-a61e3a60b658/content [accessed 28 Feb. 2026].

Kornicker L.S. 1969. Morphology, ontogeny and intraspecific variation of *Spinacopia*, a new genus of myodocopid Ostracod (Sarsiellidae). *Smithsonian Contributions to Zoology* 8: 1–50. https://doi.org/10.5479/si.00810282.8

Kornicker L.S. 1975. Antarctic Ostracoda (Myodocopina), Parts 1 and 2. *Smithsonian Contributions to Zoology* 163: 1–720. https://doi.org/10.5479/si.00810282.163

Kornicker L.S. 1976. Benthic marine Cypridinacea from Hawaii (Ostracoda). *Smithsonian Contributions to Zoology* 231: 1–24. https://doi.org/10.5479/si.00810282.231

Kornicker L.S. 1991. Myodocopid Ostracoda of Enewetak and Bikini Atolls. *Smithsonian Contributions to Zoology* 505: 1–140. https://doi.org/10.5479/si.00810282.505

Kornicker L.S. 2007. Ostracoda from New Caledonia. *In*: Payri C.E. & Richer de Forges B. (eds) *Compendium of Marine Species from New Caledonia*: 231. Institut de Recherche pour le Développement 117, second edition.

Kornicker L.S. & Caraion F.E. 1978. West African Myodocopid Ostracoda (Sarsiellidae, Rutidermatidae). *Smithsonian Contributions to Zoology* 250: 1–110. https://doi.org/10.5479/si.00810282.250

Kornicker L.S. & Iliffe T.M. 1989. Ostracoda (Myodocopina, Cladocopina, Halocypridina) mainly from anchialine caves in Bermuda. *Smithsonian Contributions to Zoology* 475: 1–96. https://doi.org/10.5479/si.00810282.475

Kornicker L.S. & Sohn I.G. 1976. Phylogeny, ontogeny, and morphology of living and fossil Thaumatocypridacea (Myodocopa: Ostracoda). *Smithsonian Contributions to Zoology* 219: 1–132. https://doi.org/10.5479/si.00810282.219

Kornicker L.S. & Thomassin B.A. 1998. Ostracoda (Myodocopina) of Tulear Reef Complex, SW Madagascar. *Smithsonian Contributions to Zoology* 595: 1–144. https://doi.org/10.5479/si.00810282.595

Kornicker L.S. & von Morkhoven F.P.C.M. 1976. *Metapolycope*, a new genus of bathyal Ostracoda from the Atlantic (Suborder Cladocopina). *Smithsonian Contributions to Zoology* 225: 1–29. https://doi.org/10.5479/si.00810282.225

Krutak P.R. 1982. Modern Ostracodes of the Veracruz-Anton Lizardo reefs, Mexico. *Micropaleontology* 28 (3): 258–288. https://doi.org/10.2307/1485182

Latreille P.A. 1806. *Genera Crustaceorum et Insectorum Secundum Ordinem Naturalem in Familias Disposita, Iconibus Exemplisque Plurimis Explicata. Tomus I*. Parisiis et Argentorati apud Amand Koenig bibliopolam.

Launay J. & Fontes J.-C. 1985. Les sources thermales de Prony (Nouvelle-Calédonie) et leurs précipités chimiques. Exemple de formation de brucite primaire. *Géologie de la France* 1: 83–100. Available from https://horizon.documentation.ird.fr/exl-doc/pleins_textes/pleins_textes_5/b_fdi_14-15/19982.pdf [accessed 28 Feb. 2026].

Le Roy L.W. 1939. Some small foraminifers, ostracoda and otoliths from the Neogene ("Miocene") of the Rokan-Tapanoeli area, Central Sumatra. *Natuurkundig Tijdschrift voor Nederlandsch-Indië* 99 (6): 215–296.

Liebau A. 1991. Skulptur-Evolution bei Ostrakoden am Beispiel europäischer *'Quadracytheren'*. *Geologie und Paläontologie in Westfalen* 13: 1–395.

Luz N.C. & Coimbra J.C. 2022. Ostracods (Crustacea: Ostracoda) of the Vitoria-Trindade Chain, Southwestern Atlantic. *Zootaxa* 5188 (4): 301–329. https://doi.org/10.11646/zootaxa.5188.4.1

Luz N.C. & Coimbra J.C. 2023. Benthic ostracods (Crustacea) from the Vitória-Trindade Chain, South Atlantic Ocean, with the description of five new species. *Zootaxa* 5285 (3): 426–454. https://doi.org/10.11646/zootaxa.5285.3.2

Luz N.C., Ritter N.M., Erthal F. & Coimbra J.C. 2025. Hotspots of linked-fidelity: Live-dead faithfully of insular ostracods sheds light on the structure of the marine microfossil record. *Journal of South American Earth Sciences* 163: e105609. https://doi.org/10.2139/ssrn.5174814

Machado C.P., Coimbra J.C. & Bergue C.T. 2020. Provinciality of Ostracoda (Crustacea) in the Northeastern and Eastern Brazilian shelves based on neontological and paleontological analyses. *Revista Brasileira De Paleontologia* 23 (1): 3–31.

Maddocks R.F. 1966. Distribution patterns of living and subfossil podocopid ostracods in the Nosy Bé area, northern Madagascar. *University of Kansas Palaeontological Contributions* 12: 1–72.

Maddocks R.F. 1969. Revision of recent Bairdiidae (Ostracoda). *United States National Museum Bulletin* 295: 1–126. https://doi.org/10.5479/si.03629236.295.1

Maddocks R.F. 1974. Ostracodes. *In*: Bright T. & Pequegnat L. (eds) *Biota of the West Flower Garden Bank*: 200–229. Gulf Publishing Co., Houston, Texas.
Available from https://archive.org/details/biotaofwestflowe0000unse/page/226/mode/2up [accessed 14 Aug. 2026].

Maddocks R.F. 1988. New species and review of the genus *Paracypris* (Ostracoda). *Crustaceana* 55 (1): 53–70. https://doi.org/10.1163/156854088x00249

Maddocks R.F. 1995. Bairdiidae (Ostracoda) of Nosy Be, Madagascar. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut* 92: 197–236.

Maddocks R.F. 2005. New thalassocypridine Ostracoda from anchialine caves of the Loyalty Islands, New Caledonia (Podocopida, Paracypridinae). *Micropaleontology* 51 (3): 169–216. https://doi.org/10.2113/51.3.169

Maddocks R.F. 2007. Podocopid and platycopid Ostracoda of New Caledonia. *In*: Payri C.E. & Richer de Forges B. (eds) *Compendium of Marine Species from New Caledonia*: 269–273. Institut de Recherche pour le Développement 117.
Available from https://horizon.documentation.ird.fr/exl-doc/pleins_textes/divers15-05/010059799.pdf [accessed 28 Feb. 2026].

