Zootaxa 1866: 373–452 (2008)
www.mapress.com/zootaxa/

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

New species of Bairdioidea (Crustacea, Ostracoda) from the Southern Ocean and discussions on *Bairdoppilata simplex* (Brady, 1880), *?Bairdoppilata labiata* (Müller, 1908) and *Bythopussella aculeata* (Müller, 1908)*

SIMONE N. BRANDÃO

Biozentrum Grindel und Zoologisches Museum, Universität Hamburg, Martin-Luther-King-Platz 3, Hamburg, 20146, Germany. Email: snbrandao@terra.com.br

In: Martínez Arbizu, P. & Brix, S. (Eds) (2008) Bringing Light into Deep-sea Biodiversity. *Zootaxa*, 1866, 1–574.

Abstract

Only a few bairdioid species were reported from the high Antarctic region of the Southern Ocean. One of these species is the supposedly widely distributed *Bairdoppilata simplex* (Brady, 1880). The re-study of material previously identified as *Bairdoppilata simplex* (Brady, 1880) indicates that these specimens should be assigned to several different species. On the basis of the specimens studied herein and of published illustrations it is possible to conclude that more than ten species are represented in the material that has been misidentified under this name, seven of these species were re-studied and are illustrated herein. One of them, *Bairdoppilata labiata* (Müller, 1908), previously considered a junior synonym of *B. simplex*, is herein considered a valid taxon and its lectotype is designated. Additionally, in the present publication 82 bairdioid live specimens and 585 valves collected from depths of 1123 to 4932m during the ANDEEP Project in the Atlantic Sector of the Southern Ocean were studied. Seven new species are described—*?Neonesidea keyseri* sp. nov., *Bythocypris praerenis* sp. nov., *Bythocypris malyutinae* sp. nov., *Bythocypris polarsterni* sp. nov., *Bythocypris richarddinglei* sp. nov., *Bythocypris weddellensis* sp. nov., *Bythopussella brandtae* sp. nov. A new combination is suggested to the bathyal species *Bythopussella microguttata* (Whatley *et al.*, 1998b) n. comb. (previously described in the genus *Bairdoppilata*). Statistical analyses (MDS, ANOSIM, BEST_BIOENV, and Cluster) show clear relationships among the bairdioid assemblages and the depth and geographical locality where samples were collected.

Key words: Ostracoda; Bairdioidea; deep-sea; geographical distribution; bathymetry; new species

Introduction

Although animal communities inhabiting shallow marine benthic environments around Antarctica are well known, there have been few studies of the deep-water faunas in the adjacent Southern Ocean. The ANDEEP (Antarctic benthic deep-sea biodiversity: colonization history and recent community patterns) project was designed to fill this knowledge vacuum. Between 2002 and 2005, three expeditions were performed in the deep Weddell Sea and adjacent areas aboard the German research vessel *Polarstern*. Biological collections and data on environmental and seafloor characteristics were obtained from diverse settings, including continental slope, rise, abyssal plain, trench floor, channel levees and adjacent to fracture zones, and from water depths between 774 and 6,348m. Species assemblages were analysed in ANDEEP samples across a range of taxonomic groups, representing meiofauna, macrofauna and megafauna, and found substantial levels of unrecorded biodiversity: more than 1,000 new species were identified (Brandt *et al.*, 2007b).

Specifically regarding Ostracoda, almost 3,300 ostracod live specimens and more than 1,500 subfossil valves were collected at the 40 ANDEEP stations by the different gears employed (epibenthic sledge, boxcorer, multicorer and Agassiz trawl). Most of the ostracod live specimens (81%) were collected by the

Accepted by S. Brix: 28 Apr. 2008; published: 3 Sept. 2008

epibenthic sledge (EBS), which sampled a total of more than 100,000 m^2. A high diversity was found; at least 150 species are recognised (at least 50% are new to science). The first results on ANDEEP Ostracoda are presented in the two papers of the present volume (herein, and Brandão this volume). In the present publication, 82 bairdioid live specimens and 585 valves collected from depths of 1123 to 4932m during the ANDEEP cruises in the Atlantic Sector of the Southern Ocean were studied (Fig. 01, Tab. 1, 2); seven new species are described.

Summarising the previous data on Antarctic and Subantarctic Podocopina, Hartmann (1997: 44) cited two bairdiid and five bythocypridid species: *Bairdoppilata simplex* (Brady, 1880); *Bairdoppilata villosa* (Brady, 1880); *Bythocypris eltanina* Maddocks, 1969; *Bythocypris spiriscutica* Maddocks, 1969; *Bythocypris* sp. (from Müller 1908); *Anchistrocheles angulata* (Brady, 1870); *Bythopussella aculeata* (Müller, 1908). The same author had previously reported *Neonesidea* sp. (Hartmann 1993) from the Antarctic Peninsula, and *Neonesidea* sp. and *Paranesidea* sp. from the Isla de los Estados (Tierra del Fuego). In early Antarctic research, Müller (1908) described *Nesidea labiata* Müller, 1908 from the continental shelf of Antarctica (Indic Sector), and Neale (1967) recorded it from Halley Bay, Western Antarctic Peninsula. But Hartmann (1997) followed Maddocks (1969) in considering the latter species a junior synonym of *B. simplex*. Hartmann (1997) also excluded *Bythocypris reniformis* Brady, 1880 from the list of Antarctic ostracods. *Bythocypris reniformis* was reported by Briggs (1978) from the Pleistocene of the Taylor Formation, Ross Island, and also from recent sediments of the Ross Sea and McMurdo Sound region. This last record was considered dubious (Hartmann 1997) because Briggs failed to give any details on localities, illustrations and description for this species.

Subsequent to that, Whatley and colleagues published a series of papers on (mostly subfossil) ostracods from the Antarctic Peninsula, the Scotia Sea and Southwestern Atlantic recording: (1) *Bairdoppilata angulata* (Brady, 1870) and *Bairdoppilata hirsuta* (Brady, 1880) and describing 3 new species—*Bairdoppilata erugata*, *Bairdoppilata microguttata* and *Bythocypris kyamos* from the Scotia Sea (Whatley *et al*., 1998b); (2) *Bairdoppilata* sp. cf. *B. simplex* from the Malvinas Islands (Whatley *et al.* 1995); (3) *Neonesidea* sp. from the Upper Pliocene of Burwood Bank, off Tierra del Fuego (Whatley & Cusminsky 2002); (4) *Bairdoppilata angulata* (Brady, 1880), *Bairdoppilata* sp. cf. *B. simplex* (17.7 to 456.3m), *Bairdoppilata hirsuta* (Brady, 1880) and *Neonesidea* sp. cf. *N. australis* (Chapman, 1914) from the Strait of Magellan (Kaesler *et al.* 1979; Whatley *et al.* 1996); (5) *Bairdoppilata* sp. cf. *B. simplex* from 3 localities in eulittoral and immediate sublittoral of Argentina (Whatley *et al.* 1997b); (6) *Neonesidea* sp. cf. *N. australis* Chapman, 1914 off Southern Brasil (Rio Grande do Sul state) (Whatley *et al.* 1998b).

Further publications include fossil bairdioids in the Antarctic and Subantarctic regions of the Southern Ocean. Fauth *et al.* (2003) studied the oldest ostracod fauna in Antarctica and reported *Bairdia* sp. from the middle to late Campanian (Upper Cretaceous) of James Ross Island, Antarctic Peninsula. During a study of the Cretaceous fauna in the Southern ocean, Majoran *et al.* (1997) also recorded *Bythocypris* sp., stating that the last was the most abundant genus from the Maastrichtian (Cretaceous) in 7 DSDP/ODP holes (356, 525–529, 698A, 689B) in the South Atlantic and Southern Oceans. Dingle (2000) assigned specimens from the Quaternary of Victoria Land Basin, Antarctica, to *Bairdoppilata* sp. cf. *B. simplex.* Additionally, Dingle (2003) recorded *Bairdoppilata villosa* (Brady, 1880), *Bairdoppilata angulata* (Brady, 1870), *Bythocypris reniformis* and *Bythocypris* sp. from Marion Island. According to Majoran and Dingle (2001a, 2001b, 2002) *Bairdia* sp. and *Bythocypris* sp. are known from the Miocene and Pliocene of Southeastern Atlantic/Southern Ocean (ODP sites 1087 and 1088); *Bairdia* (sp. 1 and 2) were identified from the Eocene Southwestern Atlantic/Southern Ocean (DSDP site 699); *Bairdia* sp. from the Oligocene, and *Abyssocypris* sp. from the Palaeocene and Eocene of the Maud Rise, Weddell Sea.

Furthermore, Dingle and colleagues studied extensively the taxonomy (Dingle 1992, 1993) and ecology (Dingle 1995, Dingle & Lord 1990, Dingle *et al.* 1989, 1996, 2001, Dingle & Giraudeau 1993) of recent and fossil ostracods occurring on the continental margin of the Southeastern Atlantic and reported *Bairdoppilata* [sic] *simplex*.

Although analysing a very large collection from the Tasman Sea, and the Challenger and Campbell plateaus (South Pacific), Jellinek and Swanson (2003) did not report any bairdioid species in their monograph. Mazzini (2005), recognizing the difficulty in the correct identification of bairdioid carapaces, recorded 3 species in open nomenclature, *Bairdoppilata* sp., *Anchistrocheles?* cf. *B. aculeata* Müller, 1908, and *Bythocypris* sp., from samples collected off Southern Australia and off New Zealand.

Brady's publications (1880 for example) were pioneering in many aspects, but obviously their figures and descriptions are not detailed enough for modern taxonomic identifications. The antiquated figures, together with the general acceptance that several of Brady's species present a very wide geographical and bathymetric distribution, caused these species to be recorded from several, very distant localities. This is the case in, for example, *Bradleya dictyon* (Brady, 1880), *Bythoceratina scaberrima* (Brady, 1887), *Cytherella serratula* (Brady, 1880), *Cytheroptheron testudo* (Sars, 1869), *Dutoitella suhmi* (Brady, 1880), *Henryhowella asperrima* (Reuss, 1850), *Henryhowella dasyderma* (Brady, 1880), *Legitimocythere acanthoderma* (Brady, 1880), *L. presequenta* (Benson, 1977), *Macropyxis similis* (Brady, 1880), *Pennyella dorsoserrata* (Brady, 1880), *Pseudocythere caudata* (Sars, 1866), *Pterygocythere mucronalatum* (Brady, 1880) (e.g. Ayress *et al.* 2004, Benson 1979, Bonaduce *et al.* 1999, Brandão this volume, Dingle 2003, Majoran & Dingle 2001a, Neale 1967, Whatley *et al.* 1996, 1998a, 1998b). All these species have been recorded worldwide. The question of misidentifications is even more problematic when smooth shelled ostracods, like many bairdioids, are involved, as is the case of the species *Bairdoppilata simplex* (Brady, 1880). This last species have been recorded from the Southern Atlantic (Eastern and Western), Southeastern Pacific, and Southern Ocean (Atlantic, Indic and Pacific sectors), from the shallow tropical shore sands (Chapman 1902), subtropical estuary (Dingle 1993), and from Antarctic shallow waters (Hartmann 1989, 1993, Neale 1967, Whatley *et al.* 1998b) to the deep-sea (1135m in Maddocks 1969). Previous material assigned to *Bairdoppilata simplex* is herein re-studied and its geographical distribution re-evaluated.

Conversely, other publications show that the supposedly widely distributed species are actually groups of very distinct species (Schornikov 2005, Jellinek *et al.* 2006, Brandão, this volume). The key question here is what different authors regard as intra- or interspecific variation. Based on published illustrations, it is clear that these supposedly widely distributed "taxa" show enormous morphological variability. On the other hand, authors who divided the "widely distributed taxa" into several species, accept an intraspecific variability comparable (in my opinion) to that of most marine shallow water ostracod species, and even larger than most recent freshwater podocopid species. In order to give an idea of the morphological variability of each species studied herein, (where available) several specimens, including different instars, are illustrated herein.

Material and Methods

Most of the material studied herein was collected during the 3 cruises of the ANDEEP project in the Atlantic Sector of the Southern Ocean (for details on ANDEEP see Brandt *et al.* 2004, 2007a). Bairdioids were found in 16 out of 40 ANDEEP stations (Fig. 1). Another sample, which contained 1 bairdiid valve, was collected by the RV *Italica* during the ROSSMIZE (Ross Sea Marginal Ice Zone Ecology) project. These 20 samples containing Bairdioidea specimens are listed in table 1. The gears used were Epibenthic sledge (EBS – model illustrated by Brenke, 2005), Rauschert dredge, Boxcorer (GKG), Multicorer (MUC) and an Agassiz Trawl (AGT). The samples of the EBS and AGT were fixed in pre-cooled 96% ethanol and kept at under -50°C for at least 48 hours, for better results in the planned molecular studies. The other samples were fixed in 4% formalin, and transferred to 96% ethanol after sorting. The empty valves were transferred to micropaleontological slides and other specimens containing appendages were kept in 96% ethanol. Specimens were dissected in Hydromatrix permanent medium, and their valves were transferred to micropaleontological slides. Each dissected specimen, and also several photographed specimens, were numbered with the prefix SNB for future,

correct reassignment of the appendages (on glass slides) to its valves (on micropaleontological slides) and also illustrations (Tab. 2). The identifications are based on the descriptions and illustrations of genera and species (mostly Hartmann 1997 and Maddocks 1969, 1972, 1973, 1976, 1991, 1995, Warne 1990) and on comparison with the lectotypes and paralectotypes of *?Bairdoppilata labiata* (Müller, 1908) and *B. simplex* (Brady, 1880) and the syntypes of *Bythopussella aculeata* (Müller, 1908). The chaetotaxy descriptions are based on Schornikov and Keyser (2004), with a few modifications: e=external; i=internal; fc= fused claw; fs=fused seta. All ANDEEP specimens are deposited in the Crustacean collection of the "Zoologisches Institut und Museum", University of Hamburg under the abbreviation ZMH–K. The maps were made with the program *Ocean Data View* (Schlitzer 2007), and the faunistic analyses were performed in the program *Primer 6 & Permanova +*.

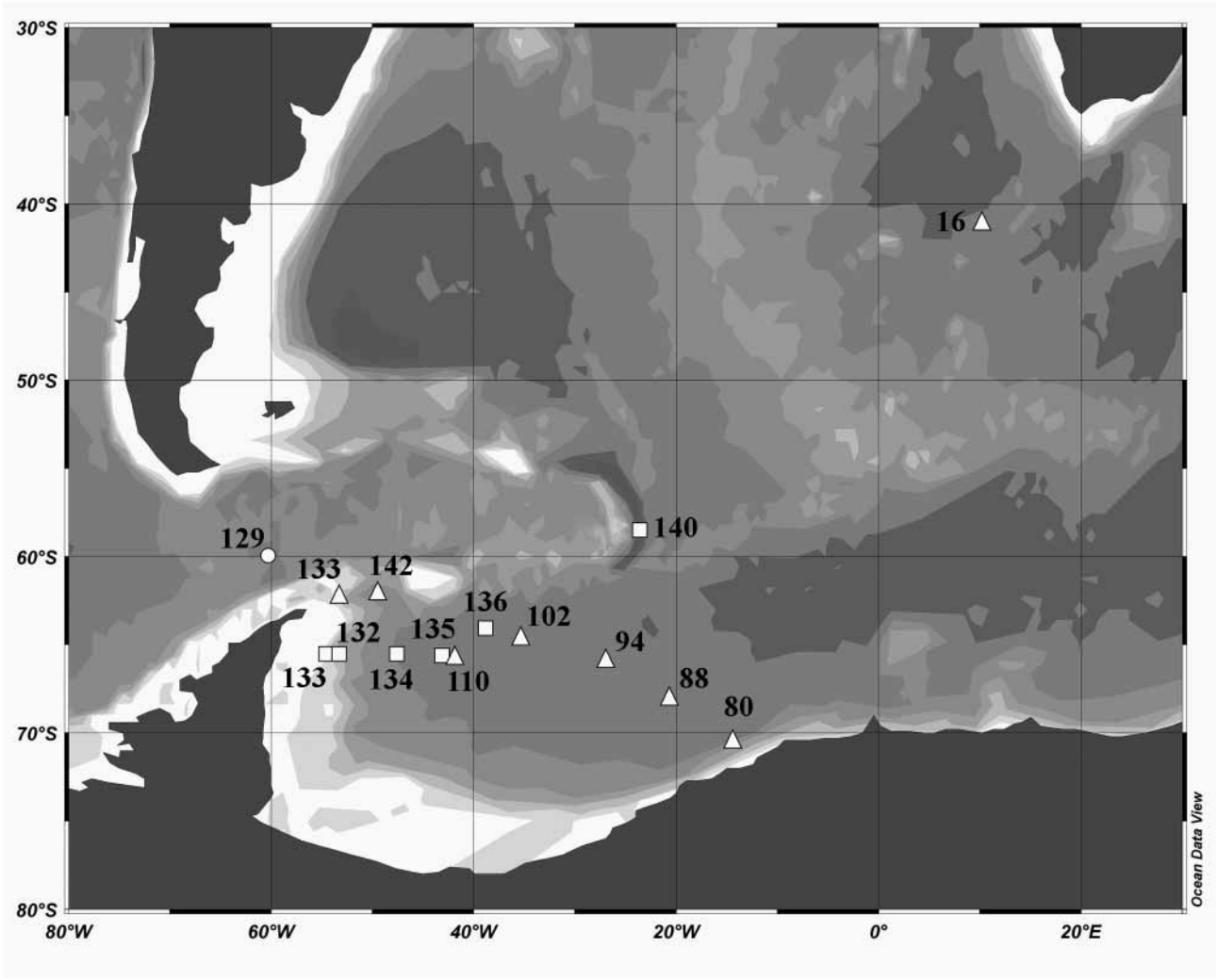


FIGURE 1. Stations of the ANDEEP cruises containing Bairdioidea. Legend: ○ Stations of the ANDEEP I cruise; □ Stations of the ANDEEP II cruise; △ Stations of the ANDEEP III cruise. For details on stations see Table 1.

Abbreviations. A, adult(s); (A-1), (A-2), (A-3), juvenile stages; AI, antenna I; AII, antenna II; ApV, ApVI, ApVII, fifth to seventh appendages; dv, dorsal view; E (after a station number), epinet of EBS; ev, external view; F, female(s); H, height; iv, internal view; J, juvenile(s); L, length; LV, left valve(s); M, male(s); Md, mandible; m, metres; mm, millimetres; MxI, maxilla I; RLV, closed right and left valves without soft parts; RV, right valve(s); S (after a station number), supranet of EBS; SNB, specimen number as catalogued by the present author; sp(p)., species (plural); U (after a station number), over one or both net (s) of EBS; V, valve(s);

vv, ventral view; ZMB, Museum für Naturkunde, Humboldt Universität zu Berlin (Germany); ZMH, Zoologisches Institut und Museum, Universität Hamburg (Germany); #, station.

Faunistic Patterns

Statistical tests were performed in order to test the relationship among the different bairdioid assemblages, and among these assemblages and environmental variables. The tests were all based on the 2nd root transformed abundance data (each valve counted as 1 specimen in subfossils), and on Bray-Curtis similarity.

The MDS plot (Kruskal fit scheme 1) shows a clear influence of locality on the fauna (Fig. 2). The only samples from the Cape Basin (CB, # 16), Scotia Arc (SA, #140) and Drake Passage (DP, #129) appear quite isolated from each other and from all other samples. Furthermore, the samples from the continental slope off the Antarctic Peninsula group together (group 1 in Fig. 2), which also happens with the samples from the abyssal depths in the Weddell Basin (group 2 in Fig. 2). Additionally, the samples from the Weddell Basin are also quite well separated in the Western (WW, group 2A in Fig. 2) and Eastern (EW, group 2B in Fig. 2) Weddell Basin.

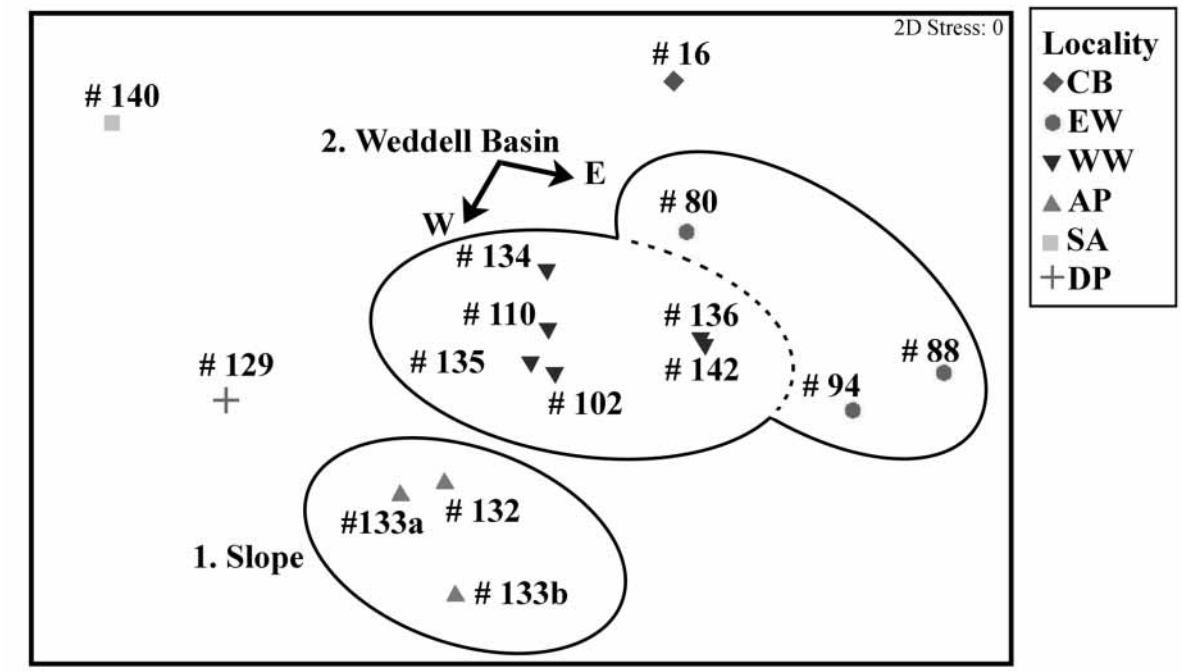


FIGURE 2. MDS plot of ANDEEP samples containing Bairdioidea. Legend: This MDS plot is based on the Bray-Curtis similarity matrix obtained from 2nd root transformed abundance data of Bairdioidea in ANDEEP samples. **AP**, off Antarctic Peninsula; **CB**, Cape Basin; **DP**, Drake Passage; **EW**, Eastern Weddell Basin; **SA**, Scotia Arc; **WW**, Western Weddell Basin.