Maddocks R.F. 2013. New and poorly known species of *Neonesidea* (Bairdiidae, Ostracoda, Crustacea) from French Frigate Shoals, the Hawaiian Islands. *Zootaxa* 3608 (6): 457–510. https://doi.org/10.11646/zootaxa.3608.6.3

Maddocks R.F. 2025. “By any other name”: The saga of *Bairdia bradyi* van den Bold, 1957 in the Caribbean and Gulf of Mexico, with eight new species of *Bairdoppilata* (Ostracoda, Podocopida). *Zootaxa* 5628 (1): 1–78. https://doi.org/10.11646/zootaxa.5628.1.1

Maddocks R.F., Iliffe T.M. & Sarbu S. 1993. Anchialine podocopid Ostracoda of New Caledonia. *In*: McKenzie K.G. & Jones P.J. (eds) *Ostracoda in the Earth and Life Sciences*: 439-450. A.A. Balkema. Rotterdam.

Malz H. & Ikeya N. 1986. *Miocyprideis* and *Bishopina*, related but different cyprideidine ostracoda. *Reports of the Faculty of Sciences, Shizuoka University* 20: 175–187.

Malz H. & Keij A.J. 1987. *Loxoconchella* Triebel, 1954 (Crustacea, Ostracoda): proposed confirmation of type species. *Zoological Nomenclature* 44 (3): 170, 171. https://doi.org/10.5962/bhl.part.311

Malz H. & Lord A. 1988. Recent ornate bairdiid ostracoda: origin and distribution. *In*: Hanai T., Ikeya N. & Ishizaki K. (eds) *Evolutionary Biology of Ostracoda: Its Fundamentals and Applications*: 63–74. Elsevier/Kodansha, Amsterdam/Tokyo. https://doi.org/10.1016/s0920-5446(08)x7008-6

Margerel J.-P. 1981. Espèces nouvelles de foraminifères de la baie de Saint-Vincent (Nouvelle-Calédonie). *Cahiers de Micropaléontologie* 4: 67–72.

Martens K., Yavuzatmaca M. & Higuti J. 2019. On a new species of the genus *Cyprinotus* (Crustacea, Ostracoda) from a temporary wetland in New Caledonia (Pacific Ocean), with a reappraisal of the genus. *European Journal of Taxonomy* 566: 1–22. https://doi.org/10.5852/ejt.2019.566

Martens K., Ferreira V.G., de Almeida N.M. & Higuti J. 2023a. On *Caledromus robinsmithi*, a new genus and species of Psychrodromini Martens, 2001 (Crustacea, Ostracoda, Herpetocypridinae) from New Caledonia (Pacific Ocean). *ZooKeys* 1165: 155–182. https://doi.org/10.3897/zookeys.1165.104045

Martens K., Almeida N.M.D., Páll-Gergely B. & Higuti J. 2023b. On a new tribe, genus and species of Cypricercinae McKenzie, 1971 (Crustacea, Ostracoda, Cyprididae) from New Caledonia (Pacific Ocean). *Zootaxa* 5375 (4): 451–477. https://doi.org/10.11646/zootaxa.5375.4.1

Maurizot P. & Mortimer N. 2020. New Caledonia: geology, geodynamic evolution and mineral resources. *Geological Society, London, Memoirs* 51 (1): 1–277. https://doi.org/10.1144/m51.0

McDonald A.P. 2023. *Neogene Ostracod Micropalaeontology and Marine Palaeoenvironmental Reconstruction in Southeastern Australia*. PhD thesis. Deakin University, Geelong, Victoria, Australia.

McDonald A.P. & Warne M.T. 2022. Latest Miocene ostracods from the Bookpurnong Formation in the Murray Basin of southeastern Australia: shallow marine migrants into an epicontinental sea. *Alcheringa* 46 (3–4): 301–339. https://doi.org/10.1080/03115518.2022.2133169

McDonald A.P., Wolden E.A. & Warne M.T. 2024. Early Pliocene Ostracoda from the Jemmys Point Formation, Gippsland Basin, southeastern Australia: nearshore and offshore origins of biodiversity. *Alcheringa* 48 (2): 338–383. https://doi.org/10.1080/03115518.2024.2347505

McKenzie K.G. 1964. The ecologic associations of an ostracode fauna from Oyster Harbour, a marginal marine environment near Albany, Western Australia. *Pubblicazioni Della Stazione Zoologica Di Napoli* 33 (Suppl.): 421–461.

McKenzie K.G. 1967. Recent Ostracoda from Port Phillip Bay, Victoria. *Proceedings of the Royal Society of Victoria* 80: 61–106.
Available from https://www.biodiversitylibrary.org/page/56859301#page/83/mode/1up [accessed 28 Feb. 2026].

McKenzie K.G. 1969. Corrected nomenclature of species list in McKenzie 1965. *In*: Neale J. (ed.) *The Taxonomy, Morphology and Ecology of Recent Ostracoda*: 448–453. Oliver & Boyd, Edinburgh.

McKenzie K.G. 1974. Cenozoic Ostracoda of southeastern Australia with the description of *Hanaiceratina* new genus. *Geoscience and Man* 6: 153–182.

McKenzie K.G. 1982. Chapman's 'Mallee bores' and 'Sorrento Bore' Ostracoda in the National Museum of Victoria, with the description of *Maddocksella* new genus. *Proceedings of the Royal Society of Victoria* 92 (3): 105–107.

McKenzie K.G. 1986. A comparative study of collections from the S.W. Pacific (Saipan to Tonga), with the descriptions of *Gambiella caudata* (Brady, 1890) and a new species of *Pterobairdia* (Ostracoda). *Journal of Micropalaeontology* 5: 91–108. https://doi.org/10.1144/jm.5.1.91

McKenzie K.G. & Pickett J.W. 1984. Environmental interpretations of late Pleistocene ostracode assemblages from the Richmond River Valley, New South Wales. *Proceedings of the Royal Society of Victoria* 96 (4): 227–242.
Available from https://www.biodiversitylibrary.org/page/57468389#page/537/mode/1up [accessed 28 Feb. 2026].

McKenzie K.G. & Sudijono 1981. Plio-Pleistocene Ostracoda from Sangiran, Java. *Publication of the Geological Research and Development Centre. Paleontology Series* 1: 29–51.

McKenzie K.G., Reyment R.A. & Reyment E.R. 1990. Pleistocene and Recent Ostracoda from Goose Lagoon Drain, Victoria and Kingston, South Australia. *Bulletin of the Geological Institution of the University of Uppsala (New Series)* 16: 1–46. Available from
https://paleoarchive.com/literature/McKenzieEtAl1990-PleistoceneRecentOstracodaSouthAustralia.pdf [accessed 28 Feb. 2026].

McKenzie K.G., Reyment R.A. & Reyment E.R. 1991. Eocene-Oligocene Ostracoda from south Australia and Victoria, Australia. *Revista Española de Micropaleontología* 6 (2): 135–175.
https://doi.org/10.7203/sjp.25056

Méhes G. 1939. Ostracodes de la Nouvelle Calédonie. *Revue suisse de Zoologie* 46: 549–566.

Mohammed M. 2004. *The Study of Ostracoda in Recent Deposits–South West Yemen*. Ph.D. Thesis, Baghdad University, Iraq.

Mohammed M. & Keyser D. 2012. Recent ostracods from the tidal flats of the coast of Aden City, Yemen. *Marine Biodiversity* 42: 247–280. https://doi.org/10.1007/s12526-012-0112-9

Mohammed M. & Keyser D. 2014. *Adencythere kodalnamerensis*, a new genus and a new species (Ostracoda) from Kod Al-Namer Beach, Aden City, Yemen. *Crustaceana* 87 (8–9): 1036–1042.
https://doi.org/10.1163/15685403-00003341

Mohammed M., Al-Wosabi M.A., Keyser D. & Al-Kadasi W.M. 2012. Distribution and taxonomy of shallow marine Ostracods from Northern Socotra Island (Indian Ocean) – Yemen. *Revue de Micropaléontologie* 55: 149–170. https://doi.org/10.1016/j.revmic.2012.06.004

Mohammed Nisbath N., Hussain S.M., Neelavnnan K., Thejasino S., Saalim S. & Rajkumar A. 2017. Ostracod biodiversity from shelf to slope oceanic conditions, off central Bay of Bengal, India. *Palaeogeography, Palaeoclimatology, Palaeoecology* 481: 70–82.
https://doi.org/10.1016/j.palaeo.2017.05.004

Mohan S.P., Ravi G., Hussain S.M. & Rao N.R. 2001. Recent Ostracoda from the Bay of Bengal, off Karikkattuppam (near Chennai), South East coast of India. *Journal of the Palaeontological Society of India* 46: 1–14. https://doi.org/10.1177/0971102320010101

Monnin C., Chavagnac V., Boulart C., Ménez B., Gérard M., Gérard E., Pisapia C., Quémeneur M., Erauso G., Postec A., Guentas-Dombrowski L., Payri C. & Pelletier B. 2014. Fluid chemistry of the low

temperature hyperalkaline hydrothermal system of Prony Bay (New Caledonia). *Biogeosciences* 11: 5687–706. https://doi.org/10.5194/bg-11-5687-2014

Monnin C., Quéméneur M., Price R., Jeanpert J., Maurizot P., Boulart C., Donval J.-P. & Pelletier B. 2021. The chemistry of hyperalkaline springs in serpentinizing environments: 1. The composition of free gases in New Caledonia compared to other springs worldwide. *Journal of Geophysical Research: Biogeosciences* 126: e2021JG006243. https://doi.org/10.1029/2021jg006243

Montenegro M.E., Pugliese N. & Sciuto F. 2004. Shallow water ostracods near the Mae Khlong River mouth (NW Gulf of Thailand). *Bollettino della Societa Paleontologica ltaliana* 43 (1–2): 225–234.

Moore R.C. 1961. *Treatise on Invertebrate Paleontology. Arthropoda 3, Crustacea, Ostracoda*. Geological Society of America and University of Kansas Press, Boulder and Lawrence.

Morat P. 2010. Les botanistes récolteurs en Nouvelle-Calédonie de 1774 à 2005. *Adansonia* 32 (2): 159–216. https://doi.org/10.5252/a2010n2a1

Morley M.S. & Hayward B.W. 2012. Ostracoda of the Hauraki Gulf, New Zealand. *Records of the Auckland Museum* 48: 51–75.

Morley M.S. & Hayward B.W. 2016. Ostracoda of the Cavalli Islands, Northland, New Zealand. *Records of the Auckland Museum* 51: 79–93.

Mostafawi N. 1992. Rezente Ostracoden aus dem mittleren Sunda-Schelf, zwischen der Malaiischen Halbinsel und Borneo. *Senckenbergiana Lethaea* 72: 129–168.

Mostafawi N., Colin J.P. & Babinot J.F. 2005. An account on the taxonomy of ostracodes from recent reefal flat deposits in Bali, Indonesi a. *Revue de Micropaléontologie* 48: 123–140. https://doi.org/10.1016/j.revmic.2004.12.001

Mostafawi N., Nabavi S.M.B. & Moghaddasi B. 2010. Ostracods from the Strait of Hormuz and Gulf of Oman, Northern Arabian Sea. *Revista Española de Micropaleontología* 42 (2): 243–265.

Müller G.W. 1884. Zur näheren Kenntnis der Cytheriden. *Archiv fuer Naturgeschichte* 50 (1): 1–18. Available from https://www.marinespecies.org/ostracoda/aphia.php?p=sourceget&id=174430 [accessed 28 Feb. 2026].

Müller G.W. 1894. Die Ostrakoden des Golfes von Neapel und der angrenzenden Meeres-Abschnitte. *Fauna und Flora des Golfes von Neapel und der angrenzenden Meeres-Abschnitte* 21: 1–404. Available from https://www.biodiversitylibrary.org/bibliography/7419 [accessed 28 Feb. 2026].

Müller G.W. 1912. Crustacea: Ostracoda. *Das Tierreich* 31: 1–434.
Available from https://www.biodiversitylibrary.org/item/15741#page/7/mode/1up [accessed 25 Oct. 2026].

Müller O.F. 1875. Entomostraca seu Insecta Testacea, quae in aquis Daniae et Norvegiae reperit, descripsit et iconibus illustravit Otho Fridericus Müller. [The Entomostraca or Insecta Testacea, which he finds in the waters of Denmark and Norway, were described and illustrated by icons by Otho Friedrich Müller.]. F.W. Thiele, Lipsiae & Havniae: 1–134.
Available from https://www.marinespecies.org/DeepSea/aphia.php?p=sourceget&id=104418 [accessed 28 Feb. 2026].

Neil J.V. 1994. Miocene Ostracoda of the Trachyleberidae and Hemicytheridae from the Muddy Creek area, south-western Victoria. *Memoirs of the Museum of Victoria* 54: 1–49. https://doi.org/10.24199/j.mmv.1994.54.01

Niiyama S., Tanaka G., Komatsu T., Doan H.D., Nguyen H.B., Trinh H.T. & Nguyen M.T. 2019. Holocene ostracod assemblages from the Co To Islands, northeastern Vietnam. *Journal of Micropalaeontology* 38: 97–111. https://doi.org/10.5194/jm-38-97-2019

Noraswana N.F., Ramlan O. & Norashikin S. 2014. Distribution of Recent Ostracoda in offshore sediment of selected stations in the Sulu Sea, Sabah. *Malaysian Applied Biology* 43 (2): 49–57.