This picture is confirmed by the high significance (0.01%) in the one way ANOSIM, where the relationship between the different regions (Cape Basin, Eastern Weddell Basin, Western Weddell Basin, Drake Passage, and Scotia Arc) and the fauna is verified (sample statistic—Global R: 0.505; 10,000 random permutations). Also the relationship of the fauna with the depth was confirmed in a one way ANOSIM (sample statistic—Global R: 0.203; significance level: 0.7%; number of permutations: 455 (All possible permutations), number of permuted statistics greater than or equal to Global R: 3).

Also in the BEST test (BIOENV, normalized environmental data) the relationship between depth and geographical locality in the bairdioid fauna was proven. In this test, six variables—latitude, longitude, depth, salinity, temperature and steepness (depth difference between start and end locations of trawling) were tested. Depth versus longitude presented the highest correlation to the fauna (0.420), closely followed by the three

variables—depth plus longitude plus latitude – which presented a correlation index slightly smaller (0.413). Sample statistic (Rho) of BEST_BIOENV: 0.42, significance level of sample statistic: 0.2%, number of permutations: 999 (random sample), number of permuted statistics greater than or equal to Rho: 1.

Based on the abundance data of bairdioid fauna from the ANDEEP project, it is possible to recognize some biogeographic units, related to the different basins of the Atlantic Sector of the Southern Ocean. It is also obvious that the three samples taken from the continental slope are very different from the adjacent Weddell Basin samples, not only in the faunal composition, but also in the much higher abundance found on the slopes. The species present on the continental slope are also the same, or are very similar, to those reported from other regions of the Antarctic shelf and slope. The typical species from the shallowest samples are: (1) *?Bairdoppilata* sp. aff. *?B. labiata* (Müller, 1908), which is obviously very similar to *?B. labiata* described from 385m depth off Heard Island; (2) *Bythopussella brandtae* sp. nov., similar to *Bythopussella microguttata* (Whatley *et al.* 1998), which occurs in the Scotia Sea from depths of 990 to 2370m; (3) *Bythocypris praerenis* sp. nov., which is similar to *B. reniformis*, which is also typical from slope depths. This indicates that the faunal change between typical deep shelf and continental slope taxa and the truly deep-sea (=abyssal) taxa occurs between 2100 and 3000m depth. Also noticeable is that not only the shelf, but also the continental slope in the Western Weddell Sea is an ecosystem which supports a high biomass, not only from Ostracoda but also Peracarida, Porifera, Nematoda etc (Brandt *et al.* 2007a). This high biomass is probably related to the periodical phytoplankton bloom and consequent fall of organic material from the euphotic zone to the deep sea.

Taxonomy

Remarks. The description of new taxa based on a few specimens is controversial, but sometimes appropriate, especially concerning groups which are extremely rare in their natural environment, as is the case of living deep-sea Ostracoda. Moreover, the extremely high costs and the logistical difficulties involved in the collection and sorting of deep-sea samples justifies herein the descriptions of several new taxa, especially because all these descriptions involve the study and illustration of soft parts, which are unknown for most of the ostracod species. Herein a new species was described when (1) at least 2 live specimens were available and (2) clear diagnostic characters differentiating this new taxon and the previously described ones could be observed.

Classe Ostracoda Latreille, 1806
Subclasse Podocopa Müller, 1894
Order Podocopida Müller, 1894
Suborder Bairdiocopina Gruendel, 1967
Superfamily Bairdioidea Sars, 1888

Remarks. As previously stated by Hartmann (1974: 253–4), the genera and families of Bairdioidea need new diagnoses. Several previously described taxa present a number of characters which are diagnostic for different bairdioid genera and even families. One good example is the genus *Bythopussella* Warne, 1990, which was described (Warne 1990: 114) in order to accommodate species with robust, bairdiid carapaces but anchistrocheline (bythocypridid) soft parts. In the present study, most of the species studied did not fit completely into any described genus; conversely, single species presented characters typical from more than one genus simultaneously, and sometimes also diagnostic of both families of Bairdioidea. For example, the species *?Bairdoppilata labiata* presents the enlarged anterior claw on the podomere II of antenna II (typical of the genus *Bairdoppilata*), but lack the bairdoppilatan hinge denticulation. Additionally, *Bythocypris malyutinae* sp. nov. and *Bythocypris polarsterni* sp. nov. present bythocypridid and bairdiid characters (see both remarks on the systematic part of each species). Moreover, the female genitalia and the furca of *B. polarsterni* sp. nov. are very similar to that of *Zabythocypris helicina* Maddocks, 1969. Otherwise, both valves of *B. polarsterni* sp.

nov. present subequal right and left valves (typical of *Bythocypris*), while the genus *Zabythocypris* is diagnosed by a left valve very much higher than the right valve. Finally, *Bythocypris weddellensis* sp. nov., as well, resemble the genus *Anchistrocheles* in the valve morphology, but the soft parts are typical of the genus *Bythocypris*.

Since a taxonomic revision of the genera and families of Bairdioidea is beyond the scope of the present publication, each species described herein is assigned to the genus whose diagnosis best fits to the species morphology.

Family Bairdiidae Sars, 1888

Genus *Bairdoppilata* Coryell, Sample & Jennings, 1935

Type species: Bairdoppilata martyni Coryell, Sample & Jennings, 1935 (original designation).

Remarks. Most of the following systematic section on the genus *Bairdoppilata* deals with specimens previously assigned to *Bairdoppilata simplex* (Brady, 1880). *Bairdoppilata simplex* is one of the species described by Brady (1880) which was subsequently recorded from many distant localities, in this specific case, from the Southern Hemisphere (Fig. 03, Tab. 3), including the Pacific (Brady 1890, Chapman 1902), the Atlantic (Eastern: Dingle 2003; and Western: Whatley *et al.* 1995, 1996, 1997a), and the Southern oceans (Brady 1880, Dingle 2000, Hartmann 1989, 1993, 1997, Maddocks 1969, Neale 1967, Whatley *et al.* 1998b). Several of these records obviously do not involve the species *B. simplex* and also involve other bairdioid genera (see examples in Fig. 3.3, 3.6, 3.11b, 3.12, 3.22, 3.24). This is the case, for example, of the specimens from the "Gausstation" (Indic Sector of the Southern Ocean, 385m), which were described by Müller (1908) as *Nesidea labiata*, and later considered a junior synonym of *B. simplex* (Maddocks 1969: 77). The re-study of part of the specimens previously assigned to *B. simplex* shows that more than ten different species are represented (see below), and that *B. simplex* is restricted to its type locality (off Heard Island).

***Bairdoppilata simplex* (Brady, 1880)**

(Figs. 3.20a, b; 4; 5 G, H; Tab. 3)

1880		*Bairdia simplex* Brady: 51, Pl. 7.1a–d.
1890	non	*Bairdia simplex* Brady: 492.
1969	in part	*Bairdoppilata (Bairdoppilata?) simplex*, Maddocks: 77–78.
1976		*Bairdia simplex*, Puri & Hulings: 266, Pl. 3.11–13.
1989	non	*Bairdoppilata simplex*, Hartmann: 211.
1993	non	*Bairdoppilata simplex*, Dingle: 7–10, Figs.3.C–F, 4.
1993	non	*Bairdoppilata simplex*, Hartmann: 230.
1995	non	*Bairdoppilata* sp. cf. *B. simplex*, Whatley *et al.*: 21, 22, Pl.1.7–12.
1996	non	*Bairdoppilata* sp. cf. *B. simplex*, Whatley *et al.*: 55, Pl. 1.3.
1997	non	*Bairdoppilata (Bairdoppilata) simplex*, Hartmann: 47, Fig. 11.
1997	non	*Bairdoppilata* sp. cf. *B. simplex*, Whatley *et al.*: 18, Pl.1.11–13.
1998	non	*Bairdoppilata simplex*, Whatley *et al.*: 116, Pl.1.15.
2000	?	*Bairdoppilata* cf. *B. simplex*, Dingle: 486.

Material. **Lectotype**: *Bairdia simplex* Brady, 1880, 1 RV and 1 LV of the same specimen, contained on the Challenger slide no. 142, labelled "station no. 151, off Heard Island, depth 75fms (=137m)", BMNH cat. no. 81.5.13. This specimen was designated and described by Puri & Hulings (1976, p. 266, Pl. 3.11–13), also examined by Maddocks (1969, p. 77). This specimen is probably an adult since the calcified inner lamella is very wide. Herein this lectotype is illustrated in Figs. 3.20a, b, and 5.G, H.

Distribution. Off Heard Island, Southern Ocean (Indic Sector), 137m.

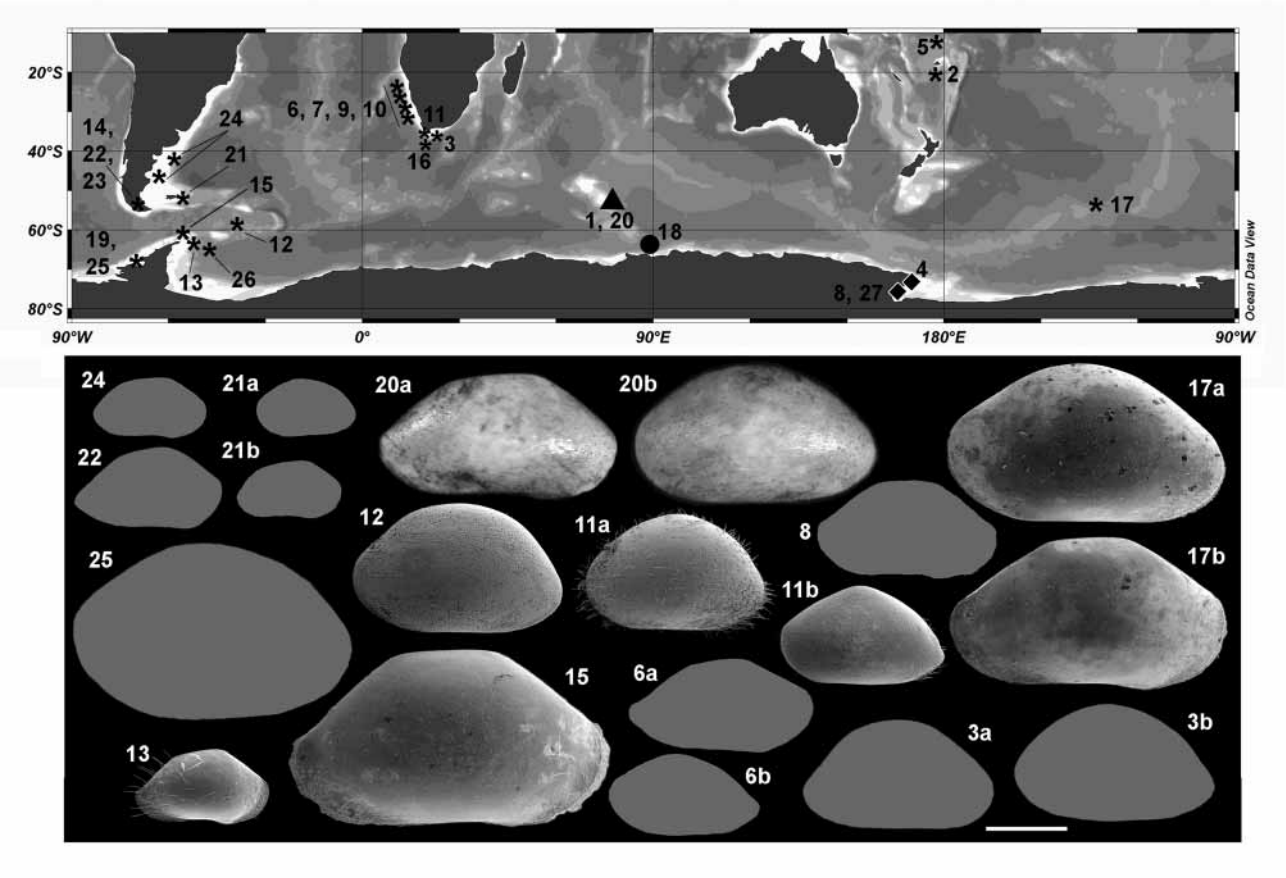


FIGURE 3. Occurrence of specimens previously recorded as *Bairdoppilata simplex* (Brady, 1880). Legend: ▲—*B. simplex* (Brady, 1880); ●—*?B. labiata* (Müller, 1908); ◆—*B.* cf. *simplex* (dubious records); * Bairdioidea spp. (misidentifications, surely not *B. simplex*). Stations are numbered herein in alphabetical order of first author of the publications citing them (see table. 3, last column). The numbers related to the illustrated valves (all external view) indicate the station(s) (on the map) where they were collected, and consequently the author(s) who published this occurrence. 1–Brady (1880); 2–Brady (1890); 3–modified after Benson and Maddocks (1964, Pl.1.3, 1.6), 3a, LV, 3b, RV; 4–Briggs (1978); 5–Chapman (1902); 6–modified after Dingle (1993, Fig. 3.C, D), 6a, RV, 6b, LV; 7–Dingle (1995); 8–modified after Dingle (2000, Fig. 5.C), RV; 9–Dingle *et al.* (1996); 10–Dingle and Giraudeau (1993); 11–Hartmann (1974), 11a–LV, ZMH K-30230, 11b–LV, ZMH K-30070; 12–Hartmann (1989), LV, ZMH K-33798; 13–Hartmann (1993), RV, ZMH K- 35474; 14–Kaesler *et al.* (1979); 15–Maddocks (1969), RV, USNM 121347; 16–Maddocks (1969); 17–Maddocks (1969), 17a, LV, 17b, RV, USNM 121348; 18–Müller (1908); 19–Neale (1967); 20–lectotype of *B. simplex* designated by Puri and Hulings (1976), 20a, RV, 20b, LV; 21–modified after Whatley *et al.* (1995, Pl. 1.7, 1.8), 21a, LV, 21b, RV; 22–modified after Whatley *et al.* (1996, Pl. 1.33), RV; 23–Whatley *et al.* (1997a); 24–modified after Whatley *et al.* (1997b, Pl. 1.13), RV; 25–modified after Whatley *et al.* (1998b, Pl. 1.15), LV; 26–*?Bairdoppilata* sp. 2 aff. *?B. labiata*, ANDEEP III # 133–2–E (herein); 27–*?Bairdoppilata* sp. 1 aff. *?B. labiata*, ROSSMIZE, H in 4 (herein). Scale bar: 500 µm (applies to all valves illustrated).

Measurements (Fig. 4). Lectotype: LV L 1.50mm, H 0.86mm; RV L 1.48mm, H 0.76mm.

Diagnosis (modified from Brady 1880; Puri and Hulings 1976). In lateral view, LV oblong, subovate, fairly equilateral, nearly twice as long as high, anterior and posterior margins rather narrow, evenly rounded; dorsal margin gently arched, ventral margin straight or slightly convex. RV equilateral, fairly subpentagonal. Anterior and posterior margins of both valves smooth (without denticles). Carapace compressed, ovate in dorsal view, about twice as long as broad, widest in the middle, extremities subacuminate. Shell surface smooth,

with numerous open and evenly distributed radial pore canals. Zone of concrescence wide, vestibules well developed and widest at anterior end. Hinge terminal elements faintly denticulated. Marginal pore canals numerous, simple and straight.

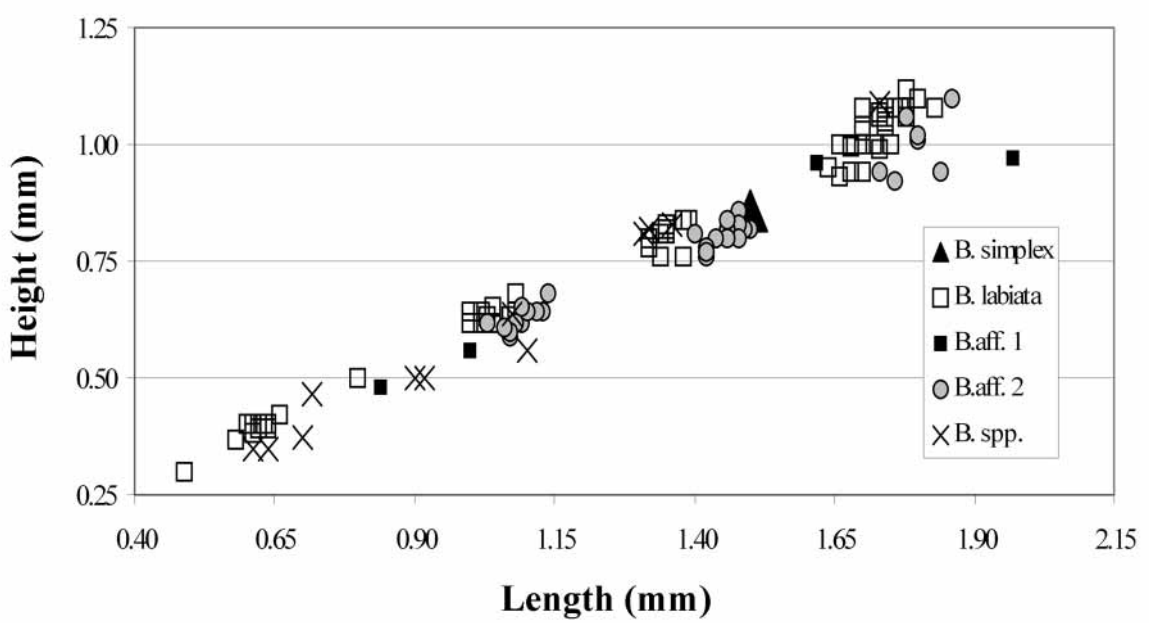


FIGURE 4. Length: height scatter plot of the valves of specimens previously recorded as *Bairdoppilata simplex* (Brady, 1880) (including all misidentifications). Legend: Measurements taken from: *B. simplex*–lectotype of *B. simplex; B. labiata*–lecto- and paralectotypes; *B.*aff. 1–*B.* sp. 1 aff. *B labiata* (as identified herein); *B.*aff. 2–*B.* sp. 2 aff. *B labiata* (as identified herein); B. spp. –all other misidentifications of *B. simplex* (Dingle 1993; Neale 1967; Maddocks 1969; Hartmann 1989; Hartmann 1993; Whatley *et al.* 1995, 1996, 1997a; Whatley *et al.* 1998b).

Remarks. In the report on Ostracoda from the German South Polar Expedition, Müller (1908) described *Nesidea labiata* from the Gausstation (Indic Sector of the Southern Ocean, 385m depth) (see Fig. 3.18 herein). After studying the subfossil lectotype of *Bairdoppilata simplex*, and based on Müller's published illustrations (1908, Pl. 14.1–5), Maddocks (1969: 77) considered *N. labiata* to be a junior synonym of *B. simplex*. On the contrary, after I studied the type material of *B. simplex* and *N. labiata*, I consider the second species as valid. The transference of *N. labiata* to the genus *Bairdoppilata*, as suggested by Maddocks (1969), is here considered dubious, since the diagnostic "4–6 tiny denticles on ends of right valve ridge articulating with sockets beneath left valve overlap" are not present in the types of *N. labiata*. No true hinge denticulation was observed in specimens of the Gausstation (Fig. 6.C, D, F, J), in a few cases some kind of undulating structure was observed, but it was more likely due to an irregular relief on the hinge elements than to real teeth (Fig. 6.A, G, L). Otherwise, the anterodistal seta of podomere VI of AII is enlarged, clawlike (Figs. 8.A, C, 9.F), which is a diagnostic character of *Bairdoppilata*. For this reason, the assignment to the genus is considered dubious—*?B. labiata* (Müller, 1908). The differences observed between the lectotype of *B. simplex* (Figs. 3.20a, b, 5.G, H) and types of *?B. labiata* are described below.

(1) The most conspicuous features that differentiate *B. simplex* (Fig. 5.G, H) from *?B. labiata* (Fig. 5.A–D, I–K) are the more arcuate dorsal margin and more broadly rounded posterior margin of the latter species. These differences are not due to sexual dimorphism since both sexes from *N. labiata* present these characteristics.

(2) Also conspicuous is the difference in dorsal view: *?B. labiata* presents very inflated, subhexagonal shape (Fig. 7.N), while *B. simplex* is more elongate, less wide (Brady, 1880, Fig.b, c).

(3) The hinge denticulation of *B. simplex* is conspicuous even under an optic microscope, while in *?B. labiata* it is very faint, if not absent, even under electron microscopic magnifications (Fig. 6.A, C, D, F, G, J, L).

(4) RV in both species present tri-segmented dorsal margin, but in *B. simplex* it is more rounded, with inconspicuous posterodorsal angle (Fig. 5.A, C, G).