Norman A.M. 1865−1867. Report on the Crustacea. *In*: Deep Sea Dredgings on the Coast of Northumberland and Durham. *Natural History Transactions of Northumberland, Durham, and Newcastle-upon-Tyne. Tyneside Naturalists' Field Club* 1: 12−29.
Available from https://www.biodiversitylibrary.org/page/37119638#page/24/mode/1up [accessed 28 Feb. 2026].

Norman A.M. 1869. Last report on dredging among the Shetland Isles. Part 2. On the Crustacea, Tunicata, Polyzoa, Echinodermata, Actinozoa, Hydrozoa, and Porifera. *In*: *Report of the Thirty-eighth Meeting of the British Association for the Advancement of Science; Held in Norwich in August 1868. London 1869*: 247–336.

Ohmert von W. 1968. Die Coquimbinae, eine neue Unterfamilie der Hemicytheridae (Ostracoda) aus dem Pliozän von Chile. *Mitteilungen der Bayerischen Staatssammlung für Paläontologie und Historische Geologie* 8: 127–165.
Available from https://www.biodiversitylibrary.org/item/90556#page/7/mode/1up [accessed 28 Feb. 2026].

Omar R., Faiz N.N. & Raoh N.N. 2018. Abundance and diversity of benthic ostracod in sediments around Pulau Bidong, Terengganu. *Malaysian Applied Biology* 47 (5): 113–118.

Özdikmen H. 2009. Substitute names for two genera of Ostracoda (Crustacea). *Munis Entomology & Zoology* 4 (2): 614–615. Available from
https://www.munisentzool.org/Issue/abstract/substitute-names-for-two-genera-of-ostracoda-crustacea_222 [accessed 25 Oct. 2026].

Pelletier B. & Chevillon C. 2006. Morphologies sous-marines particulières et constructions chimiques et biologiques dans le lago sud-ouest de Nouvelle-Calédonie : les aiguilles hydrothermales de la baie du Prony et les monticules d'huîtres du banc Gail. *Abstract Book, Congrès Biodec, Nouméa (New Caledonia)*: 84–85.

Pelletier B., Chevillon C., Menou J.-L., Butscher J., Folcher E., Geoffray C., Bore J.-M., Panché J.-Y. & Perrier J. 2006. *Plongées, forage et cartographie Baie du Prony et Banc Gail, lagon Sud de Nouvelle-Calédonie, NO, ALIS, 13–17 Juin 2004 et cartographie baie du Prony NO, ALIS, 25–26 Septembre 2005, 2006*.

Pirard C., Hermann J. & O'Neill H.S. 2013. Petrology and geochemistry of the crust-mantle boundary in a nascent arc, Massif du Sud Ophiolite, New Caledonia, SW Pacific. *Journal of Petrology* 54: 1759–1792. https://doi.org/10.1093/petrology/egt030

Pisapia C., Gérard E., Gérard M., Lecourt L., Lang S.Q., Pelletier B., Payri C.E., Monnin C., Guentas L., Postec A., Quéméneur M., Erauso G. & Ménez B. 2017. Mineralizing filamentous bacteria from the Prony Bay hydrothermal field give new insights into the functioning of serpentinization-based subseafloor ecosystems. *Frontiers in Microbiology* 8: 57. https://doi.org/10.3389/fmicb.2017.00057

Postec A., Quéméneur M., Bes M., Mei N., Benaïssa F., Payri C., Pelletier B., Monnin C., Guentas-Dombrowsky L., Ollivier B., Gérard E., Pisapia C., Gérard M., Ménez B. & Erauso G. 2015. Microbial diversity in a submarine carbonate edifice from the serpentinizing hydrothermal system of the Prony Bay (New Caledonia) over a 6-year period. *Frontiers in Microbiology* 6: 857.
https://doi.org/10.3389/fmicb.2015.00857

Poulsen E.M. 1965. Ostracoda - Myodocopa, Part II: Cypridiniformes–Rutidermatidae, Sarsiellidae and Asteropidae. *Dana Report Carlsberg Foundation* 65: 1–484. https://doi.org/10.1163/9789004628625

Price R. & Giovannelli D. 2017. *A Review of the Geochemistry and Microbiology of Marine Shallow-Water Hydrothermal Vents*. Reference Module in Earth Systems and Environmental Sciences, Elsevier. https://doi.org/10.1016/B978-0-12-409548-9.09523-3

Price R., Boyd E.S., Hoehler T.M., Wehrmann L.M., Bogason E., Valtýsson H.Þ., Örlygsson J., Gautason B. & Amend J.P. 2017. Alkaline vents and steep Na+ gradients from ridge-flank basalts—implications for the origin and evolution of life. *Geology* 45: 1135–1138. https://doi.org/10.1130/g39474.1

Pugliese N., Montenegro N.E., Sciuto F. & Chaimanee N. 2006. Environmental monitoring through the shallow marine ostracods of Phetchaburi area (NW Gulf of Thailand). In: Coccioni R. & Marsili A. (eds) *Proceedings of the Second and Third Italian Meetings on Environmental Micropaleontology*: 85–90. Grzybowski Foundation Special Publication, 11.

Puri H.S. 1953. The ostracode genus *Trachyleberis* and its ally *Actinocythereis*. *American Midland Naturalist* 49 (1): 171–187. https://doi.org/10.2307/2422285

Puri H.S. 1957. Stratigraphy and zonation of the Ocala group. Part 3: Ostracoda. *Florida Geological Survey Bulletin* 38: 187–248. https://doi.org/10.35256/b38

Puri H.S. 1960. Recent Ostracoda from the west coast of Florida. *Transactions of the Gulf-Coast Association of Geological Societies* 10: 107–149.
https://doi.org/10.1306/0bda620c-16bd-11d7-8645000102c1865d

Puri H.S. & Hulings N.C. 1976. Designation of lectotypes of some ostracods from the Challenger Expedition. *Bulletin of the British Museum (Zoology)* 29 (5): 249–315.
https://doi.org/10.5962/bhl.part.6924

Quéméneur M., Bes M., Postec A., Mei N., Hamelin J., Monnin C., Chavagnac V., Payri C., Pelletier B., Guentas-Dombrowsky L., Gérard M., Pisapia C., Gérard E., Ménez B., Ollivier B. & Erauso G. 2014. Spatial distribution of microbial communities in the shallow submarine alkaline hydrothermal field of the Prony Bay, New Caledonia. *Environmental Microbiology Reports* 6 (6): 665–674.
https://doi.org/10.1111/1758-2229.12184

Quesnel B., Gautier P., Boulvais P., Cathelineau M., Maurizot P., Cluzel D., Ulrich M., Guillot S., Lesimple S. & Couteau C. 2013. Syn-tectonic, meteoric water–derived carbonation of the New Caledonia peridotite nappe. *Geology* 41: 1063–1066. https://doi.org/10.1130/g34531.1

Radhakrishnan K., Hussain S.M., Sivapriya V., Rajkumar A., Nazeer M.N. & Akram Khan N. 2022. Distribution of recent Ostracoda from the sediments of Gulf of Mannar, Tamil Nadu, southeast coast of India. *Journal of the Palaeontological Society of India* 67 (1): 229–236.
https://doi.org/10.1177/0971102320220117

Rait G., Chanier F. & Waters D. 1991. Landward and seaward-directed thrusting accompanying the onset of subduction beneath New Zealand. *Geology* 19 (3): 230–233.
https://doi.org/10.1130/0091-7613(1991)019%3C0230:lasdta%3E2.3.co;2

Rajkumar A., Hussain S. M., Nishath N.M., Dewi K.T., Sivapriya V. & Radhakrishnan K. 2020. Recent ostracod biodiversity from shelf to slope sediments of Gulf of Mannar, India: ecologic and bathymetric implications. *Journal of the Palaeontological Society of India* 65 (1): 73–80.
https://doi.org/10.1177/0971102320200107

Richer de Forges B. 1991. *Le benthos des fonds meubles des lagons de Nouvelle-Calédonie, Volume 1*. Éditions de l'ORSTOM, Paris.

Roemer F.A. 1841. *Die Versteinerungen des Norddeutschen Kreidegebirges. Mit sechszehn lithographirten Tafeln*: 49–145. Hahn'sche Hofbuchhandlung, Hannover.
https://doi.org/10.5962/bhl.title.44865

Roth R. 1928. *Monoceratina*: A new genus of Ostracoda from the Pennsylvanian of Oklahoma. *Journal of Paleontology* 2 (1): 15–19.

Rougerie F. 1986. Le lagon sud-ouest de Nouvelle-Calédonie : spécificité hydrologique, dynamique et productivité. Études et thèses / Institut français de recherche scientifique pour le développement en coopération. ORSTOM, Bondy.

Ruggieri G. 1950. Gli ostracodi delle sabbie grigie quaternarie (Milazziano) di Imola. Parte I. *Giornale di Geologia* 21: 1–57.

Ruggieri G. 1953. Eta e faune di un terrazzo marino sulla Costa Ionica della Calabria. *Giornale di Geologia, Série 2a* 23: 18–168.

Ruggieri G. 1967. Due Ostracofaune del Miocene alloctono della Val Marecchia (Appenino Settentrionale). *Rivista Italiana di Paleontologia e Stratigrafia* 73 (1): 351–384.

Ryan D.R., Witts J.D. & Landman N.H. 2020. Palaeoecological analysis of a methane seep deposit from the Upper Cretaceous (Maastrichtian) of the U.S. Western Interior. *Lethaia* 54 (2): 185–203. https://doi.org/10.1111/let.12396

Salvat B. 1964. Prospections faunistiques en Nouvelle Calédonie dans le cadre de la mission d'études des récifs coralliens. *Cahiers du Pacifique* 6: 77–119.

Sars G.O. 1866. Oversigt af Norges marine ostracoder. [Overview of Norway's marine ostracods]. *Forhandlinger i Videnskabs-Selskabet i Christiania* 1865 (1): 1–130.

Sars G.O. 1888. Nye bidrag til kundskaben om Middelhavets invertebratfauna. 4. Ostracoda mediterranea. *Archiv for Mathematik og Naturvidenskab* 12: 173–324.

Sars G.O. 1923. Polycopidæ (concluded), Cytherellidæ, Cypridæ (part). *In*: Sars G.O. (ed.) *Ostracoda, An Account of the Crustacea of Norway* 9 (III–IV): 33–72. Bergen, Bergen Museum.

Sars G.O. 1925. Cypridæ (concluded), Cytheridæ (part). *In*: Sars G.O. (ed.) *Ostracoda*, *An Account of the Crustacea of Norway* 9 (IX–X): 137–176. Bergen Museum, Bergen.

Sars G.O. 1926. Cytheridæ (continued). *In*: Sars G.O. (ed.) *Ostracoda, An Account of the Crustacea of Norway* 9 (XIII–XIV): 209–240. Bergen, Bergen Museum.

Sars G.O. 1928. *An Account of the Crustacea of Norway, with short descriptions and figures of all the species. Vol. IX: Ostracoda*: 209–277. Bergen Museum, Bergen.

Schornikov E.I. 1988. The pathways of morphological evolution of Bythocytheridae. *In*: Hanai T., Ikeya N. & Ishizaki K. (eds) *Evolutionary Biology of Ostracoda, its Fundamentals and Applications*: 951–956. Elsevier, Amsterdam. https://doi.org/10.1016/S0920-5446(08)70232-2

Schornikov E.I. 1993. Problems of systematics of the ostracod Paradoxostomatidae and reclassification of *Paradoxostoma* s.l. from Peter the Great Bay (Sea of Japan) I: Ecosystem Research: coastal communities of Peter the Great Bay. *USSR Academy of Sciences. Far East Branch, Pacific Oceanological Institute, Kamchatka Department of Marine Biology and Biotechnology*.

Scott A. 1905. Report on the Ostracoda collected by Prof. Herdman at Ceylon in 1902. *Ceylon Pearl Oyster Fisheries, Supplementary Reports* 22: 365–384.
Available from https://www.marinespecies.org/ostracoda/aphia.php?p=sourceget&id=174684 [accessed 28 Feb. 2026].

Scott T. 1894. Report on Entomostraca from the Gulf of Guinea collected by John Rathay, B.Sc. *Transactions of the Linnean Society of London* 6: 1–7.
https://doi.org/10.1111/j.1096-3642.1894.tb00660.x

Shyam Sunder V.V., Varma K.U. & Naidu T.Y. 1995. Recent Ostracoda of the Goguleru Creek, east coast of India. *Journal of the Geological Society of India* 45: 471–481. https://doi.org/10.17491/jgsi/1995/450409

Sleep N.H., Bird D.K. & Pope E.C. 2011. Serpentinite and the dawn of life. *Philosophical Transactions of the Royal Society B: Biological Sciences* 366: 2857–2869. https://doi.org/10.1098/rstb.2011.0129

Sridhar S.G.D., Hussain S.M., Kumar V. & Periakali P. 1998. Benthic Ostracoda responses to sediments in the Palk Bay, off Rameswaram, Southeast Coast of India. *Journal of Indian Association of Sedimentologists* 17 (2): 187–195.