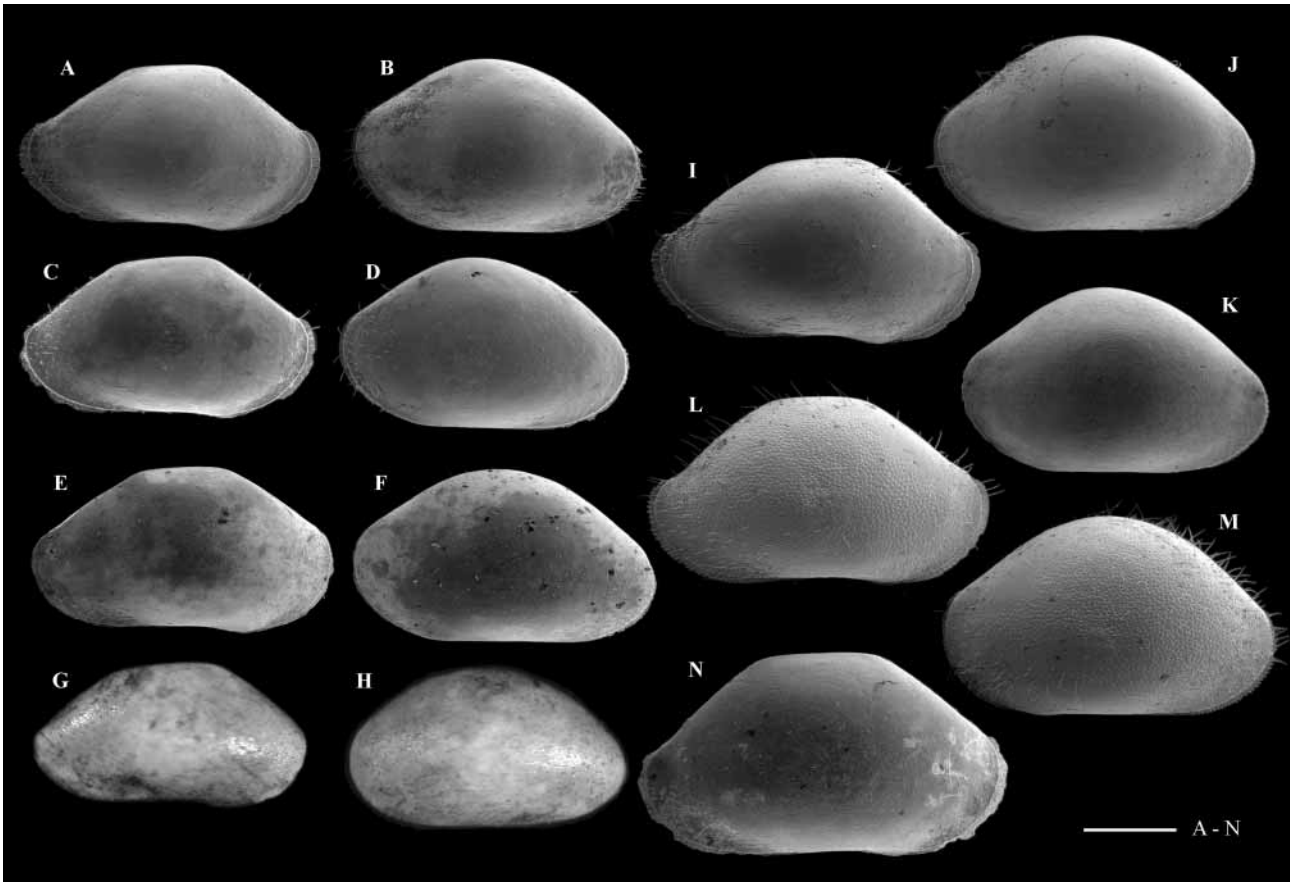
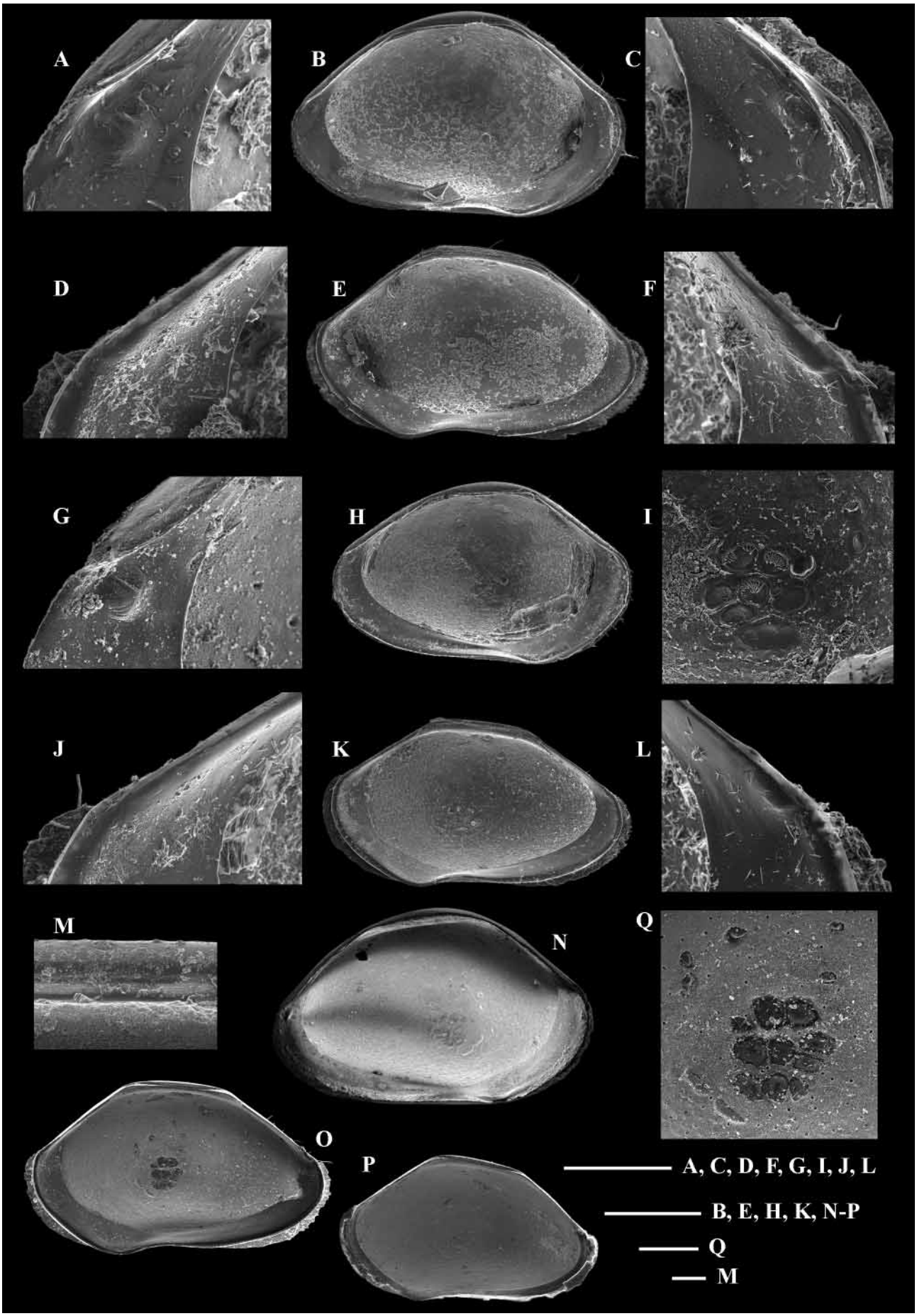


FIGURE 5. *?Bairdoppilata. labiata* (Müller, 1908), *B. simplex* (Brady, 1880), *?B.* sp. 1 aff. *?B. labiata*, and *?B.* sp. 2 aff. *?B. labiata*. Legend: *?B. labiata* (Müller, 1908): **A, B**, A M (lectotype, ZMB 13069, SNB 0683); **C, D**, A M, **K**, A F (subfossil paralectotypes, ZMB 13069); **I, J**, A F (paralectotype, ZMB 13069, SNB 0682). *?B.* sp. 1 aff. *?B. labiata*: **E, F**, A M (USNM 121348); **N**, A F (USNM 121347). *B. simplex* (Brady, 1880): **G, H**, lectotype (BMNH cat. no. 81.5.13). *?B.* sp. 2 aff. *?B. labiata*: **L, M**, A F (ZMH K-41359, SNB 0386). **A, C, E, G, I, L, N**, RV, ev; **B, D, F, H, J, K, M**, LV, ev. Scale bars: 500µm.

Maddocks (1969) also assigned to *B. simplex* specimens from three other localities in the Southern Ocean, and dubiously assigned to *B. simplex* subfossil specimens from the Southeastern Atlantic. Part of this was restudied herein, one male (USNM 121348, from the Pacific Sector of the Southern Ocean) and one female (USNM 121347, from the Atlantic Sector of the Southern Ocean), and the differences between *B. simplex* and *?B. labiata* (described above) could also be observed between *B. simplex* and these 2 last specimens, which are herein identified as *Bairdoppilata* sp. 1 aff. *?B. labiata* (Müller, 1908) (see below).

FIGURE 6. *?Bairdoppilata. labiata* (Müller, 1908). Legend: **A–F**, A F (paralectotype, ZMB 13069, SNB 0682); **G, N, O, Q**, A (subfossil paralectotypes, ZMB 13069). **H–L** (lectotype, ZMB 13069, SNB 0683); **M, P**, (A-1) (subfossil paralectotypes, ZMB 13069); **A, C, G, I**, LV hinge; **B, H, N**, LV, iv; **D, F, J, L, M**, RV hinge; **E, K, O, P**, RV, iv; **Q**, adductor muscle scars. Scale bars: **A, C, D, F, G, I, J, L, Q**, 100µm; **B, E, H, K, N–P**, 500µm; **M**, 10µm.


A
B
C
D
E
F
G
H
I
J
K
L
M
N
Q
O
P
A, C, D, F, G, I, J, L
B, E, H, K, N-P
Q
M

The RV from off Antarctic Peninsula (Fig. 3.13 herein) recorded by Hartmann (1993) as *B. simplex* was re-studied and illustrated herein, see below *?Bairdoppilata* sp. 4, and is considered a misidentification. Hartmann's specimen is most probably an adult (see the very wide calcified inner lamella in Fig 15.P), which presents a similar shape to the lectotype of *B. simplex*, but which is much smaller—length 0.84mm, instead of 1.50mm.

Based on the published illustrations, the specimens "AM/4, AM/1, AM/2" from the Malvinas Island identified as *B.* sp. cf. *B. simplex* (Whatley *et al.* 1995, Pl. 1.7–12) are not co-specific to *B. simplex*. The following differences between Whatley's material and the lectotype of *B. simplex* are: RV mid-height anterior to mid-length, instead of at mid-length; and LV with rounded posterodorsal margin (Fig. 3.20a, b), the carapace is more elongate, less wide in dorsal view.

Dingle's (2000) illustrated RV, from the Quaternary of Victoria Land Basin, Antarctica, is similar to the lectotype of *B. simplex*, but could also be co-specific to *?B. labiata* or other bairdioid species.

Other specimens assigned to *B. simplex* (Dingle 1993, Whatley *et al.* 1996, 1997, 1998b) should be included in other bairdiid species and genera (Fig. 3.3, 3.6, 3.21, 3.22, 3.24, 3.25). Some of these specimens present a more globose form and comprise at least 4 different species: (1) from the Halley Bay, Antarctic Peninsula (Whatley *et al.*, 1998b) (Fig. 3.25 herein); (2) off South Georgia, Scotia Sea (Hartmann 1989), (see *Bairdoppilata* sp. 3 herein, Figs. 3.12, 15.A–G); (3) from Knysna Estuary, Namibia ("*Bairdia villosa*? Brady, 1880" from Benson & Maddocks 1964, assigned to *B. simplex* by Dingle 1993) (Fig. 3.3 herein); (4) in Lüderitz Bay, South Africa (part of *Bairdoppilata* sp. 44 from Hartmann 1974, assigned to *B. simplex* by Dingle 1993, identified herein as *Bairdoppilata* sp. 5) (Figs. 3.11a and 16); (4) Simon's Bay, South Africa ("*Bairdia ovata* Bosquet, 1853" from Brady 1880 assigned to *B. simplex* by Dingle 1993). Other specimens assigned to *B. simplex* present a more angulated outline and occur (1) off South Africa and Namibia (Dingle 1993) (Fig. 3.6 herein), part of *Bairdoppilata* sp. 44 from Hartmann (1974) (assigned to *B. simplex* by Dingle 1993 and herein identified as *Bairdoppilata* sp. 6 (Figs. 3.11b); (2) Straight of Magellan (Whatley *et al.*, 1996) (Fig. 3.22 herein). Other misidentifications of *B. simplex* include specimens with RV higher anteriorly, instead of higher at mid-length; and RV with rounded posterodorsal margin (Whatley *et al.* 1995) (Fig. 3.21 herein). Also, the records from the warm water littoral of Fiji, SW Pacific (Brady 1890) are very improbable.

***?Bairdoppilata labiata* (Müller, 1908)**
(Figs. 3.18, 4, 5.A–D, I–K, 6, 7, 8.A, C, F, G, J, M–O, R, T, 9.A–F)

1908		*Nesidea labiata* Müller: 99, Fig. 1.a–d.
1967	?non	*Nesidea labiata*, Neale: 5, 6.
1997	in part	*Bairdoppilata (Bairdoppilata) simplex*, Hartmann: 47, Fig. 11.a–c, e–g.
2000	?non	*Bairdoppilata* cf. *B. simplex*, Dingle: 486.

Material. Previously the syntype series used by Müller to describe "*Nesidea labiata"* were in a glass containing alcohol and labelled "*Nesidea labiata* G. W. Müller, Gaus Station (177a), 385m, Deut. Südpolar Exp., 1901–1903, ZMB 13069". Inside of this larger glass there were six small vials labeled "177a-1.03", "177a-2.03", "177a-4.02", "177a-6.02", "177a-10.02a", and "177a-12.02" (see below). These labels most probably indicate the date of collection of each sample, since Müller (1908) stated that these samples were collected between March 1902 and February 1903, and that *N. labiata* was especially abundant in December. The vial labelled "177a-12.02" is the one with the largest number of specimens. Finally, three more glass slides with valves and dissected soft parts also form part of Müller's syntype series.

Lectotype (herein designated with the purpose of clarifying the application of the name *?B. labiata* to the taxon): 1 dissected A M (SNB 0683), soft parts on glass slides with permanent medium "Hydromatrix" and 2 valves on a micropaleontological slide, ZMB 13069. Previously this specimen was in a vial containing alcohol and labelled "*Nesidea labiata* G. W. Müller, Gaus Station (177a.12.02), 385m, Deut. Südpolar Exp., 1901–

1903, ZMB 13069". A newly dissected specimen was chosen as the lectotype, since the three slides containing the specimens dissected and illustrated by Müller (1908) can not be observed under the higher magnification objective (100X) of an optical microscope because of the large quantity of preserving medium. Furthermore, the valves of these 3 specimens were also preserved in permanent medium (which contain cracks) on glass slide, being impossible to study them accurately.

Paralectotypes: 58 *live specimens preserved in alcohol, 7 RV, 11 LV on micropaleontological slides. All these specimens were in six small vials (see below) and three slides:

*Part of the material listed below as live A, (A-1), (A-2), (A-3), (A-4), (A-5) might or might not contain soft parts, since all the valves from the Gausstation were opaque, it was not possible to be sure if some specimens were live or subfossil.

1) Vial labelled "177a-4.02"—subfossil: 2 A RV, 1 (A-4) RV, 1 A LV, 1 (A-1) LV.

2) Vial labelled "177a-6.02"—*live: 1 A F, 1 (A-1); subfossil: 1 A RV, 1 A LV.

3) Vial labelled "177a-10.02a"—*live: 4 (A-1), 1 (A-4) (one of them dissected SNB 0686).

4) Vial labelled "177a-12.02"—*live: 9 A F (one of them dissected SNB 0682), 9 A M, 5 (A-1) F (one of them dissected SNB 0685), 6 (A-2), 1 (A-3), 9 (A-4), 1 (A-5) ; subfossil: 1 A RV, 1 (A-2) RV, 4 A LV, 3 (A-1) LV, 1 (A-2) LV.

5) Vial labelled "177a-1.03"—*live: 1 A, 4 (A-1), 1 (A-4); subfossil: 1 (A-4) RV.

6) Vial labelled "177a-2.03"—*live: 1 (A-2), 1 (A-4).

7) 1 glass slide with permanent medium containing appendages and 2 valves of 1 A M, and labelled "*Nesidea labiata*, 1672, Gauss., 177a-12.02, 1 adult male".

8) 1 glass slide with permanent medium containing appendages and 2 valves of 1 A M, and labelled "*Nesidea labiata*, 1674, Gauss., 177a-12.02, 1 adult male".

9) 1 glass slide with permanent medium containing appendages and 2 valves of 1 A F, plus one closed carapace positioned in dorsal view, and labelled "*Nesidea labiata*, 1680, Gauss., 177a-12.02, 1 adult female".

Distribution. Known only from the type locality, Southern Ocean (Indic Sector), 385m.

Measurements (Fig. 4). **Lectotype**, LV, L 1.52mm (with spines and fringe) 1.50mm (without spines and fringe), H 0.93mm RV, L 1.61mm (with spines and fringe) 1.53mm (without spines and fringe), H 0.87mm.

Paralectotypes, LV, A L 1.64–1.83mm, H 0.94–1.10mm; (A-1) L 1.32–1.39mm, H 0.80–0.84mm; (A-2) L 1.00–1.08mm, H 0.62–0.68mm; (A-3) L 0.80mm, H 0.50mm; (A-4) L 0.60-0.64mm, H 0.38–0.40mm; (A-5) L 0.49mm, H 0.30mm.

Diagnosis. LV and RV subtriangular, smoothly rounded, equilateral in female, fairly inaequilateral in male, not caudate in lateral view. Valve surface of adults and juveniles smooth. Hinge anterior and posterior elements without visible teeth. Carapace subhexagonal, very inflated medially in dorsal view. Podomere VI of AII with 1 medium-sized anterodistal claw, 1 long posterodistal claw, 2 small setae, and 1 medium-sized, fused seta. Fu with 7 setae; setae 2 and 4 longest. Genital lobe oval, with very long and tightly coiled internal tube, and an external elongated process. Hemipenis with subrectangular basal element, subhemispherical medial element, and elongated distal element, the last one terminates in a finger-like process; copulatory tube very elongate and strongly sclerotized; an elongated, flattened process arises from the distal part of medial element.

Description. LV and RV subtriangular, smoothly rounded, equilateral in female, fairly inaequilateral in male, not caudate in lateral view. Males tend to be not as long, and not as high as females. Valve surface of adults smooth. Valves of adults and juveniles covered by many conspicuous sensilla of variable length, from very short to very long; long sensilla barbed. Normal pore canals simple, with narrow rims or without rim. Anterior fringes and posterior marginal denticles well developed. Marginal pore canals long and straight, not very numerous. Calcified inner lamella medium-sized. Hinge anterior and posterior elements with or without very faint denticulation, medial bar finely striate. Carapace subhexagonal, very inflated in dorsal view, with rounded contour, maximum width at mid-length. Eight adductor muscle scars present.

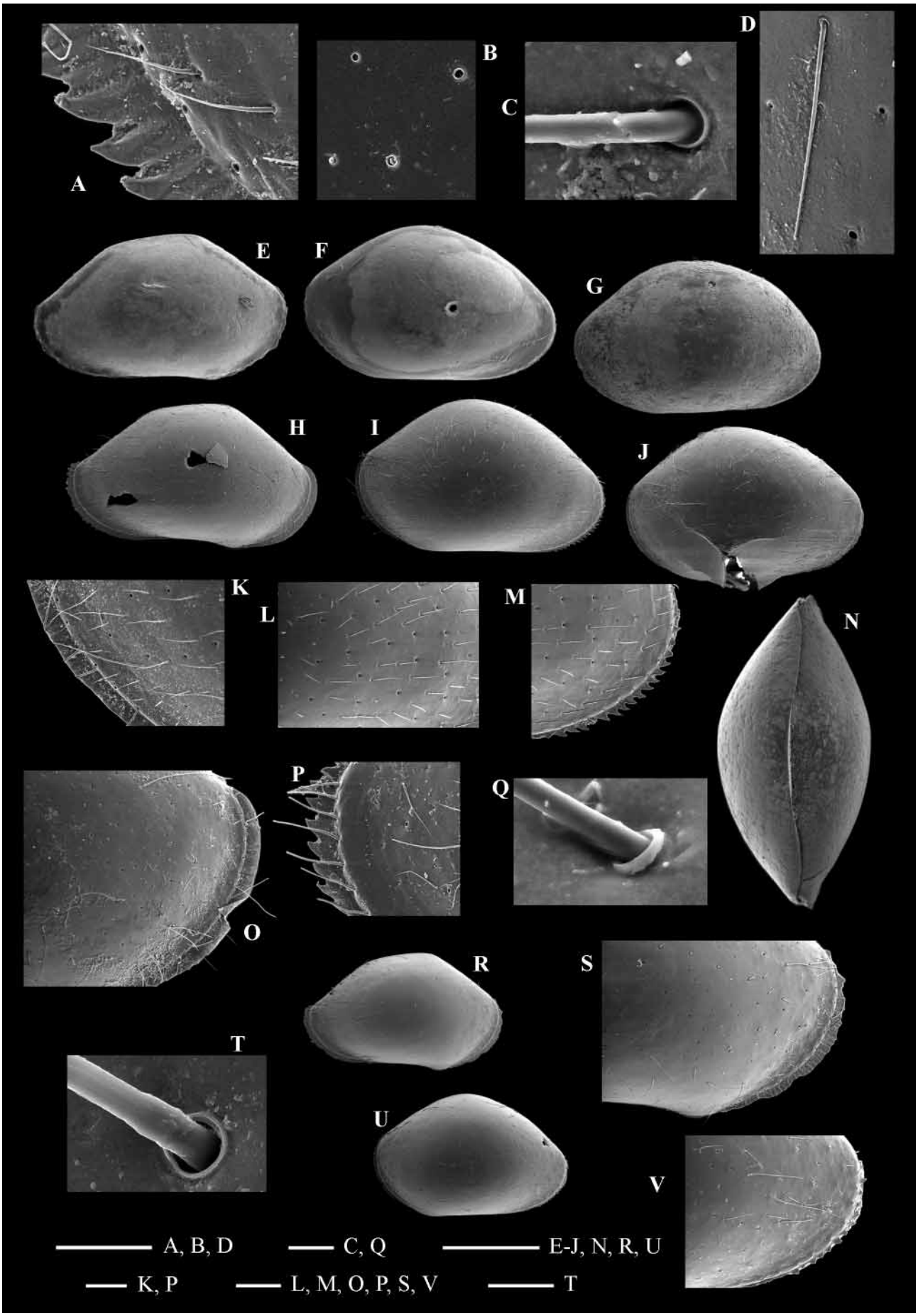

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
A, B, D
C, Q
E-J, N, R, U
K, P
L, M, O, P, S, V
T

FIGURE 7. *?Bairdoppilata. labiata* (Müller, 1908). Legend: **A, B**, A M (paralectotype, ZMB 13069, SNB 0682); **C, D**, A M (paralectotype, ZMB 13069, SNB 0683); **E, F, G**, (A-1) (subfossil paralectotypes, ZMB 13069); **H, I, K–M**, (A-1) (live paralectotype, ZMB 13069, SNB 0685); **J, O–Q**, (A-1) (live paralectotype, ZMB 13069, SNB 0686); **N**, A (subfossil paralectotype, ZMB 13069); **R–V**, (A-2) (subfossil paralectotypes, ZMB 13069). **A**, posterior of RV; **B**, lateral surface of RV; **C, Q, T**, normal pore canals; **D, L**, lateral surface of LV; **E, H, R**, RV, ev; **F, G, I, J, U**, LV, ev; **K, M**, anterior and posterior of **I** (LV); **N**, RLV, dv; **O, P**, anterior and posterior of RV; **S**, anterior of **R** (RV); **V**, posterior of **U** (LV). Scale bars: **A, B, D, K, P**, 50µm; **C, Q, T**, 5µm; **L, M, O, P, S, V**, 100µm; **E–J, N, R, U**, 500 µm.

AI with several very long setae; chaetotaxy 1(0/0), 2(.1/0), 3(.1/0), 4(.1/.1), 5(.2/.2), 6(.2/.2.), 7(0/0:3). AII with elongated podomere IV and V; exopodite with 1 very long and 2 short setae; podomere VI with 1 medium-sized anterodistal claw (its length about ¾ that of posterodistal claw), 1 long posterodistal claw, 2 small setae, and 1 medium-sized, fused seta in males; females present a more robust fused seta (claw-like); chaetotaxy 1(0/0:2i), 2(.1/0:1i), 3(0/.3.2), 4(0/.2), 5(.1.2./.1,1), 6[male:(0/0:1c,1c,1,1fs); female:(0/0:1c,1c,2,1fc)]. Masticatory process of Md with several setae, and 1 simple, plus 5 trifurcate, plus 1 bifurcate teeth; exopodite with 1 very long and 2 long setae; podomere IV palp with 1 robust, feathered, distal claw; chaetotaxy of palp 1(0/.1.:1i), 2(.2/.2:1i), 3(.4./.1:2i), 4(.1./3pc,2). Vibratory plate of MxI with 6 subequal strahlen and 25 feathered setae; endites with modified, broad, feathered, distal claws, and also simple setae and claws; chaetotaxy of palp (.3./1:1,1pc). Vibratory plate of ApV with 4 proximally segregated strahlen, and 13 feathered setae, chaetotaxy 1(.1 .2. 2-3. 1/0), 2(.2/0), 3(.1/0), 4(0/0:1r,1c). Chaetotaxy of Ap VI and VII 1(.1.1.1.1/0), Exopodite(0/0:2), 2(2/0), 3(.1/0), 4(.1/0), 5(0/0:1r,1c). Fu with 7 setae; seta 1 (more distal one) thick, seta 2 the longest and distally feathered; seta 4 also long, other setae short, but not vestigial. Brush-shaped organ assymetrical. Genital lobe oval, with very long and tightly coiled internal tube and an external elongated process. Hemipenis with subrectangular basal element, followed by a medial subhemispherical element and terminated by an elongated, irregularly shaped distal element, the last terminates in a finger-like process; copulatory tube very elongate and strongly sclerotized; an elongated, flattened process arises from the distal part of the medial element.

Remarks. The differences between *?B. labiata* and *B. simplex* are presented in the *Remarks* of the last species.

The juvenile LV recorded by Neale (1967, Fig. 2) from the Halley Bay, Antarctic Peninsula, presents a more broadly rounded posterior margin. Consequently this record is herein considered dubious.

Dingle's (2000) illustrated RV (identified as *B. simplex*), from the Quaternary of Victoria Land Basin, Antarctica, is similar to the lectotype of *B. simplex*, but could also be co-specific to *?B. labiata* or other bairdioid species.

?Bairdoppilata sp. 1 aff. *?B. labiata* (Müller, 1908)

(Figs. 3.15, 3.17, 4, 5.E, F, N, 8.B, E, H, I, L, P, Q, 9.G–L, 12.O–Q)

1969	in part	*Bairdoppilata (Bairdoppilata?) simplex*, Maddocks: 77–78, Fig. 42.
2000	?	*Bairdoppilata* cf. *B. simplex*, Dingle: 486, 488, Figs. 2, 3, 5.C, table. 2.

Material. 1 A F, *Bairdoppilata (Bairdoppilata?) simplex* (Brady, 1880), RV *Eltanin* station 418, 62°39–40'S, 56°8–10'W, 311 to 426m, Ref. 58, USNM 121347. This living female was illustrated by Maddocks (1969, p. 77, fig. 42B); this is Maddocks' specimen no. 191.

1 A M, *Bairdoppilata (Bairdoppilata?) simplex* (Brady, 1880), RV *Eltanin* station 1345, 54°50–51'S, 129°46–48'W, 915 to 1153m, USNM 121348. This living male was identified and illustrated by Maddocks (1969, p. 77, Fig. 42A, C–H); this is Maddocks' specimen no. 205. (Herein Figs. 3.17, 4, 5.E, F, 8.E, H, L, P, Q, 9.G–L).

1 RV, ROSSMIZE, # H in 4, ZMH K-41363 (Herein Fig. 12.P–Q).

Distribution. Southern Ocean (Atlantic and Pacific Sectors), 196 to 426m.

Measurements (Fig. 4). USNM 121347: RV, A F L 1.97mm, H 0.97mm. USNM 121348: LV, A M L 1.70mm, H 0.96mm; RV L 1.68mm, H 0.90mm. ZMH K-41363: LV, L 1.00mm, H 0.56mm.

Remarks. Specimens from the Pacific Sector of the Southern Ocean – one male, USNM 121348, and off Northern Antarctic Peninsula – one female, USNM 121347 – identified by Maddocks (1969) as *B. simplex* are included herein. They differ from *B. simplex* in the same features as *B. simplex* differs from *?B. labiata* (see *Remarks* from *?B. labiata*). These two specimens are similar to *?B. labiata*, but their LV present a more rectilinear outline, with slightly concave anterodorsal margin (instead of slightly convex); dorsal margin of RV presents relatively shorter medial segment (Figs. 5.A–F, I–K, N). Additionally, the adult female (USNM 121347) is considerably larger than the lectotype of *B. simplex*. Moreover, the three males of *?B. labiata* from the Gausstation (ZMB 13069) present different hemipenis morphology than the male from the Pacific sector of the Southern Ocean (USNM 121348). The distal element of specimens collected from the Gausstation is irregular, subtriangular in shape, with a distal "finger-like" process pointing out from the rest of the hemipenis (Figs. 8.M–O, 9.A–D). In the specimen from the Pacific Sector of the Southern Ocean the distal element of the hemipenis is elongate, subovate, and the distal process forms a structure similar to a subchela (but not articulated) with the most interior part of the distal element (Figs. 8.P, Q, 9.G–L). The chaetotaxy of the appendages (AI, AII, Md, MxI, ApV to VII) and furcae was compared among type specimens of *?B. labiata* and *?B.* sp. aff. *?B. labiata* but no consistent difference was found. In my opinion, these differences in carapace and hemipenis are sufficient for the description of a new species, which, otherwise, should await the collection of more specimens. In addition, it is also possible that both specimens (USNM 121347, USNM 121348), which were collected many thousands of kilometres away from each other, belong to different species.

The only RV from Ross Sea (ZMH K-41363) (Fig. 12.O–Q) studied herein is different from ?*B. labiata* in being much smaller and presenting a convexity in mouth region of the ventral margin.

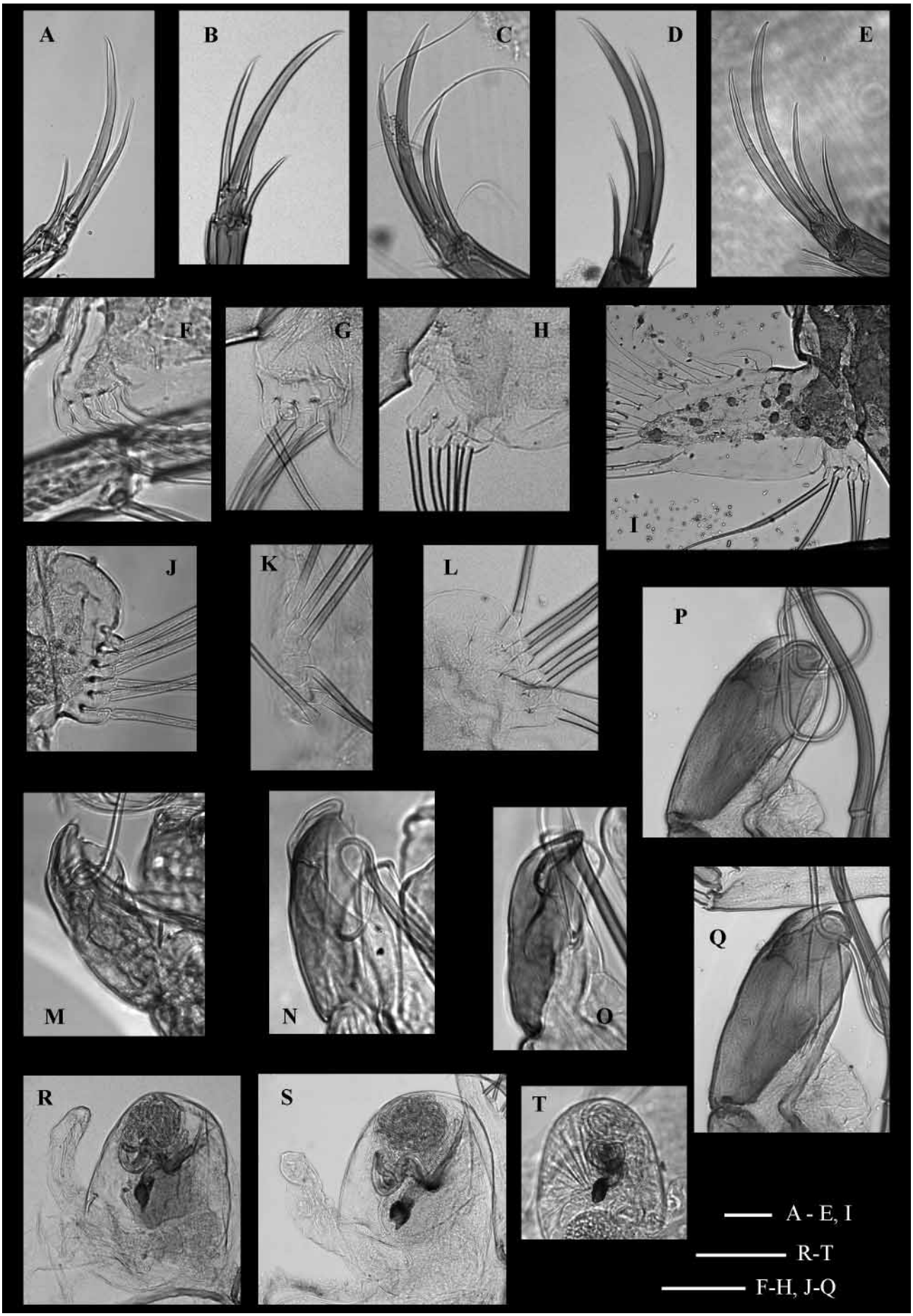
***?Bairdoppilata* sp. 2 aff. *?B. labiata* (Müller, 1908)**
(Figs. 4, 8.D, K, S, 11–14)

Material. 6 live specimen, 58 valves. 2 A F (SNB 0385-6), 2 (A-1), 2 (A-2), 31 RV, 27 LV, ANDEEP III # 133–2–E, 1581 to 1582m, ZMH K-41359.

Measurements (Fig. 4). LV, A L 1.73–1.86mm, H 0.94–1.10mm; (A-1) L 1.40–1.50mm, H 0.76–0.86mm; (A-2) L 1.03–1.14mm, H 0.59–0.68mm.

Distribution. NW Weddell Sea, Southern Ocean (Atlantic Sector), 1581 to 1582m.

FIGURE 8. *?Bairdoppilata. labiata* (Müller, 1908), *?B.* sp. 1 aff. *?B. labiata*, and *?B.* sp. 2 aff. *?B. labiata*.
Legend: *?Bairdoppilata. labiata* (Müller, 1908): **A, F, J, M**, A M (lectotype, ZMB 13069, SNB 0683); **C, T**, A F (paralectotype, ZMB 13069, Müller's number 1680); **G, R**, A F (paralectotype, ZMB 13069, SNB 0682); **N**, A M (paralectotype, ZMB 13069, Müller's number 1672); **O**, A M (paralectotype, ZMB 13069, Müller's number 1674). *?B.* sp. 1 aff. *?B. labiata*: **B, H, L, P, Q**, A M (USNM 121348); **E, I**, A F (USNM 121347). *?B.* sp. 2 aff. *?B. labiata*: **D, K, S**, A F ((ZMH K-41359, SNB 0386). **A–E**, podomeres V (distal part) and VI of AII; **F–I**, strahlen of ApV; **J–L**, strahlen of MxI; **M–Q**, distal element of hemipenis; **R–T**, genital lobe. Scale bars: **A–Q**, 50µm; **R–T**, 100µm.


A
B
C
D
E
F
G
H
I
J
K
L
P
M
N
O
Q
R
S
T
A - E, I
R-T
F-H, J-Q

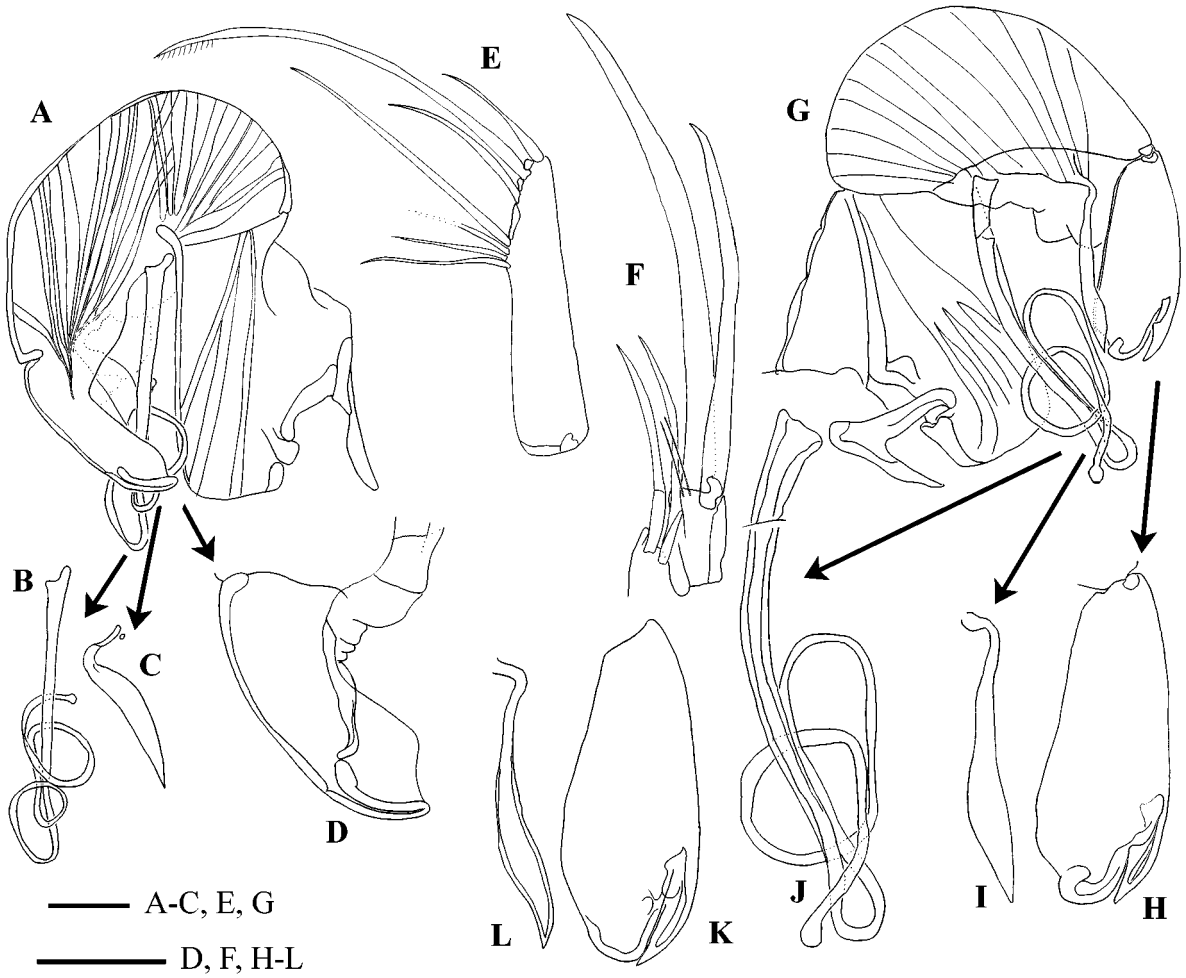


FIGURE 9. *?Bairdoppilata. labiata* (Müller, 1908), and *?B.* sp. 1 aff. *?B. labiata*. Legend: ?Bairdoppilata. labiata (Müller, 1908): **A–F**, A M (lectotype, ZMB XXXX, SNB 0683). ?B. sp. 1 aff. ?B. labiata: **G–L**, A M (USNM 121348). **A, G**, hemipenis; **B, J**, copulatory tube of hemipenis; **C, I**, flattened process; **D, H**, distal element of hemipenis; **E**, Fu; **F**, podomeres V (distal part) and VI of AII. Scale bars: 50µm.

Remarks. The species collected from the ANDEEP station #133 is very similar to *?B. labiata*, but the former species presents a punctuated valve surface (adults and juveniles (A-1), instead of smooth as the specimens from the Gausstation. Other differences were also found on soft parts: (1) podomere VI of antenna II – the ANDEEP females present 2 short setae plus one fused, and 2 large claws, while Gausstation females present just 1 seta plus one fused, and 2 large claws (no males were collected in the ANDEEP station); (2) vibratory plate of maxilla I presents 27 feathered setae plus 6 strahlen in the ANDEEP specimens, instead of 25 feathered setae plus 6 strahlen as in the specimens from the Gausstation. Since environmental differences (salinity, temperature…) might influence the calcification process in ostracods (Keyser *pers. comm.*), which could be the cause of the differences in ornamentation observed between *?B. labiata* and ?*B.* sp. 2 aff. *?B. labiata*, I prefer not to name this new species, until more specimens are available.

Since only females with soft parts and few other adult valves are available, it is not possible to evaluate sexual dimorphism.

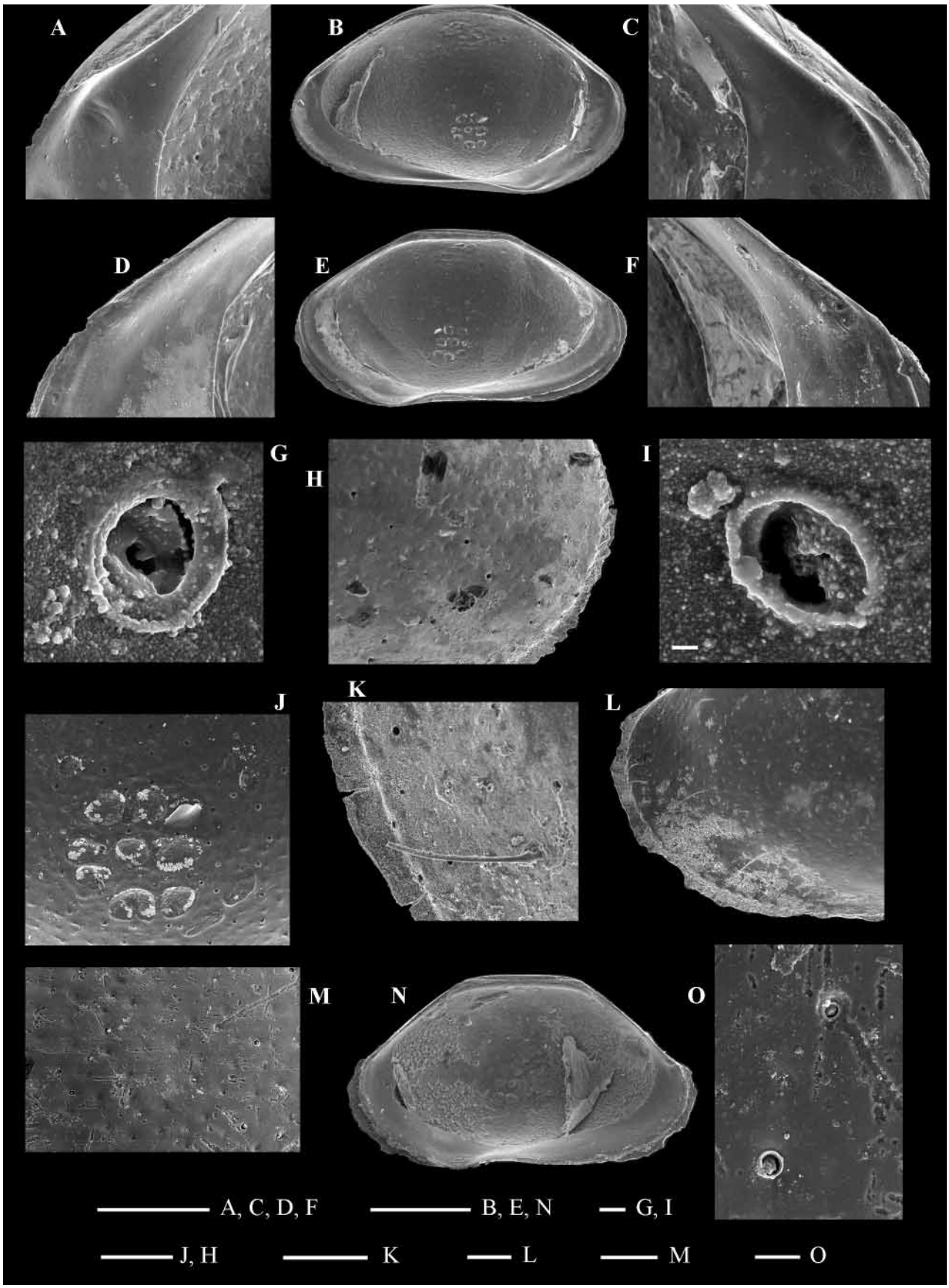


FIGURE 10. *? Bairdoppilata* sp. 1 aff. *?B. labiata*. Legend: **A–K**, A M (USNM 121348); **L–O**, A F (USNM 121347). **A, C**, LV hinge; **B**, LV, iv; **D, F**, RV hinge; **E, N**, RV iv; **G, I**, normal pore canals; **H**, posterior of LV, ev; **J**, adductor muscle scars of LV; **K**, anterior of LV, ev; **L**, posterior of RV, ev; **M, O**, RV lateral surface. Scale bars: **A, C, D, F, O**, 10 µm; **B, E, N**, 500µm; **G, I**, 1µm; **J, H, L**, 100µm; **K, M**, 50µm.