Sridhar S.G.D., Hussain S.M., Kumar V. & Periakali P. 2002. Recent benthic Ostracoda from Palk Bay, off Rameswaram, southeast coast of India. *Journal of the Paleontological Society of India* 47: 17–39. https://doi.org/10.1177/0971102320020102

Sridhar S.G.D., Hussain S.M., Periakali P. & Kumar V. 2007. Ostracod *Kotoracythere inconspicua* (Brady) from the Palk Bay, off Rameswaram, southeast coast of India: its zoogeography and ecology. *Journal of the Geological Society of India* 70: 981–986. https://doi.org/10.17491/jgsi/2007/700610

Swanson K.M. 1969. Some Lower Miocene Ostracoda from the Middle Waipara District. New Zealand. *Transactions of the Royal Society of New Zealand, Earth Sciences* 7 (3): 33–48.

Swanson K.M. 1979. The Marine Fauna of New Zealand: Ostracods of the Otago Shelf. *New Zealand Oceanographic Institute Memoir* 78: 1–57.

Sylvester-Bradley P.C. 1948. The ostracod genus *Cythereis*. *Journal of Paleontology* 22 (6): 792–797.

Sylvester-Bradley P.C. & Benson R.H. 1971. Terminology for surface features in ornate ostracodes. *Lethaia* 4: 249–286. https://doi.org/10.1111/j.1502-3931.1971.tb01924.x

Tabita Symphonia K. & Nathan D.S. 2021. Recent marine Ostracoda from East Indian shelf-slope sediments and their response to marine hydrodynamics. *Journal of Earth System Science* 130 (195): 1–14. https://doi.org/10.1007/s12040-021-01685-0

Tabuki R. & Nohara T. 1988. Preliminary study on the ecology of Ostracods from the Moat of a Coral Reef off Sesoko Island, Okinawa, Japan. *In*: Hanai T., Ikeya N. & Ishizaki K. (eds) *Evolutionary Biology of Ostracoda: Its Fundamentals and Applications*: 429–437. Elsevier/Kodansha, Amsterdam/Tokyo. https://doi.org/10.1016/s0920-5446(08)x7008-6

Tabuki R. & Nohara T. 1990. The Ostracoda of Sekisei-sho area, Ryukyu Islands, Japan: a preliminary report on ostracods from coral reefs in the Ryukyu Islands. *In*: Whatley R. & Maybury C. (eds) *Ostracoda and Global Events*: 365−378. Chapman and Hall, London.

Tabuki R. & Nohara T. 1995. Seasonal distribution of intertidal ostracodes on gravels from the moat behind a coral reef off Sesoko Island, Ryukyu Islands, Japan. *In*: Riha J. (ed.) *Ostracoda and Biostratigraphy*: 343–349. Balkema, Rotterdam.

Tanaka G. 2016. Redescription of two krithid species (Crustacea, Ostracoda) from the Sea of Japan, with a comment on the taxonomic characters of Krithidae. *Paleontological Research* 20 (1): 31–47. https://doi.org/10.2517/2015pr022

Tanaka G. & Hasegawa Y. 2013. Miocene Ostracods from the Itahana Formation in the Tomioka District, Gunma Prefecture, Central Japan: Paleoenvironmental Significance and Systematics. *Paleontological Research* 17 (2): 138–172. https://doi.org/10.2517/1342-8144-17.2.138

Tanaka G., Yanagihara A. & Niiyama S. 2025. Ontogenetic change of shell ornamentation of two *Pistocythereis* ostracods from Japan with soft-parts description. *Paleontological Research* 29: 367–383. https://doi.org/10.2517/prpsj.250024

Tanaka H. & Tsukagoshi A. 2010. Two new interstitial species of the genus *Parapolycope* (Crustacea: Ostracoda) from central Japan. *Zootaxa* 2500: 39–57. https://doi.org/10.11646/zootaxa.2500.1.2

Tanaka H. & Tsukagoshi A. 2013. The taxonomic utility of the male upper lip morphology in the ostracod genus *Parapolycope* (Crustacea), with descriptions of two new species. *Journal of Natural History* 47: 963–986. https://doi.org/10.1080/00222933.2012.743615

Tanaka H., Tsukagoshi A. & Hiruta S. 2010. A new combination in the genus *Parapolycope* (Crustacea: Ostracoda: Myodocopa: Cladocopina), with the description of a new species from Japan. *Species Diversity* 15: 93–108. https://doi.org/10.12782/specdiv.15.93

Tarasov V.G., Gebruk A.V., Mirononov A.N. & Moskalev L.L. 2005. Deep-sea and shallow-water hydrothermal vent communities: two different phenomena? *Chemical Geology* 224: 5–39. https://doi.org/10.1016/j.chemgeo.2005.07.021

Taylor A. 1988. *The Taxonomy, Ecology and Zoogeographical Significance of Recent Reef Ostracoda from Singapore*. MSc Thesis. University of Wales, Aberystwyth, UK.

Teeter J.W. 1973. Geographic distribution and dispersal of some Recent shallow-water Ostracoda. *Ohio Journal of Science* 73: 46–54.

Teeter J.W. 1975. Distribution of Holocene marine Ostracoda from Belize. *American Association of Petroleum Geologists Studies in Geology* 2: 400–499.

Tian S.Y., Langer M., Yasuhara M. & Wei C.-L. 2024. Reefal ostracod assemblages from the Zanzibar Archipelago (Tanzania). *EGUsphere*. https://doi.org/10.5194/egusphere-2024-487

Titterton R. 1984. *The Taxonomy, Ecology and Distribution of Recent Ostracoda from the Solomon Islands*. PhD Thesis, University College of Wales, Aberystwyth, UK.

Titterton R. & Whatley R.C. 1988. Recent Bairdiinae (Crustacea, Ostracoda) from the Solomon Islands. *Journal of Micropalaeontology* 7 (2): 111–142. https://doi.org/10.1144/jm.7.2.111

Titterton R. & Whatley R.C. 2006a. Recent marine Ostracoda from the Solomon Islands: part 1 – Cypridoidea, Platycopina and Cladocopina. *Journal of Micropalaeontology* 25: 73–94. https://doi.org/10.1144/jm.25.1.73

Titterton R. & Whatley R.C. 2006b. Recent marine Ostracoda from the Solomon Islands. Part 3. Cytheroidea: Bythocytheridae, Cytherideidae, Krithidae, Neocytherideidae, Cytheruridae. *Revista Española de Micropaleontología* 38 (1): 169–189.

Titterton R. & Whatley R.C. 2007. Recent marine Ostracoda from the Solomon Islands. Part 5: Cytheroidea, Leptocytheridae. *Revista Española de Micropaleontología* 39 (1–2): 45–62.