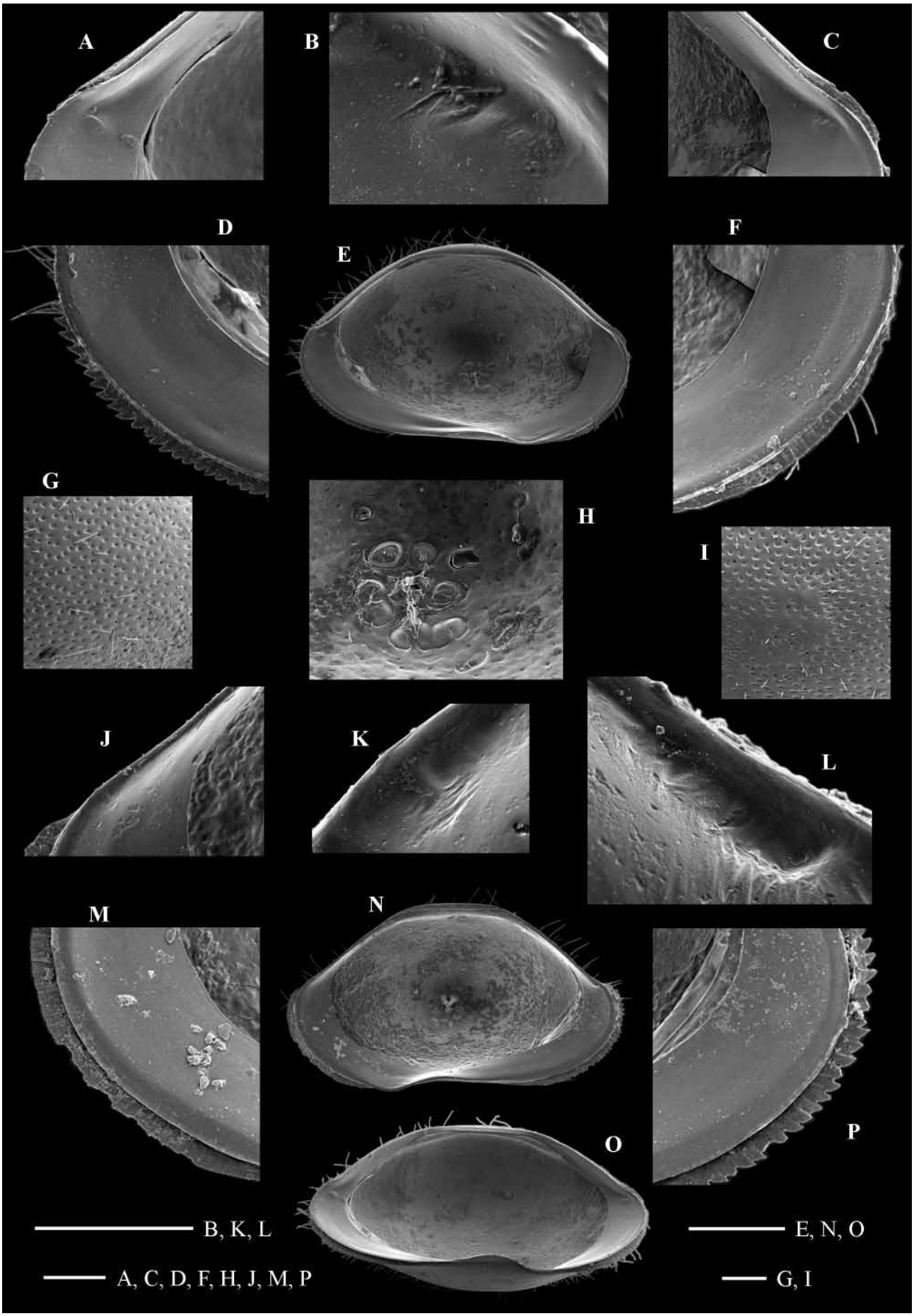

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
B, K, L
A, C, D, F, H, J, M, P
E, N, O
G, I

FIGURE 11. *? Bairdoppilata* sp. 2 aff. *?B. labiata*. Legend: A F (ZMH K-41359, SNB 0385). **A–C**, LV hinge; **D,F,** posterior and anterior of LV, iv; **E, O**, LV, iv; **G, I**, lateral surface of LV; **H**, adductor muscle scars; **J–L**, RV hinge; **M, P**, posterior and anterior of RV, iv; **N**, RV, iv. Scale bars: **A, C, D, F, G–J, M, P**, 100 µm; **E, N, O**, 500µm.

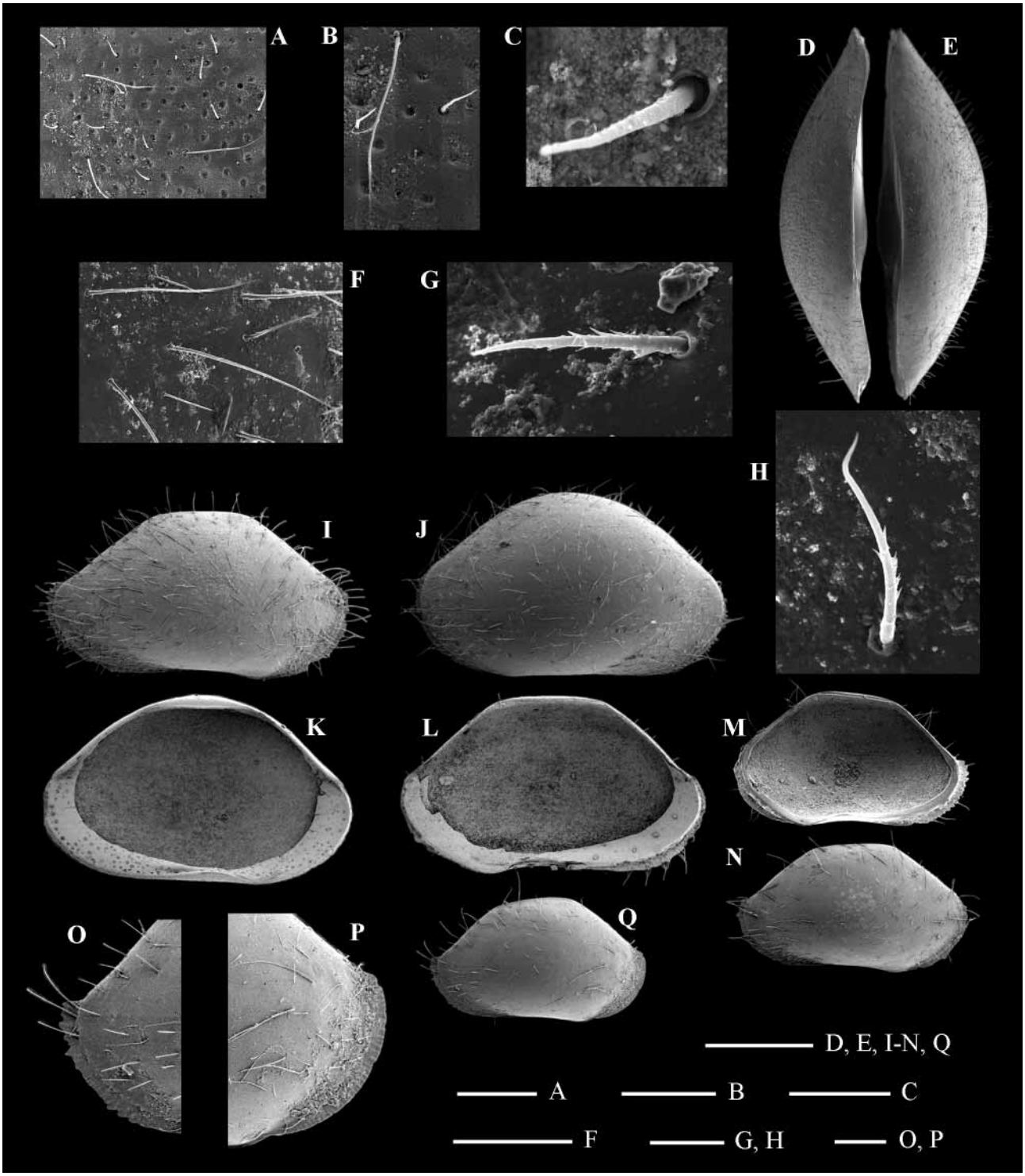


FIGURE 12. *?Bairdoppilata* sp. 2 aff. *?B. labiata* and *?B.* sp. 1 aff. *?B. labiata*. Legend: *?B.* sp. 2 aff. *?B. labiata*: **A–E**, A; **F–L**, (A-1); **M, N**, (A-2) (ZMH K-41359). *?B.* sp. 1 aff. *?B. labiata*: **O–P**, (A-?2) (ZMH K-41363). **A–C, F–H**, valve external surface and sensilla; **D**, LV, dv; **E**, RV, dv; **I, N–Q**, RV, ev; **J**, LV, ev; **K**, LV, iv; **L, M**, RV, iv. Scale bars: **A, F, O, P**, 100µm; **B**, 50µm; **C, G, H**, 10µm; **D, E, I-N, Q**, 500µm.

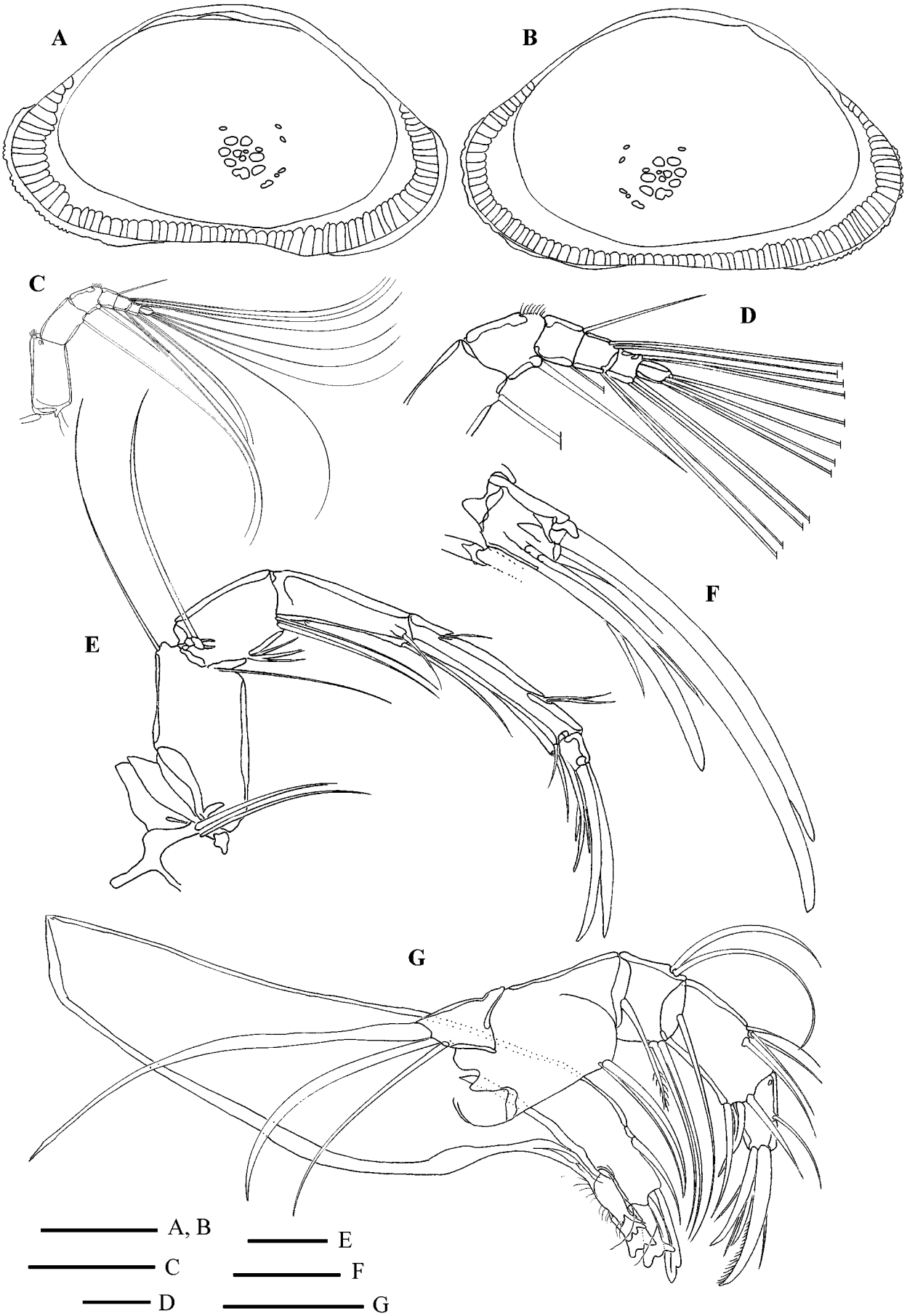


FIGURE 13. *?B.* sp. 2 aff. *?B. labiata*. Legend: **A–F**, A F (ZMH K-41359, SNB 0386). **A**, RV, ev, **B**, LV, ev, **C, D**, AI, **E**, **F**, AII, **G**, Md. Scale bars: **A, B**, 500µm; **C**, 300µm; **D, E, G**, 100 µm; **F**, 50 µm.

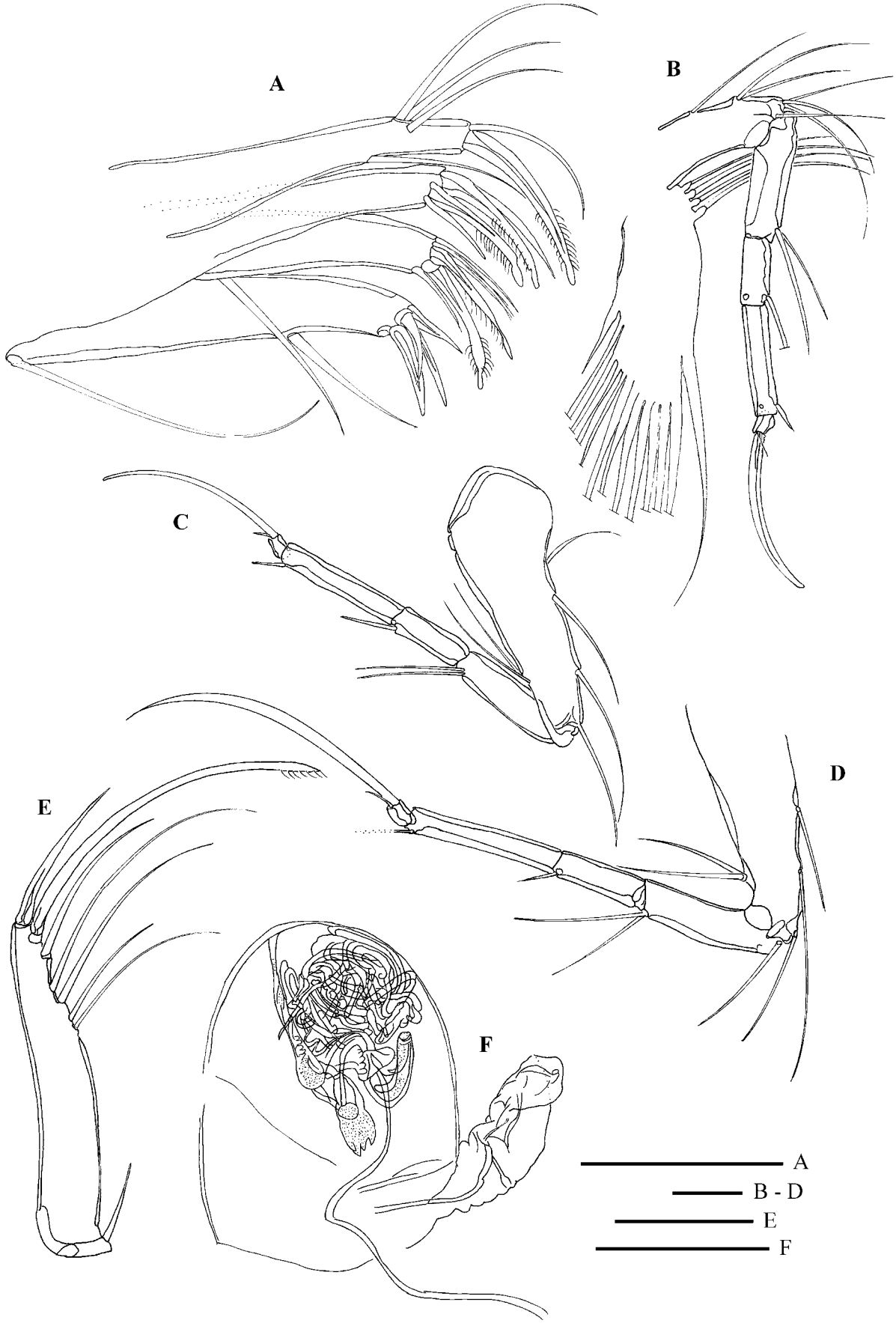


FIGURE 14. *?Bairdoppilata* sp. 2 aff. *B. labiata*. Legend: **A–F**, A F (ZMH K-41359, SNB 0386). **A**, MxI; **B**, ApV; **C**, ApVI; **D**, ApVII; **E,** Fu; **F**, genital lobe. Scale bars: **A, B, E, F**, 100µm; **C, D,** 200µm.

***Bairdoppilata* sp. 3**
(Figs. 3.12, 4, 15.A–G)

1989 *Bairdoppilata simplex*, Hartmann: 211.

Material. 3 LV (plus 2 broken V), off South Georgia, F.F.S *Walter Herwig* cruise 68/1, station 7-1, 53°43.5'S, 41°47.8'W, 137m, date 28.1.1985, temperature 1.486°C, salinity 34.002 ‰, rocky substrate, ZMH K-33798. This material was studied (but not illustrated) by Hartmann (1989).

Distribution. Off South Georgia, Southern Ocean (Atlantic Sector), 137m.

Measurements (Fig. 4). LV, L 1.31–1.36mm, H 0.81–0.86mm

Description. LV globose-ovate in lateral view, anterior conspicuously more broadly rounded than posterior, not caudate, dorsal margin highly arcuate. Valve surface punctuated. Normal pore canals large, numerous, located among punctae, with very thin rim, and sensilla of variable length. No fringes or denticles present on the 3 subfossil LV. Calcified inner lamella fairly narrow; vestibules constricted. Hinge anterior and posterior elements with 4 well developed denticles and sockets. Nine adductor muscle scars present.

Remarks. Bairdoppilata sp. 3 differs greatly from *B. simplex* and *?B. labiata* on its more globose carapace and punctuated surface (Fig. 15.A–G).

***?Bairdoppilata* sp. 4**
(Figs. 3.13, 4, 15.H–P)

1993 *Bairdoppilata simplex*, Hartmann: 211.

Material. 1 RV, off Northeastern Antarctic Peninsula, RV *Polarstern* cruise PS ANT/X/1b, "1st station after O'Higgins", 63°00.49'S, 57°09.45'W, 97m, date 22.12.1991, ZMH K-35474. This RV was studied but not illustrated by Hartmann (1993).

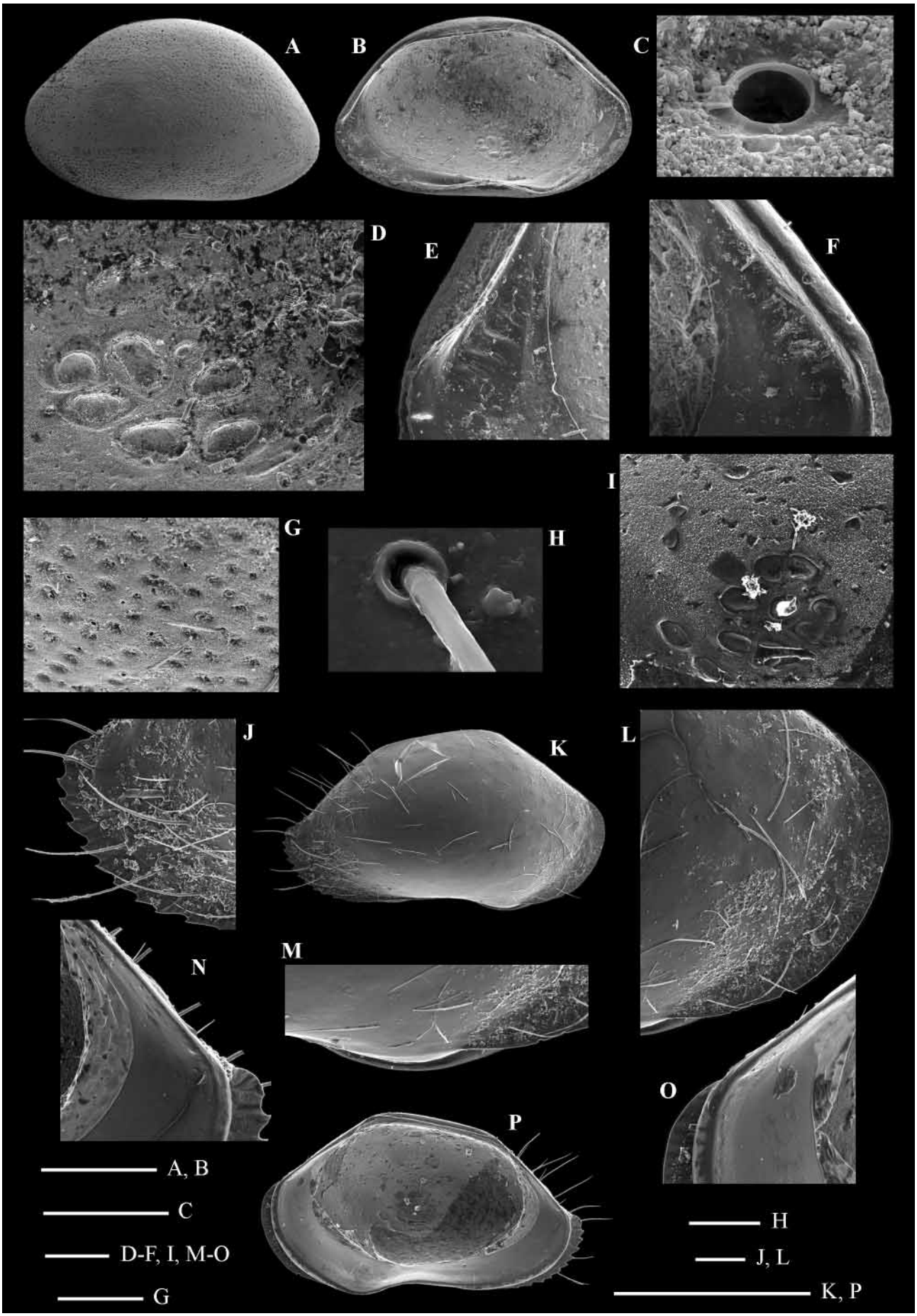
Distribution. Off NW Antarctic Peninsula, Southern Ocean (Atlantic Sector), 97m.

Measurements. RV, A L 0.84mm, H 0.48mm.

Description. RV small, sub-hexagonal in lateral view, anterior more broadly rounded than posterior, slightly caudate, dorsal margin tri-segmented. Valve surface smooth. Normal pore canals not very numerous, with rim, sensilla long to very long. Fringes present on anterior margin and 10 denticles present on posterior margin. Calcified inner lamella very broad. Hinge anterior and posterior elements without denticles and sockets. Nine adductor muscle scars present, eight of them positioned in a circle surrounding the ninth scar.

Remarks. ?Bairdoppilata sp. 4 differs from *B. simplex*, because the first species presents: (1) the much smaller adult size; (2) longer carapace sensilla; (3) anterior and posterior elements of the hinge lacking denticles (instead of presenting denticulation); (4) conspicuous anteroventral convexity (not to be confounded with the anteroventral concavity present in many bairdioid RV); (5) denticulate posterior margin (Fig. 15.H–P).

FIGURE 15. *Bairdoppilata* sp. 3 and *?Bairdoppilata* sp. 4. Legend: Bairdoppilata sp. 3: A–G,?A subfossil (ZMH K-33798). ?Bairdoppilata sp. 4: H–P, A subfossil (ZMH K-35474). A, LV, ev; B, LV, iv; C, H, radial pore canals; D, I, adductor muscle scars; E, F, anterior and posterior hinge elements of B; G, external valve surface ornamentation; J, posterior of RV, ev; K, RV, ev; L, anterior of RV, ev; M, anteroventral convexity of RV, ev; N, O, anterior and posterior hinge elements of P; **P,** RV, iv. Scale bars: A, B, K, P, 500µm; C, 5µm; D–G, I, M–O, 50µm; H, J, L, 100µm.