Titterton R. & Whatley R.C. 2008. Recent marine Ostracoda from the Solomon Islands. Part 4: Cytheroidea; Hemicytheridae, Thaerocytheridae. *Journal of Micropalaeontology* 27: 13–33. https://doi.org/10.1144/jm.27.1.13

Titterton R. & Whatley R.C. 2009a. Recent marine Ostracoda from the Solomon Islands. Part 6: Cytheroidea; Paradoxostomatidae, Pectocytheridae, Trachyleberididae. *Revista Española de Micropaleontología* 41 (1–2): 35–74.

Titterton R. & Whatley R.C. 2009b. Recent marine Ostracoda from the Solomon Islands. Part 7: Cytheroidea: Loxoconchidae. *Revista Española de Micropaleontología* 41 (3): 295–314.

Titterton R., Whatley R.C. & Whittaker J.E. 2001. A review of some key species of mainly Indo-Pacific Ostracoda from the collections of G.S. Brady. *Journal of Micropalaeontology* 20: 31–44. https://doi.org/10.1144/jm.20.1.31

Triebel E. 1948. Zur Kenntnis der Ostracoden-Gattung *Triebelina*. *Senckenbergiana lethaea* 29: 17–22.

Triebel E. 1954. *Loxoconchella* n.g. (Crust. Ostr.). *Senckenbergiana lethaea* 35 (1/2): 17–21.

Ulrich E.O. 1894. *The Lower Silurian Ostracoda of Minnesota. The Geology of Minnesota, Volume 3, Part 2, Chapter 7*: 629–693. Geological and Natural History Survey of Minnesota. https://doi.org/10.5962/bhl.title.57606

Vasseur P. 1967. Ascidies de la Nouvelle-Calédonie. Paris, edit. de la Fondation Singer-Polignac: 127–146.

Wagner C.W. 1957. *Sur les Ostracodes du Quaternaire récent des Pays-Bas et leur utilisation dans l'étude géologique des dépots holocènes*. PhD Thesis, Université de Paris, France.

Wang H., Zhang H., Cao M. & Horne D.J. 2019. Holocene Ostracods from the Hang Hau Formation in Lei Yue Mun, Hong Kong, and their palaeoenvironmental implications. *Alcheringa: An Australasian Journal of Palaeontology* 43 (2): 320–333. https://doi.org/10.1080/03115518.2018.1511830

Warne M.T. 1987. Lithostratigraphical associations of the ostracode fauna in the marine Neogene of the Port Phillip and Western Port Basins, Victoria, southeastern Australia. *In*: McKenzie K.G. (ed.) *Shallow Tethys* 2: 435–445. Balkema, Rotterdam.

Warne M.T. 2001. Observations on *Ponticocythereis tricristata* (Brady, 1880) from the Admiralty Islands, Papua New Guinea and comments on Quaternary ostracod evolution within the SW Pacific Ocean. *Proceedings of the Royal Society of Victoria* 113 (2): 229–235.

Warne M.T. 2018. Comments on the ostracod species *Neohornibrookella transoceanica* (Teeter, 1975), and its broader generic significance. *Zootaxa* 4407 (2): 298–300. https://doi.org/10.11646/zootaxa.4407.2.12

Warne M.T. & Soutar B. 2012. Pliocene coastal palaeomorphology and ostracod faunas of the Bass Strait hinterland, southeast Australia. *Hydrobiologia* 688: 93–112. https://doi.org/10.1007/s10750-011-0777-2

Warne M.T. & Whatley R.C. 1996. The evolutionary significance of scale-like spines on the Australian and S.W. Pacific Cainozoic ostracods *Ponticocythereis manis* Whatley & Titterton, 1981 and *Trachyleberis floridus* sp. nov. *Journal of Micropalaeontology* 15 (2): 161–168. https://doi.org/10.1144/jm.15.2.161

Warne M.T. & Whatley R.C. 2016. *Neohornibrookella sorrentae* (Chapman and Crespin, 1928) and allied ostracod taxa from the Neogene of southeastern Australia: Systematic and palaeoceanographical relationships, palaeoecology and palaeobiogeography. *Marine Micropaleontology* 125: 110–133. https://doi.org/10.1016/j.marmicro.2016.04.003

Warne M.T., Whatley R.C. & Blagden B. 2006. The Ostracoda of Lee Point on Shoal–Bay, Northern Australia: Part 3 - Podocopina, Cytheracea. *Revista Española de Micropaleontología* 38 (1): 103–167.

Watson K.A. 1988. *The Taxonomy and Distribution of Recent Reef Ostracoda from the Palau Seribu, Java Sea*. PhD Thesis, University of Wales, Aberystwyth, UK.

Weiss M.C., Sousa F.L., Mrnjavac N., Neukirchen S., Roettger M., Nelson-Sathi S. & Martin W.F. 2016. The physiology and habitat of the last universal common ancestor. *Nature Microbiology* 1: 1–8. https://doi.org/10.1038/nmicrobiol.2016.116

Weissleader L.S., Gilinsky N.L., Ross R.M., Cronin T.M. 1989. Biogeography of marine podocopid Ostracodes in Micronesia. *Journal of Biogeography* 16 (2): 103–114. https://doi.org/10.2307/2845084

Whatley R.C. 2000. The zoogeographical significance of the marine Ostracoda of Easter Island. *Revista Española de Micropaleontología* 32: 147–156.

Whatley R.C. & Jones R. 1999. The marine podocopid Ostracoda of Easter Island: a paradox in zoogeography and evolution. *Marine Micropaleontology* 37: 327–343.

https://doi.org/10.1016/s0377-8398(99)00021-3

Whatley R.C. & Keeler N.P. 1989. Ostracodes actuels de l'Ile de la Réunion (Sud-Ouest de l'Océan Indien). *Revista Española de Micropaleontología* 32: 63–84.

Whatley R.C. & Roberts R. 1995. Marine Ostracoda from Pitcairn, Oeno and Henderson Islands. *Biological journal of the Linnean Society* 56: 359–364. https://doi.org/10.1111/j.1095-8312.1995.tb01096.x

Whatley R.C. & Titterton R. 1981. Some new Recent podocopid Ostracoda from the Solomon Island, South-West Pacific. *Revista Española de Micropaleontología* 13 (2): 157–170.

Whatley R.C. & Zhao Q. 1987. Recent Ostracoda of the Malacca Straits. Part 1. *Revista Española de Micropaleontología* 29: 327–366.

Whatley R.C., Jones R. & Wouters K. 2000. The marine Ostracoda of Easter Island. *Revista Española de Micropaleontología* 32 (1): 79–106.

Whatley R.C., Jones R. & Roberts S. 2004. The marine Ostracoda of Pitcairn, Oeno and Henderson Islands, southern Pacific. *Revista Española de Micropaleontología* 36: 493−528.