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
A, B
C
D-F, I, M-O
G
H
J, L
K, P

***Bairdoppilata* sp. 5**
(Figs. 3.11a, 4, 16)

1974 in part *Bairdoppilata* sp. 44, Hartmann: 253.

Material. 1 dissected A F, fragmented soft parts on a glass slide containing permanent medium "Hydromatrix" plus both valves on micropaleontological slide (K-30230b); 1LV, 2RV, Knysna Beach, South Africa, ZMH K-30230. These specimens were studied but not illustrated by Hartmann (1989).

Distribution. Knysna Beach, South Africa, Southeastern Atlantic.

Measurements. A LV, L 1.08mm, H 0.70mm (K-30230b); A RV, L 1.06mm, H 0.62mm (K-30230b); (A-1) LV, L 0.91mm, H 0.54mm; (A-1) LV L 0.86mm, H 0.44mm; (A-2) RV, L 0.76mm, H 0.38mm.

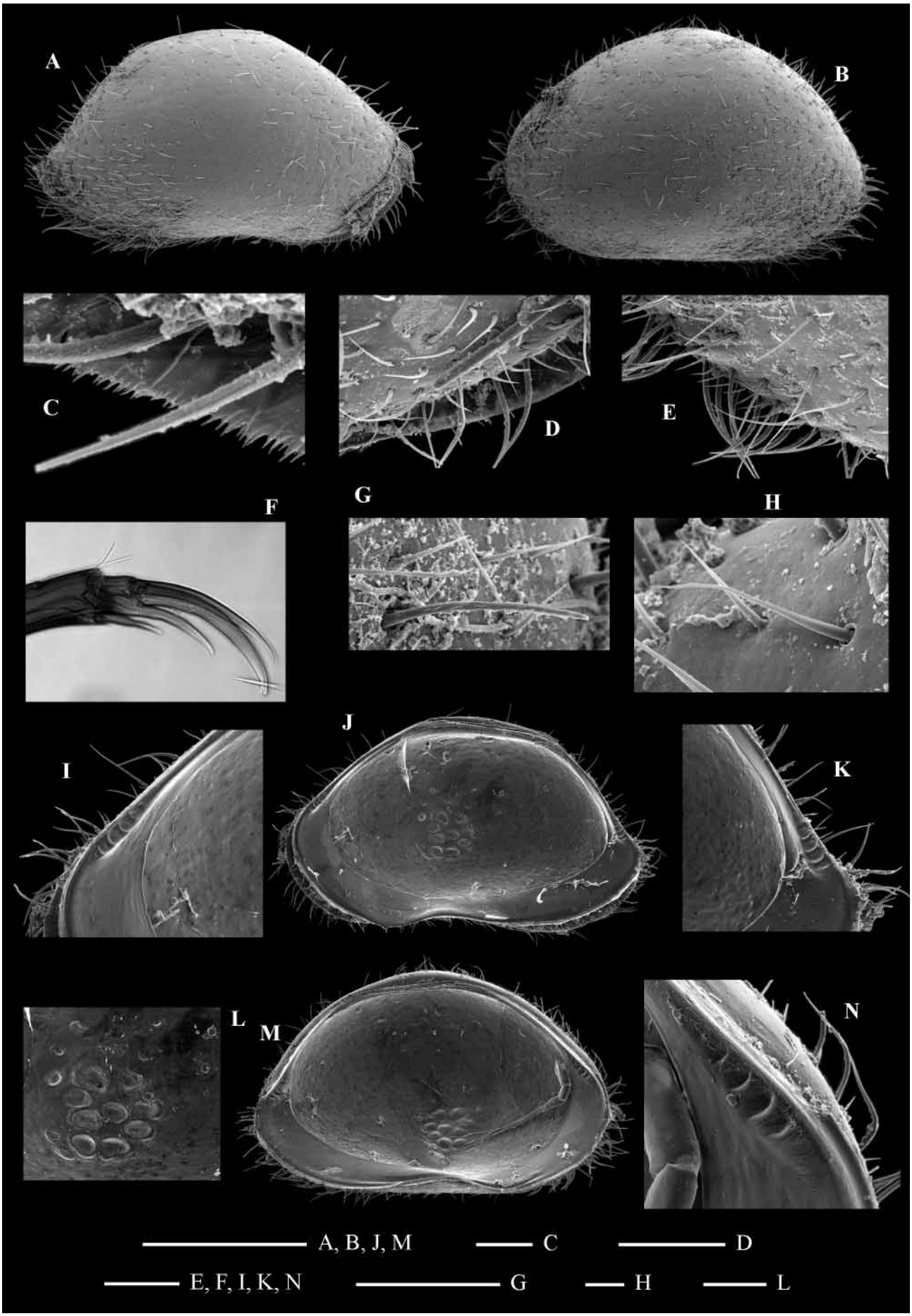
Description. LV globose-subtriangular in lateral view, anterior conspicuously more broadly rounded than posterior, not caudate, dorsal margin highly arcuate, posterior margin upswung. RV subhexagonal in lateral view, anterior and posterior similarly broad, posterior upswung, slightly caudate, dorsal margin tri-segmented, posterior segment slightly concave and shorter than anterior segment, ventral margin sinuous. Valve surface of adults smooth. Normal pore canals large, numerous, with conspicuous rim, sensilla very numerous, and of variable length (from small to long). Barbed fringe, but no denticles, present anteriorly and posteriorly on RV. No fringe or denticles present on LV. Calcified inner lamella medium-sized, vestibules constricted. Hinge anterior and posterior elements with 5 well developed denticles and sockets. Nine adductor muscle scars present, eight of them positioned in a circle surrounding the ninth scar.

Podomere VI of AII with 3 robust terminal claws, fused claw shorter than other 2 claws, exopodite with 2 tiny setae and 1 long seta. Md with 5 trifurcate teeth. MxI with several feathered, broad claws, palp with 3 dorsal, 1 ventral, and 1 distal setae, and 1 broad, robust, feathered distal claw. Fu with (from distal to proximal) one medium sized and 1 long claws, plus 6 medium-sized setae. Genital lobe globose, with short, coiled, internal tube.

Remarks. The specimens herein identified as *Bairdoppilata* sp. 5 were identified by Hartmann (1974) as *Bairdoppilata* sp. 44, and assigned to *B. simplex* by Dingle (2003). *Bairdoppilata* sp. 5 presents: (1) more globose carapace; (2) more conspicuous hinge denticulation; (3) anterior and posterior, barbed fringes on RV; (4) and more numerous sensilla than *B. simplex* (Fig. 16).

Hartmann (1974) described a very strong sexual dimorphism for his *Bairdoppilata* sp. 44, but actually he was dealing with at least 2 different species (*Bairdoppilata* sp. 5 and *B.* sp. 6 herein).

FIGURE 16. *Bairdoppilata* sp. 5. Legend: A F (ZMH K-30230b). **A**, RV, ev; **B**, LV, ev; **C, D, H**, details of **A**; **E, G**, anteroventral details of **B**; **F**, distal podomeres of AII; **I, K**, , anterior and posterior hinge elements of **J**; **J**, RV, iv; **L**, adductor muscle scars of **J**; **M**, LV, iv; **N**, anterior hinge element of **M**. Scale bars: **A, B, J, M**, 500µm; **C, H**, 10µm; **D–G, I, K, N**, 50µm; **L**, 100µm.


A
B
C
D
E
F
G
H
I
J
K
L
M
N
A, B, J, M
C
D
E, F, I, K, N
G
H
L

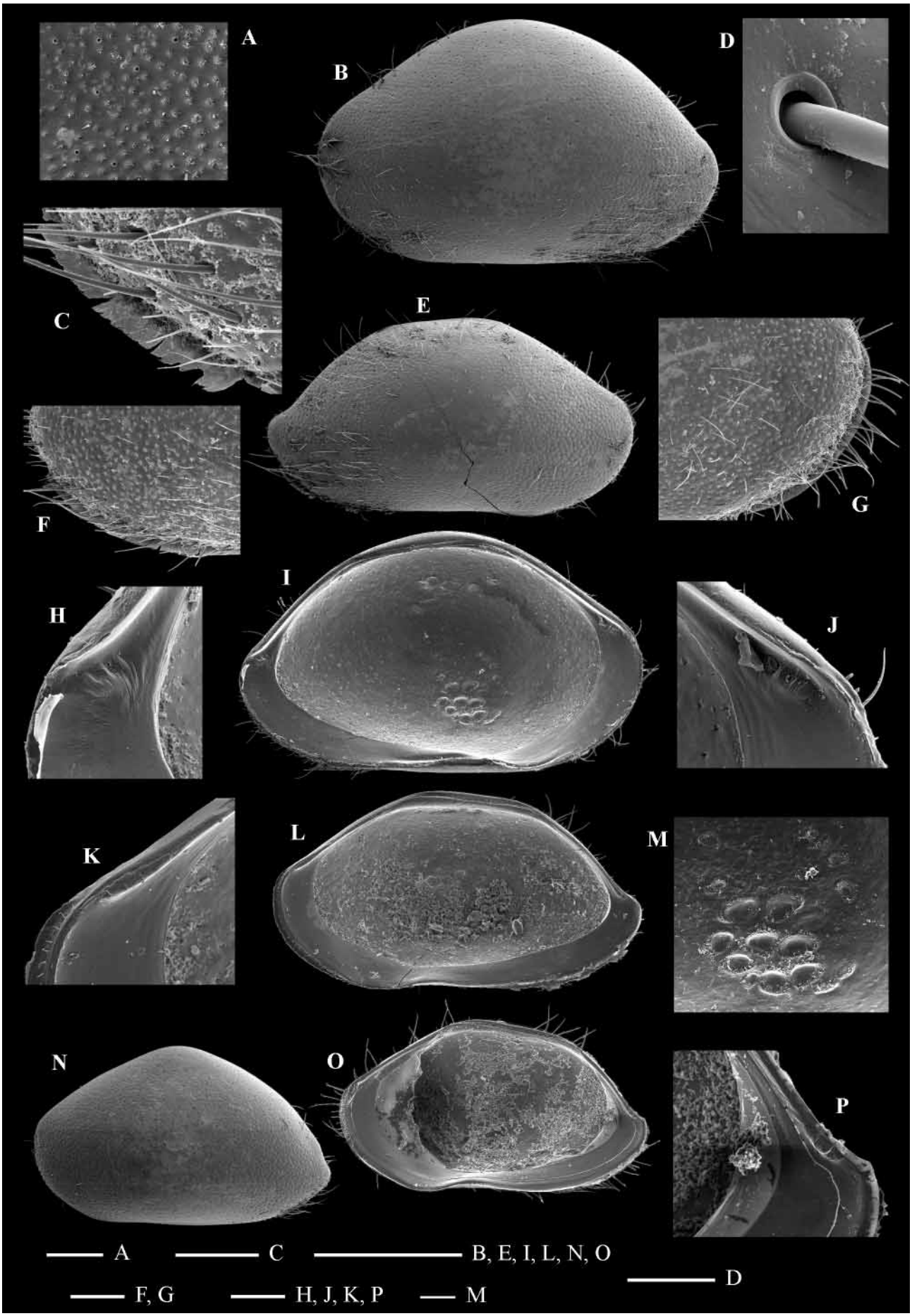

A
B
D
C
E
F
G
H
I
J
K
L
M
N
O
P
A
C
B, E, I, L, N, O
D
F, G
H, J, K, P
M

FIGURE 17. *Bairdoppilata* sp. 6. Legend: A subfossil: **A, B, H–J, M** (K-30070); (A-1) subfossil: **C–G, K, L**; (A-2) subfossils: **N–P**. **A**, ornamentation (detail of **B**); **B, N**, LV, ev; **C, F**, posterior of **E**; **D**, radial pore canal; **E**, RV, ev; **G**, anterior of **E**; **H, J**, posterior and anterior hinge elements of **I**; **I**, LV, iv; **K**, anterior hinge element of **L**; **L, O**, RV, vi; **M**, adductor muscle scars from **I**; **P**, posterior hinge element of **O**. Scale bars: **A, C, H, J, K, M, P**, 50µm; **B, E, I, L, N, O**, 500µm; **D**, 5µm; **F, G**, 100µm.

***Bairdoppilata* sp. 6**
(Figs. 3.11b, 4, 17)

1974 in part *Bairdoppilata* sp. 44, Hartmann: 253.

Material. 3 LV, 3 RV, Lüderitz Bay, Namibia, ZMH K-30070. These specimens were studied but not illustrated by Hartmann (1989).

Distribution. Lüderitz Bay, Namibia, Southeastern Atlantic.

Measurements. A LV, L 1.34mm, H 0.82mm; (A-?1) RV, L 1.17–1.20mm, H 0.62–0.64mm; (A-?2) LV, L 0.98–1.00mm, H 0.60mm; (A-?2) RV, L 0.99mm, H 0.54mm.

Description. LV subtriangular in lateral view, anterior conspicuously more broadly rounded than posterior, fairly caudate, dorsal margin steeply angulate, posterior margin upswung. LV subhexagonal in lateral view, anterior conspicuously more broadly rounded than posterior, slightly caudate, dorsal tri-segmented, but with inconspicuous angles, anterior and posterior segments slightly concave, posterior margin upswung. Valve surface punctuated. Normal pore canals with faint rim, sensilla short to long. Fringes present on anterior and posterior margins of RV. Calcified inner lamella narrow, vestibules constricted. Hinge anterior and posterior elements with 3 fairly conspicuous denticles and sockets. Nine adductor muscle scars present, eight of them positioned in a circle surrounding the ninth scar.

Remarks. The specimens herein identified as *Bairdoppilata* sp. 6 were also identified by Hartmann (1974) as *Bairdoppilata* sp. 44, and assigned to *B. simplex* by Dingle (2003). *Bairdoppilata* sp. 6 differs from *B. simplex* and *?B. labiata*, because the former species presents: (1) punctuate valve surface (Fig. 17.A); (2) more acute, non-denticulate posterior margin of RV (Fig. 17.E–F); (3) more conspicuous hinge denticulation; (4) anterior and posterior barbed fringes on RV (Fig. 17.C, F, G).

Considering the six valves studied herein, maybe the smaller, more angulate and caudate specimens (Fig. 17.N–P) belong to another species than the larger specimens (Fig. 17.A–M).

Genus aff. *Neonesidea*
***?Neonesidea keyseri* sp. nov.**
(Figs. 18–21)

Etymology. In honour of Dr. Dietmar Keyser, from the University of Hamburg, for his important contributions to Ostracodology and his careful supervision during my Ph. D. thesis.

Material: 2 live specimen, 2 RV, 1 LV. **Holotype:** 1 A F (SNB 0264), ANDEEP II, # 140–8–E, ZMH K-41361. **Paratypes:** 1 (A-?2) (SNB 0652), 2 RV, 1 LV, ANDEEP II, # 140–8, ZMH K-41362.

Distribution. Eastern Scotia Sea, Southern Ocean (Atlantic Sector), 2962 to 2965m.

Measurements (Fig. 18). Holotype, LV, L 1.33mm, H 0.88mm, RV, L 1.35mm, H 0.86mm. Paratypes, LV, A L 1.32, H 0.86mm; J (A-?2) L 0.83mm, H 0.58mm.

Diagnosis. LV and RV subhexagonal, posterior angle acute, valve surface smooth, with numerous and long sensilla. LV with rounded dorsal, anterior and posterior margins, and straight ventral margin. RV with

straight anterodorsal and ventral margins, and narrowly rounded anterior and posterior margins. AI with elongated podomere VII. Podomere VI of AII with 1 long, distally spatulate claw, 1 short seta, and 1 short fused seta, all simple. Vibratory plate of MxI with 2 strahlen and about 21 feathered setae; distal margin of palp of MxI with 1 cylindrical, distally feathered seta, and 1 simple seta. Vibratory plate of ApV with 3 strahlen and 10 feathered setae. Distal claw of podomere V of ApV-VII slightly spatulate. Fu with 7 setae, second longest, first also long, other 5 medium-sized.

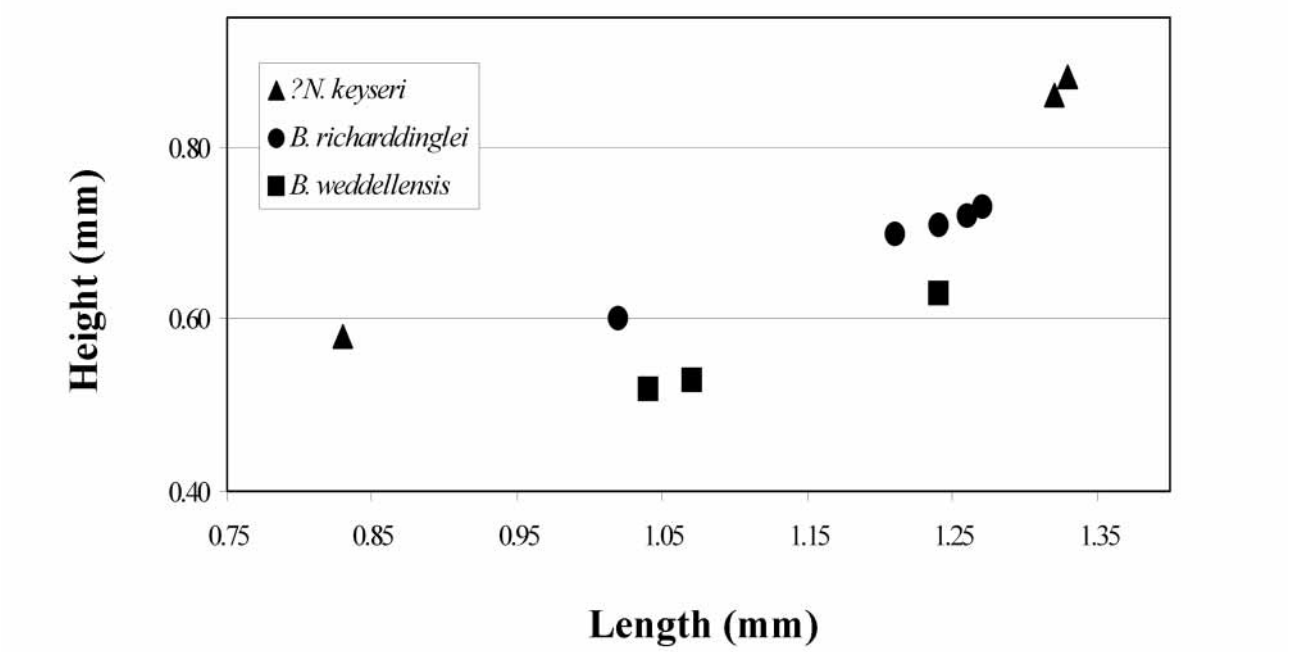
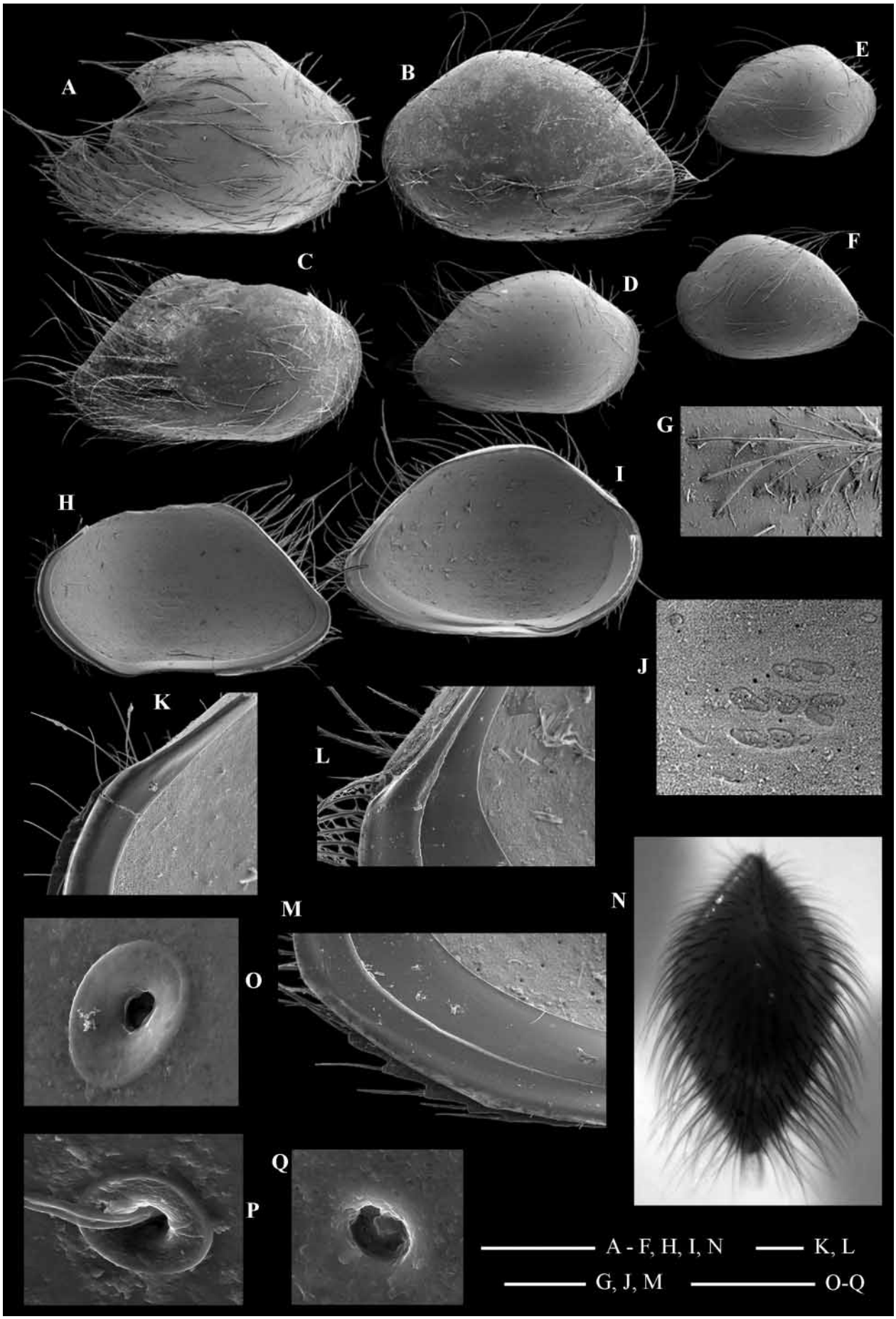


FIGURE 18. Length: height scatter plot of the valves of *Bythocypris richarddinglei* sp. nov., *Anchistrocheles weddellensis* sp. nov., and *?Neonesidea keyseri* sp. nov.

Description. LV and RV subtrapezoidal, posterior angle acute, valve surface smooth, with very numerous and long sensilla. LV with rounded dorsal, anterior and posterior margins, and straight ventral margin. RV with more angulated outline than LV, with straight anterodorsal and ventral margins. Inner lamella narrow, vestibules constricted. Radial pore canals simple and with rim. Adductor muscle scars arranged in 3 horizontal rows, dorsal row with 2 scars, middle and ventral rows with 3 scars each. In dorsal view, carapace lozenge-shaped with acute anterior and posterior angles, maximum width anterior to mid-length.

FIGURE 19. *?Neonesidea keyseri sp. nov.*, *Bythocypris praerenis* sp. nov., *Bythocypris malyutinae* sp. nov., and *Bythocypris* sp. aff. *B. malyutinae* sp. nov.
Legend: *?Neonesidea keyseri sp. nov.*: **A, G, N**, holotype A F (ZMH K-41361, SNB 0264); **B–D, H–L, M**, subfossil paratypes (ZMH K-41362); **E, F**, paratype (A-?2) (ZMH K-41362, SNB 0652). *Bythocypris praerenis* sp. nov.: **O**, subfossil paratype (ZMH K-41329). *Bythocypris* sp. aff. *B. malyutinae* sp. nov.: **P**, A M (ZMH K- 41304, SNB 0308). *Bythocypris malyutinae* sp. nov.: **Q**, A M (ZMH K-41294, SNB 0255). **A, C–E**, RV, Ev; **B, F**, LV, ev; **G**, valve surface with sensilla; **H**, RV, iv; **I**, LV, iv; **J**, adductor muscle scars; **K**, anterior hinge element of **H**; **L**, posterior hinge element of **I**; **M**, posteroventral margin (note the denticulation); **N**, RLV, dv; **O–Q**, radial pore canals. Scale bars: **A–F, H, I, N**, 500µm; **G, J, M**, 100 µm; **K, L**, 50 µm, **O–Q**, 5 µm.


A
B
E
C
D
F
G
H
I
J
K
L
M
N
O
P
Q
A - F, H, I, N
K, L
G, J, M
O-Q

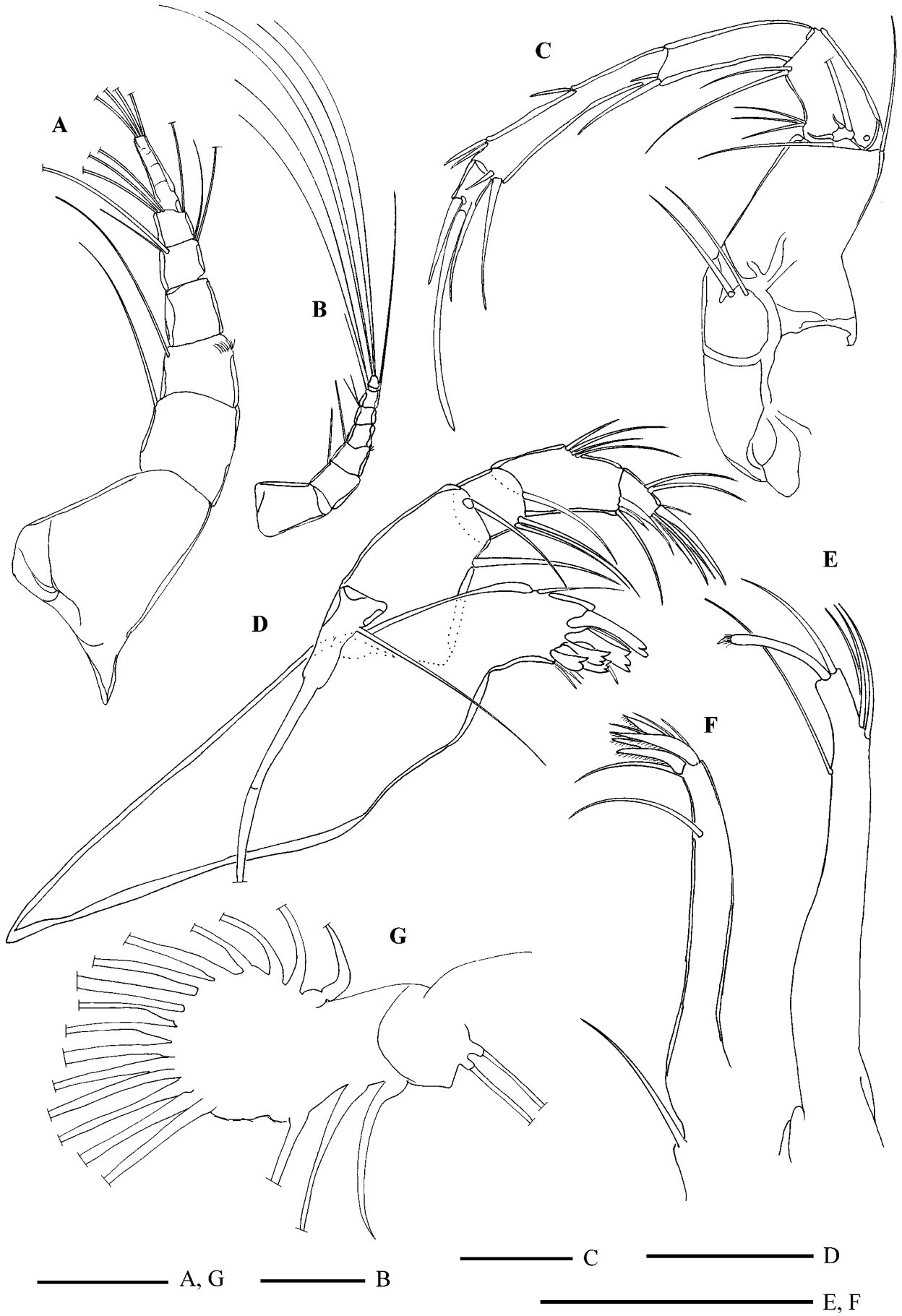


FIGURE 20. *?Neonesidea keyseri* sp. nov. Legend: **A–G**, Holotype, A F (ZMH K-41361, SNB 0264). **A, B**, AI, **C**, AII, **D**, Md, **E**, **F**, MxI, **G**, vibratory plate of MxI. Scale bars: **A, C–G**, 100µm; **B**, 200 µm.

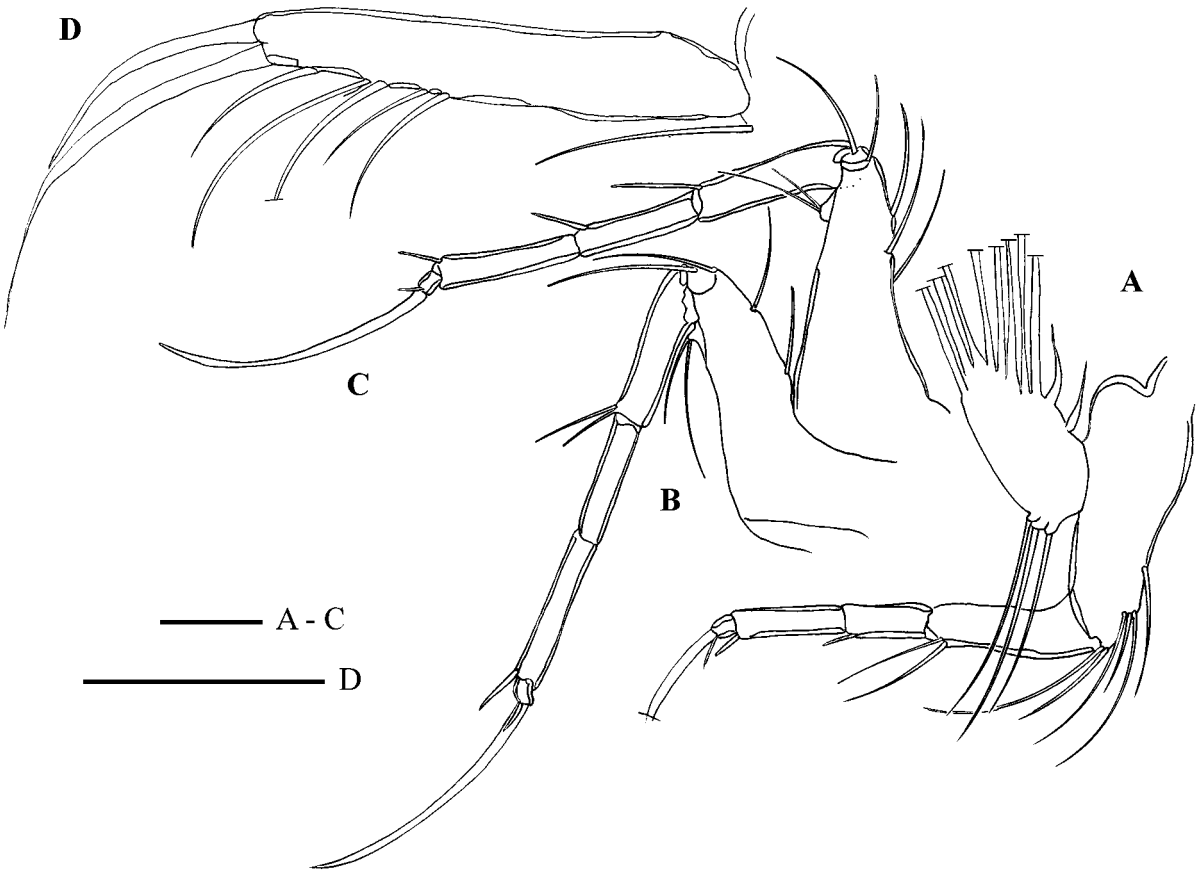


FIGURE 21. *?Neonesidea keyseri* sp. nov. Legend: **A–D**, Holotype, A F (ZMH K-41361, SNB 0264). **A**, ApV; **B**, ApVI; **C**, ApVII; **D**, Fu. Scale bars: 100 µm.

AI with very long, distal setae, podomere VII very elongate; chaetotaxy 1(0/0), 2(.1/0), 3(.1/0), 4(0/0), 5(.2/.2), 6(.3/.1), 7(0/0:4). AII elongate, especially podomere IV and V; exopodite with 1 long and 2 very short setae; podomere VI with 1 long, distally spatulate claw, 1 short seta, and 1 short, fused seta, all simple; chaetotaxy 1(0/0:2), 2(.1/0:1i), 3(0/.3.2), 4(0/.2), 5(.1.2/.2), 6(0/0:1,1c,1fs). Md and MxI with several feathered setae and claws. Base of Md with 1 anterodorsal seta, masticatory process with 1 dorsal bifurcate, 4 medial trifurcate, and 1 ventral bifurcate teeth, plus several short setae; chaetotaxy of palp 1(0/.1.:1i), 2(0/.2/1i), 3(.4./.1:1ic,1i), 4(.2./0:1,1c,3). Palp of MxI with one ventral, long seta, 3 dorsal, medium-sized setae, and 2 distal, medium-sized setae, one of the distal setae modified, cylindrical, with feathered tip; vibratory plate with 2 strahlen and about 21 feathered setae. Vibratory plate of ApV with 3 strahlen and 10 feathered setae; chaetotaxy 1(.1.3.2/0), 2(.2/0), 3(.1/0), 4(.1/0), 5(0/0:1c,1). Chaetotaxy of ApVI 1(.1.1.1.1.1/0), Exopodite (0/0:2), 2(.1/0), 3(.1/0), 4(.1/0), 5(0/0:1c,1). Chaetotaxy of ApVII 1(.1.1.1.1/0), Exopodite (0/0:2), 2(.2/0), 3(.2/0), 4(.0/0), 5(0/0:1c,1). Long claws of podomere V of ApV to VII distally spatulate. Fu with 5 short setae and 2 medium-sized, distal setae.

Remarks. *?Neonesidea keyseri* sp. nov. obviously belongs to a new genus, which is not described herein because of the low number of specimens available. *?Neonesidea keyseri* is herein tentatively assigned to the genus *Neonesidea* due to its: (1) smooth fused claw of antenna II; (2) presence of 2 strahlen on the vibratory plate of maxilla I; (3) vibratory plate of appendage V with 4 strahlen, widely spaced from other setae; (4) muscle-scar pattern with 8 elongate scars arranged in three horizontal rows plus posterior inserted wedge. Otherwise, *?Neonesidea keyseri* differs from the genus *Neonesidea* by its: (1) unstreamlined valve outline, (2) furca with 7 well developed setae, (instead of the last two very tiny). The distal antennal claw with sigmoid incision, typically present in males of *Neonesidea*, can not be observed herein, since no male is available.

?Neonesidea keyseri sp. nov. differs from other *Neonesidea* species by the subtrapezoidal outline, and the furca with seven well developed setae of the former species.

?Neonesidea keyseri sp. nov. is similar to, but differs from *Bairdoppilata hirsuta* (Brady, 1880) due to the elevated, conspicuous caudal process and concave posterodorsal margin of the last species (Puri & Huling 1976, Pl. 4.4–5). Another bairdoppilatan species similar to *?Neonesidea keyseri* sp. nov., is *Bairdoppilata villosa* (Brady, 1880), this last species is higher in relation to length, with LV more subtriangular, with maximum height at mid-length (instead of anterior to mid-length), and more acute posterior angle; RV with relatively longer anterodorsal margin, more concave ventral margin and more acute posterior angle (Puri & Huling 1976, Pl. 2.1–4). Furthermore, *?Neonesidea keyseri* sp. nov. differs from both bairdoppilatan species cited above on the short anterodistal claw of the podomere VI of antenna II, instead of the enlarged claw, diagnostic of the genus *Bairdoppilata.*

Family Bythocyprididae Maddocks, 1969
Genus *Bythocypris* Brady, 1880

Type species. Bythocypris reniformis Brady, 1880.

(1) Remarks on subgenera of *Bythocypris*

Based on carapace characters, Warne (1990) described a new subgenus of *Bythocypris–Bythotriangularia* Warne, 1990—to include the species with "subtriangular to oval" lateral valve outline, "inner lamella moderately broad", and "adductor muscle scar pattern typically bythocypridid except that individual scars are commonly subdivided". The following species were included in the subgenus *Bythotriangularia*: the type species *B. spiriscutica* Maddocks, 1969; plus *B. eltanina* Maddocks, 1969; *B. promoza* Maddocks, 1973; and *B. mozambiquensis* Maddocks, 1969.

Warne (1990) diagnosed the subgenus *Bythocypris* Brady, 1880, as follows: valve lateral outline "smooth, reniform to sub-reniform or sub-rectangular", "inner lamella of moderate size, and adductor muscle scars that are usually undivided".

Warne (1990) completely ignored the several anchistrocheline soft part characters (elongated hypostome and labrum; fused podomeres of antenna I and appendages V to VII; hemipenis with short copulatory process and one also short accessory process) of *Anchistrocheles antemacella* Maddocks, 1969, *A. barnharti* Maddocks, 1976, *A. hartmanni* Maddocks, 1976 and *A. mcquadei* Maddocks, 1976 and transferred these four species to the subgenus *Bythocypris*. These assignments are herein considered invalid, and these four species are considered to belong to the genus *Anchistrocheles* Brady & Norman, 1889 (sensu Maddocks 1976).

The author himself (Warne, 1990: 106) noticed that intermediate carapace lateral outlines exist between the two "diagnostic" sub-reniform and subtriangular forms, and even further, that the type species of the subgenus *Bythocypris—B. (B.) reniformis* Brady, 1880—is one of these intermediate forms: "the sub-reniform carapaces of the type species is intermediate in shape between the sub-rectangular carapace of *B. (B.) subrectangularia* sp. nov. and the subtriangular carapace of *B. (Bythotriangularia*), (…) but is closer to the sub-rectangular forms than to the subtriangular forms". Another example of intermediate valve outline was cited by Warne (1990: 111): "*B.elongata* Brady, 1880 may also belong to *B. (Bythotriangularia)* but it is more elongated than other species included in the new subgenus and has a very narrow inner margin".

Ostracod valve outline, especially in smooth forms, is known to be a very plastic character, with similar outlines being convergently present in different families (for example: Bythocyprididae, Cyprididae, Krithidae, Macrocyprididae, and Pontocyprididae). In addition, the width of the zone of concrescence may also vary, since it changes according to the time of the last moult, with newly moulted individuals presenting a thinner zone of concrescence than those which moulted longer before (Keyser, pers. comm.). Moreover, the

subdivision of adductor muscle scars varies according to "preservation, individual variation, method of illustration, and interpretation by an individual observer" (Maddocks, 1995: 207). Unfortunately, no consistent character is left for the recognition of both subgenera of *Bythocypris* as proposed by Warne (1990), making it impossible to recognise these taxa. Consequently, no subgeneric assignment is attempted herein.

(2) Remarks on *Bythocypris reniformis*

There is considerable taxonomic confusion concerning the name *Bythocypris reniformis*, which was reported from the Western Atlantic (North and South), Southwestern Pacific, Southwestern Indic and Southern oceans, and from the Pleistocene to recent sediments (Fig. 22, Tab. 4).

Brady (1880: 46) described *Bythocypris reniformis* based on a "considerable number of detached valves, together with a few entire specimens," collected through dredgings off Culebra Islands, 713m (# 24), off North Brazil, 340 and 1234m (# 120 and # 122), off Prince Edward's Island (subantarctic region), 91 to 274m, and off Moncoeur Island, Bass Strait, 70 to 73m. Chapman (1941) recorded *B. reniformis* from southeast Australia (860 and 924m). Maddocks (1969) assigned to *B. reniformis* subfossil specimens with very different valve morphology collected "near Tulear, Madagascar, and elsewhere on the western Madagascar coast to depths of" 3530m (75 specimens, 475 to 3530m) and off south-eastern Brazil (108 specimens, 1227m). Later, Puri and Hulings (1976) erected as the lectotype of *B. reniformis* a subfossil RV (length 1.09mm) from Culebra Islands (713m). The last authors erroneously designated topotypes (1 RLV and 1 LV) from Prince Edward Island (91 to 274m). The lectotype differs from the illustrated [sic] topotype in the more equilateral lateral outline, more straight anterodorsal margin (instead of smoothly rounded), and more concave ventral margin of the former. The lectotype also differs from the specimen illustrated by Brady (1880, Pl. 5.1b) by the more truncated anterior margin, and more rectilinear outline, especially the straight anterodorsal margin presented by the former species. The specimens collected off south-eastern Brazil (Maddocks 1969, Fig. 45.J–M) differs from the lectotype of *B. reniformis* because the former: (1) are more smoothly rounded, subtriangular valve outline; (2) have a more arched dorsal margin; (3) present maximum height at mid-length (instead of anterior to it); (4) present much larger size (1.51 to 1.62mm instead of 1.09mm). The specimens from the Mozambique Channel (Maddocks 1969, Fig. 45.N–U) differ from the lectotype of *B. reniformis*, because the former: (1) have a more sub-reniform outline; (2) have a more obtuse posterior angle; (3) have a less concave ventral margin; (4) have a more broadly rounded anterior margin; (5) present maximum height posterior to mid-length (instead of anterior to it). Finally, Briggs (1978) reported *B. reniformis* from Ross Island, Antarctica (no illustration or description was provided).

Specimens from Marion Island (Dingle 2003) also vary from the lectotype of *B. reniformis*. The RV (Dingle 2003, Pl. 1.4) shows: (1) more smoothly rounded dorsal margin (the lectotype presents a more arched dorsal margin, with straight anterodorsal margin and conspicuous anterodorsal angle); (2) posterior angle of the first species is more obtuse than the last species; (3) ventral margin is concave in the former sp. and broadly rounded anteriorly and upswung posteriorly in the type material. The LV (Dingle 2003, Pl. 1.3) lacks the conspicuous anterodorsal angle, has a more smoothly rounded dorsal margin, slightly convex (instead of concave) ventral margin, and more obtuse posterior angle than the topotype from off Marion Island.

Based on the above, I conclude that specimens previously recorded as *B. reniformis* should be included in at least 4 different species (1. type locality – Caribbean; 2. off Canada; 3. off Brazil; 4. off Mozambique Channel; ?5. off Australia).

***Bythocypris praerenis* sp. nov.**
(Figs. 22–26)

Etymology. For its resemblance to *B. reniformis* Brady, 1880.

Material: 6 live specimens, 318 V. **Holotype:** 1 A F (SNB 0388), ANDEEP III # 133–2–E, ZMH K-41356. **Paratypes:** 1 A F (SNB 0387), 1 (A-1) (SNB 0209), 5 RV, 7 LV, 1 RLV, ANDEEP III # 133–2–E, ZMH K-41328; 23 RV, 26 LV, 20 RLV, 157 V, ANDEEP II, # 132–2–S, ZMH K-41329; 3 (A-1) (SNB 0275-7), 51 V, 2 RLV, ANDEEP II, # 133–3–E, ZMH K-41330; 2 RLV, 1 LV, ANDEEP II, # 133–3–S, ZMH K-41357.

Distribution. NW Weddell Sea, Southern Ocean (Atlantic Sector), 1123 to 2084m.

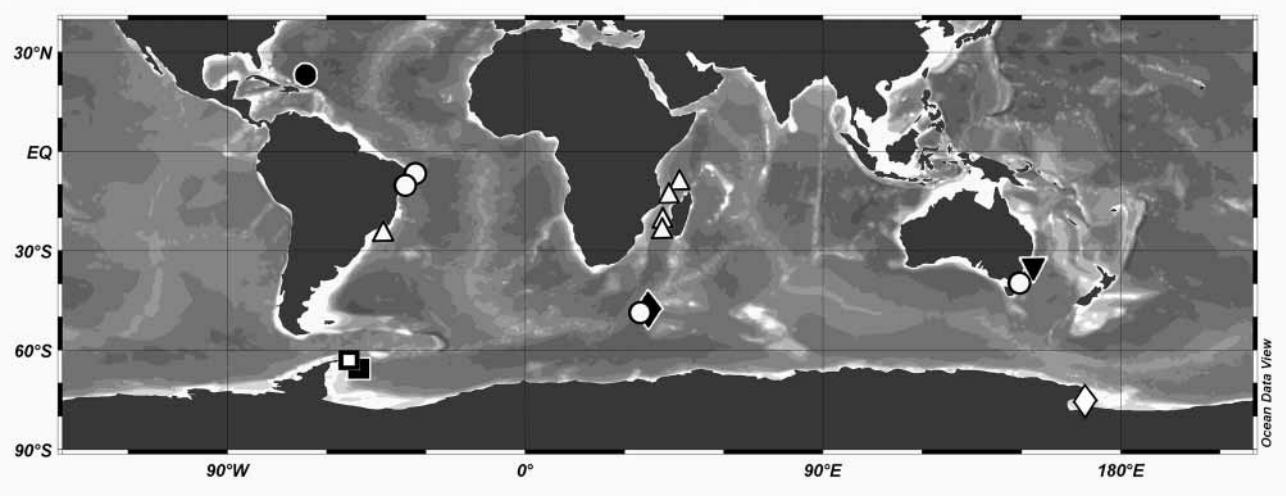


FIGURE 22. Occurrence of *Bythocypris reniformis* informal group (published information) and *Bythocypris praerenis* sp. nov. Legend: ●—type locality of *B. reniformis*, from Brady (1880) and Puri and Hulings (1976); ○—other localities from Brady (1880); ◇—Briggs (1978); ▼—Chapman (1941); ♦—Dingle (2003); △—Maddocks (1969); □—*Bythocypris praerenis* sp. nov., ANDEEP II # 133; ■—*Bythocypris praerenis* sp. nov., ANDEEP II # 132.