Williams E.U. 1980. *Some Quaternary Ostracoda from the Solomon Islands*. MSc Thesis, University College of Wales, Aberystwyth, UK.

Witte L. 1985. On *Gambiella caelata* Witte gen. et sp. nov. *A Stereo-Atlas of Ostracod Shells* 12 (25): 141−148. Available from https://www.biodiversitylibrary.org/item/210675#page/70/mode/1up [accessed 28 Feb. 2026].

Witte L. 1993. Taxonomy and origin of modern West African shallow marine Ostracoda. *Verhandelingen van de Koninklijke Nederlandse Akademie van Wetenschappen, Afdeeling Natuurkunde (Eerste Reeks)* 39: 13–105.

Witte L. & Van Harten D. 1991. Polymorphism, biogeography and systematics of *Kotoracythere inconspicua* (Brady, 1980) (Ostracoda: Pectocytheridae). *Journal of Biogeography* 18: 427–436. https://doi.org/10.2307/2845484

Wouters K. 1981. Two new marine podocopid species from Hansa Bay, Papua New Guinea (Crustacea: Ostracoda). *Bulletin de l'Institut royal des Sciences naturelles de Belgique, Biologie* 53 (16): 1–12. Available from https://biblio.naturalsciences.be/rbins-publications/bulletin-of-the-royal-belgian-institute-of-natural-sciences-biologie/53-1981/biologie-1981-53-16-_1-6.pdf [accessed 28 Feb. 2026].

Wouters K. 2003. Taxonomy and zoogeography of intertidal Ostracoda (Crustacea) from the Cape Verde Islands (Atlantic Ocean). *Bulletin de l'Institut royal des Sciences naturelles de Belgique, Biologie* 73: 137–159. Available from https://biblio.naturalsciences.be/rbins-publications/bulletin-of-the-royal-belgian-institute-of-natural-sciences-biologie/bulletin-of-the-royal-belgian-institute-of-natural-sciences-biology/73-2003/biologie-2003-73_137-159.pdf [accessed 28 Feb. 2026].

Yamaguchi T., Suzuki H., Soe A.-N., Htike T., Nomura R. & Takai M. 2015. A new late Eocene *Bicornucythere* species (Ostracoda, Crustacea) from Myanmar, and its significance for the evolutionary history of the genus. *Zootaxa* 3919 (2): 306–326. https://doi.org/10.11646/zootaxa.3919.2.4

Yassini I. & Jones B.G. 1987. Ostracoda in Lake Illawarra: environmental factors, assemblages and systematics. *Australian Journal of Marine and Freshwater Research* 38: 795–843. https://doi.org/10.1071/mf9870795

Yassini I. & Jones B.G. 1995. *Recent Foraminiferida and Ostracoda from Estuaries and Shelf Environments on the Southeastern Coast of Australia*. University of Wollongong Press.

Yassini I. & Jones B.G. 2023. *An Atlas of Foraminifera, Ostracoda and Micro-Molluscs around Lord Howe Island and Middleton*. University of Wollongong, Australia.

Yassini I. & Kendrick G.W. 1988. Middle Holocene ostracodes, foraminifers and environments of beds at Point Waylen, Swan River Estuary, southwestern Australia. *Alcheringa* 12: 107–121. https://doi.org/10.1080/03115518808618999

Yassini I. & Mikulandra M. 1989. *Mckenziartia* and *Pectocythere* (Pectocytheridae, Ostracoda, Crustacea) in Lake Macquarie, New South Wales. *Proceedings of the Linnean Society of New South Wales* 111: 131–139. Available from https://www.biodiversitylibrary.org/page/34929504#page/143/mode/1up [accessed 28 Feb. 2026].

Yassini I. & Wright A.J. 1988. Distribution and ecology of Recent ostracodes (Crustacea) from Port Hacking, New South Wales. *Proceedings of the Linnean Society of New South Wales* 110 (2): 159–174. Available from https://www.biodiversitylibrary.org/page/35075726#page/171/mode/1up [accessed 28 Feb. 2026].

Yassini I., Jones B.G. & Jones M.R. 1993. Ostracods from the Gulf of Carpentaria, northeastern Australia. *Senckenbergiana lethaea* 73 (2): 375–406.

Yassini I., Jones B.G., King R.J., Ayress M. & Dewi K.T. 1995. Ostracod fauna associated with sublittoral kelp forest vegetation at Windang Island, New South Wales, Australia. *Marine and Freshwater Research* 46: 1181–1194. https://doi.org/10.1071/mf9951181

Yücel M., Sievert S.M., Vetriani C., Foustoukos D.I., Giovannelli D. & Le Bris N. 2013. Eco-geochemical dynamics of a shallow-water hydrothermal vent system at Milos Island, Aegean Sea (eastern Mediterranean). *Chemical Geology* 356: 11–20. https://doi.org/10.1016/j.chemgeo.2013.07.020

Zhao Q. & Wang P. 1988. Distribution of modern Ostracoda in the Shelf Seas off China. *In*: Hanai T., Ikeya N. & Ishizaki K. (eds) *Evolutionary Biology of Ostracoda: Its Fundamentals and Applications*: 805–821. Elsevier/Kodansha, Amsterdam/Tokyo. https://doi.org/10.1016/s0920-5446(08)x7008-6

Zhao Q. & Whatley R.C. 1988. Recent ostracods of the Malacca Straits. Part II. *Revista Española de Micropaleontología* 20 (1): 5–37.

Zhao Q. & Whatley R.C. 1989. Recent podocopid Ostracoda of the Sedili River and Jason Bay, southeastern Malay Peninsula. *Micropaleontology* 35 (2): 168–187. https://doi.org/10.2307/1485467

Zhao Q., Wang P. & Zhang Q. 1985. Ostracoda in bottom sediments of the South China Sea off Guandong Province, China. Their taxonomy and distribution. *In*: Wang P.X. (ed.) *Marine Micropaleontology of China*: 196–218. China Ocean Press, Beijing and Springer-Verlag, Berlin.

Zhou B. 1996. Recent ostracode fauna in the Pacific off southwest Japan. *Memoir of the Faculty of Sciences Kyoto University. Series Geology and Mineralogy* 47 (2): 21–98.

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Supplementary file

Supp. file 1. Comparison between the original identifications and figured material published by Apostolescu (1967) and their reassessment in this work. 'Present' indicates whether the originally figured material was located in the MNHN collection; 'Partly' indicates that only part of this material was located; "Number of specimens" includes all specimens found on the corresponding slide, including previously unfigured material. Abbreviations: C = carapace, RV = right valve, LV = left valve. https://doi.org/10.5852/ejt.2026.1114.3348.14668