Measurements (Fig. 23). Holotype, LV, L 1.60mm, H 0.77mm; RV, L 1.60mm, H 0.72mm. Paratypes, LV, A L 1.60–1.81mm, H 0.77–0.90mm; (A-1) L 1.32–1.44mm, H 0.64–0.71mm; (A-2) L 1.00–1.14mm, H 0.53–0.58mm; (A-3) L 0.84mm, H 0.44mm.

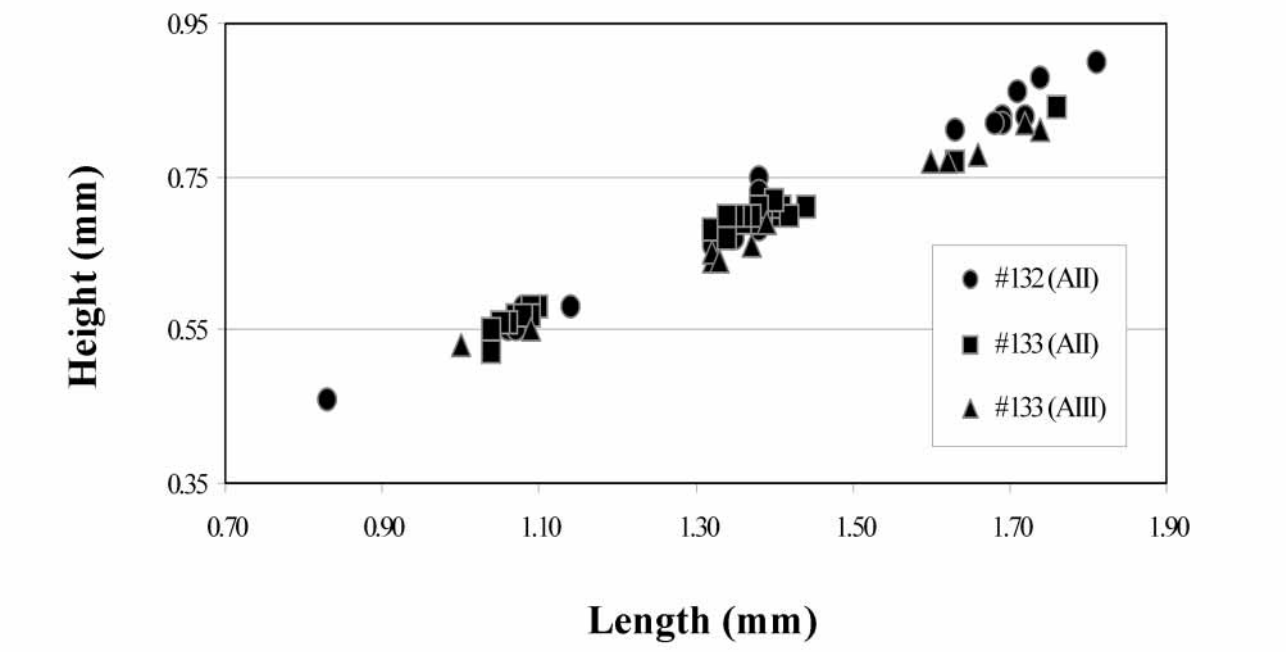


FIGURE 23. Length: height scatter plot of the valves of *Bythocypris praerenis* sp. nov.

Diagnosis. Carapace very large, sub-reniform; maximum height anterior to mid-length; with numerous, straight, short marginal pore canals. Podomere VI of AII with 1 anterodorsal, tiny seta, 1 long claw, 1 medium-sized, posterodorsal, fused claw, and 2 medium-sized, posterodistal setae. Podomere IV of Md palp with 4 medium-sized setae and 3 medium-sized claws. Vibratory plate of Mx I with 7 strahlen and 25 feathered setae. Fu with 3 to 6 tiny, proximal setae and 3 medium-sized, finely feathered, distal setae. Genital lobe ovate-subtriangular, with a scoop-shaped internal process attached to short tube.

Description. Carapace very large, sub-reniform, maximum height anterior to mid-length, posterior angle obtuse. Lateral surface smooth. RV with anterodorsal margin straight, ventral margin concave. LV outline less sinuous, more evenly rounded, with arched dorsal margin. Calcified inner lamella wide; zone of concrescence fairly narrow, with numerous straight, short radial pore canals. Radial pore canals simple, with or without rim. Three anterior plus one posterior adductor muscle scars. In dorsal view, carapace elongate, maximum width at mid-length.

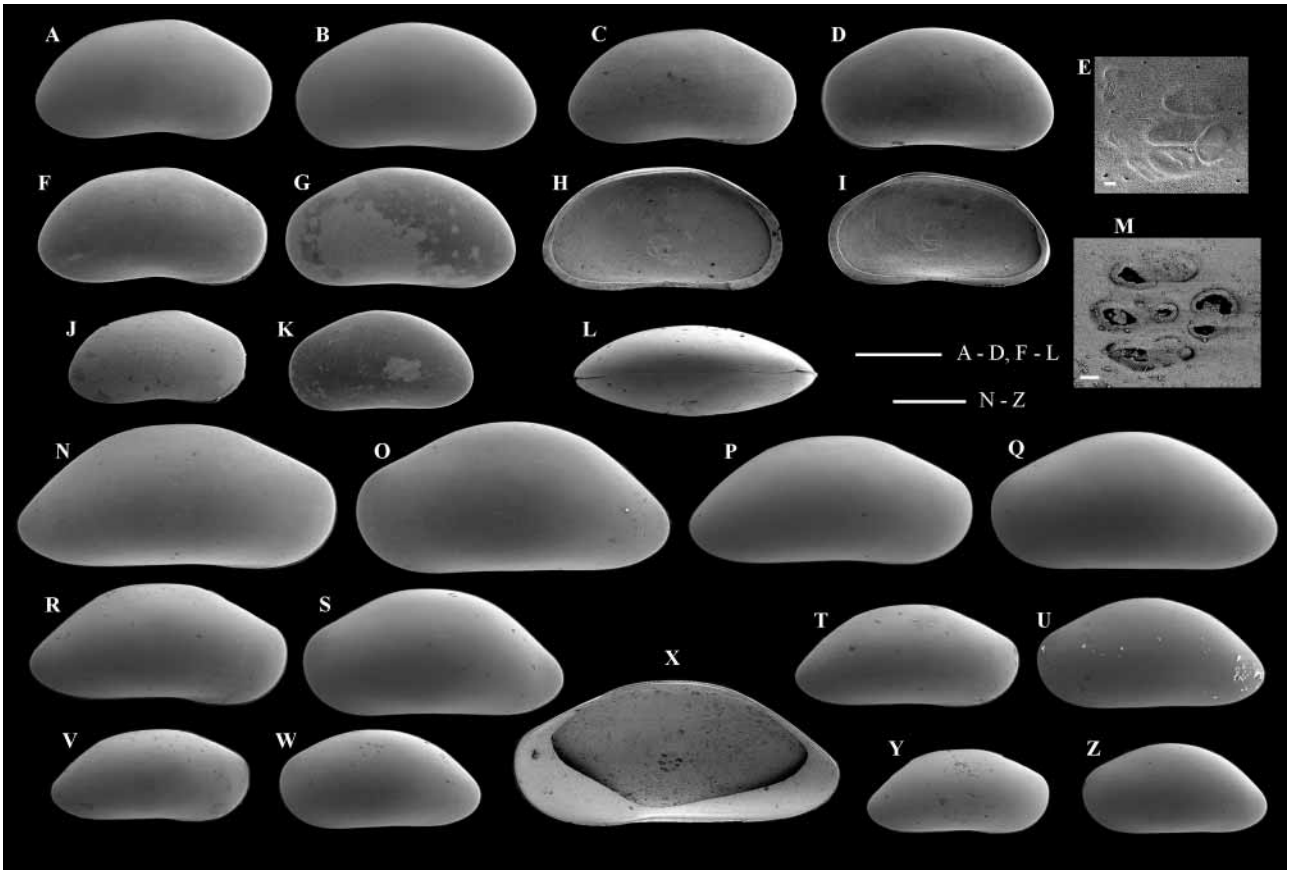


FIGURE 24. *Bythocypris praerenis* sp. nov., *Bythocypris polarsterni* sp. nov. and *Bythocypris* sp. aff. *B. polarsterni* sp. nov. Legend: *Bythocypris praerenis* sp. nov.: **A, B**, subfossil paratypes, ANDEEP II # 132 (ZMH K-41329); **C–L**; subfossil paratypes, ANDEEP II # 133(ZMH K-41330). *Bythocypris polarsterni* sp. nov., ANDEEP II, # 134: **N, O,** holotype, A F (ZMH K-41314, SNB 0137); **R, S**, paratype (A-1) (SNB 0246**), V, W**, paratype (A-2) (SNB 0384), (ZMH K-41315). *Bythocypris* sp. aff. *B. polarsterni* sp. nov.: ANDEEP III, # 80: **P, Q**, A F (SNB 0269), **Y, Z**, (A-2) (SNB 0270) (ZMH K-41319); **M, X (**ZMH K-41318); **T, U**, (A-1) (ZMH K-41316, SNB 0266). **A, C, F, J, N, P, R, T, V, Y,** RV ev; **B, D, G, K, O, Q, S, U, W, Z**, LV ev; **E**, adductor muscle scars from **I**; **H**, RV iv; **I, X**, LV iv; **M**, adductor muscle scars from **X; L**, RLV dv. Scale bars: **A–D, F–L, N–Z**, 500µm; **E, M**, 20 µm.

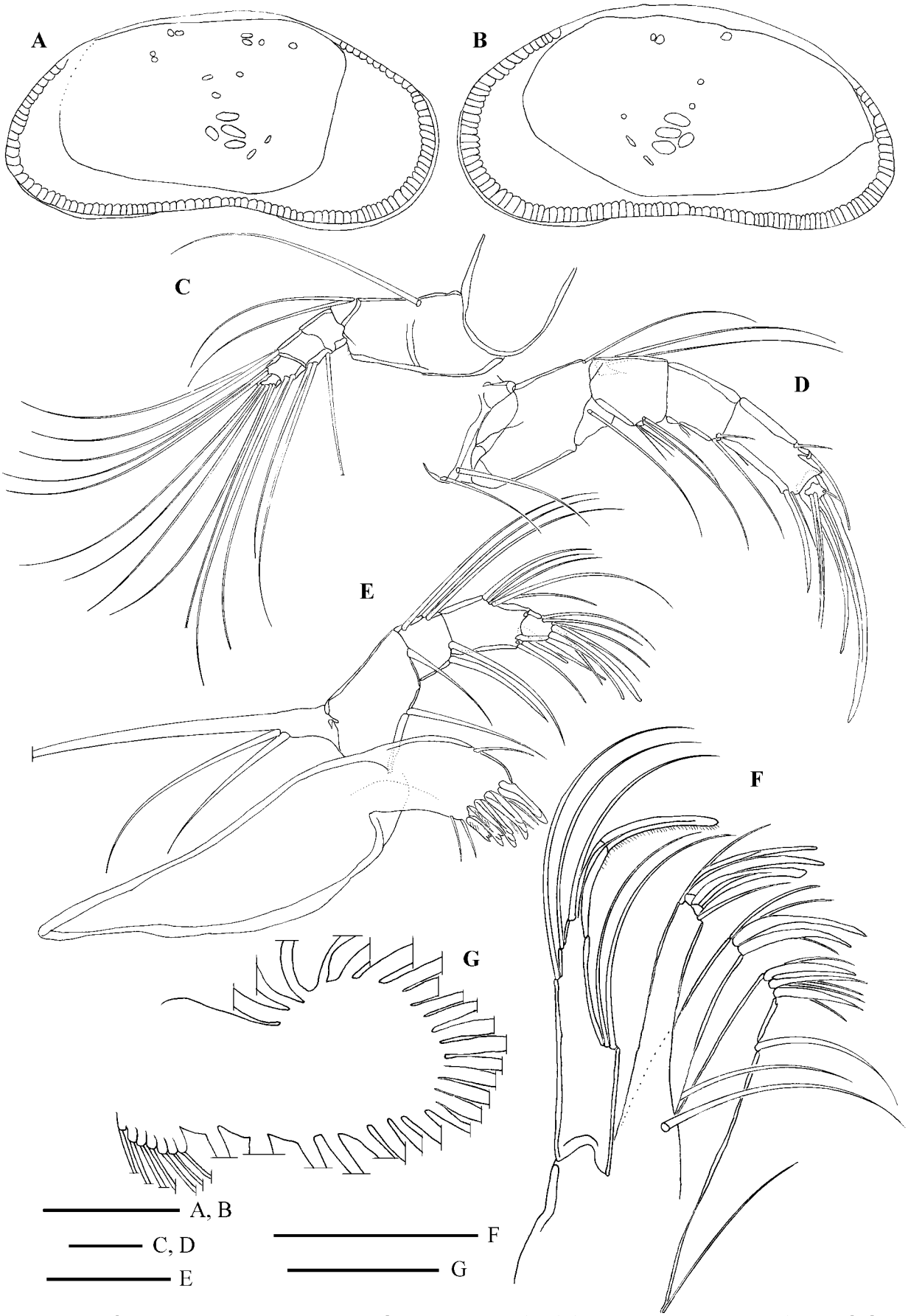


FIGURE 25. *Bythocypris praerenis* sp. nov. Legend: **A, B**, paratype (A-1) (ZMH K-41330, SNB 0275); **C–G**, holotype, A F (ZMH K-41356, SNB 0388). **A,** RV ev; **B**, LV ev; **C**, AI; **D**, AII; **E**, Md; **F**, MxI; **G**, vibratory plate of MxI. Scale bars: **A, B,** 500µm; **C, D**, 100 µm; **E–G**, 50µm.

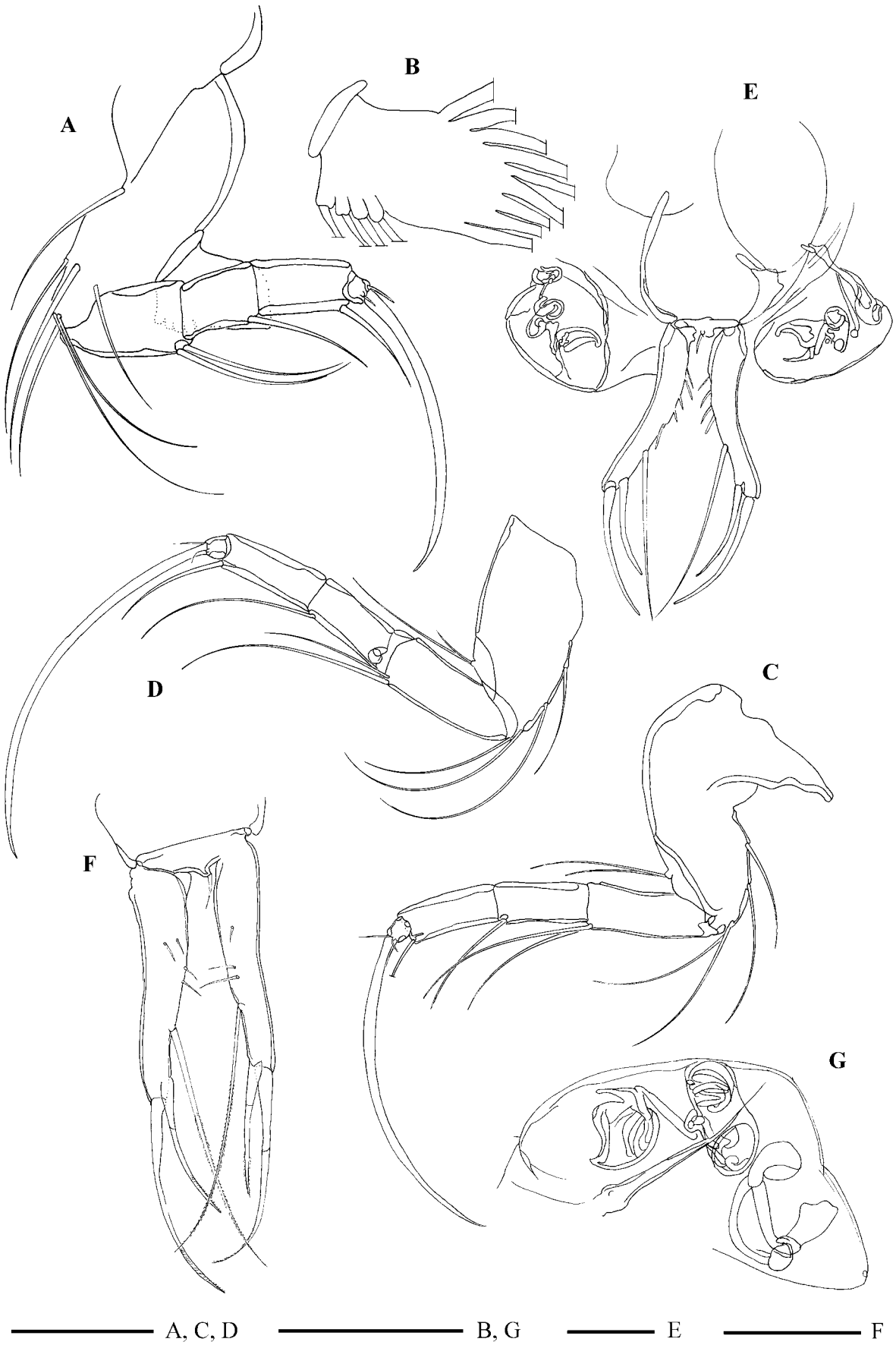


FIGURE 26. *Bythocypris praerenis* sp. nov. Legend: **A–D, G**, holotype, A F (ZMH K-41356, SNB 0388); **E**, paratype, A F (ZMH K-41328, SNB 0387); **F**, paratype, (A-1) (ZMH K-41330, SNB 0275). **A, B**, ApV; **C**, ApVI; **D**, ApVII; **E**, Fu and genital lobes; **F**, Fu; **G**, genital lobe. Scale bars: 100µm.

AI robust, with short and thick podomeres, with not very long setae; suture between podomeres II and II incomplete; chaetotaxy 1(0/0), 2(0/.1); 3(0/.1-2); 4(.1/0); 5(.2/.2); 6(.2/.2-3), 7(0/0:4-5). AII robust, with short and thick podomeres; exopodite with 1 short and 2 long setae; podomere VI with 1 anterodorsal, very short seta, 1 long claw, 1 medium-sized posterodorsal fused claw, and 2 medium-sized posterodistal setae; chaetotaxy 1(0/0:2i), 2(1/0), Exopodite(0/0:3), 3(0/.3.2), 4(.2r,2./0), 5(.1.1c./.1r.1c,1), 6(1r,1c,2,1fc). Base of Md with 1 anterodorsal seta, masticatory process with 1 dorsal, bifurcate tooth, 4 trifurcate teeth, plus several short setae; exopodite with 1 very long and 2 long feathered setae; podomere IV of palp with 4 medium-sized setae and 3 medium-sized claws; chaetotaxy of palp 1(0/.1.:1i), 2(.1.2./1:1i), 3(.5./.1:2i), 4(.2./0:3c,2). Vibratory plate of Mx I with 7 strahlen and around 25 setae; palp with 3 long, dorsal, setae 2 long, ventral setae and 1 distal, medium-sized, finely feathered claw. ApV robust, with short and thick podomeres; vibratory plate with 4 strahlen and 9 or 10 feathered setae; chaetotaxy 1(.1.2.2-3/0:1i), 2(.2/0), 3(.1/0), 4(.1/0), 5(0/0:1r,1c,1r). Chaetotaxy of ApVI and VII 1(.1.1.2/0), 2(.2/0), 3(.1/0), 4(.1/0), 5(0/0:1r,1c,1r). Fu with 3 to 6 tiny proximal setae, and 3 medium-sized feathered distal seta. One short seta between Fu rods. Genital lobe ovate-subtriangular, with scoop-shaped process attached to coiled tube.

Remarks. *Bythocypris praerenis* sp. nov. is similar to *B. reniformis sensu* Puri and Hulings, 1976, but the former species presents: (1) larger height to length ratio; (2) larger size (1.60 to 1.76mm instead of 1.09mm); (3) more concave ventral margin; (4) and wider calcified inner lamella, with straight, short marginal pore canals (instead of ramified).

The only three species of *Bythocypris* recorded from the high Antarctic region of the Southern Ocean (*B. eltanina* Maddocks, 1969, *B. spiriscutica* Maddocks, 1969 and *B. promoza* Maddocks, 1973) plus *B. elongata* Brady, 1880, *B. mozambiquensis* Maddocks, 1969, *B. prolata* Maddocks, 1969 are more subtriangular than *B. praerenis*. *Bythocypris affins affins* Brady, 1886 (*sensu* Brady & Norman 1889: 242, Fig.) is smaller and has a more rounded, less sinuous RV in lateral view, and is also wider, more ovate in dorsal view. *Bythocypris affins madagascarensis* Maddocks, 1969 is higher in relation to length with the maximum height of LV at mid-length instead of conspicuously anterior to it.

***Bythocypris malyutinae* sp. nov.**
(Figs. 19.Q, 27, 28, 29.A–F, M, N, P–W, 30.A, B, G, H, M–R, 31, 32)

Etymology. In honour of Dr. Marina Malyutina (Institute of Marine Biology, FEB RAS, Russia), who is a specialist on deep-sea Isopoda, and also works on the ANDEEP material.

Material. 19 live specimens. **Holotype**: 1 A M (SNB 0255), ANDEEP III, # 102–13–U, ZMH K-41294. **Paratypes**: 1 A F (SNB 0263), ANDEEP II, # 134–4–E, ZMH K-41293; 1 A F (SNB 0245), 1 (A-2) (SNB 0304), ANDEEP II, # 134–4–S, ZMH K-41295; 1 (A-1) (SNB 0083), 2 (A-1) (SNB 0313-4), ANDEEP II, # 135–4–E, ZMH K-41296; 1 A, 2 (A-1) (SNB 0657), 1 (A-3), ANDEEP II, # 135–4–S, ZMH K-41297; 1 A F (SNB 0249), ANDEEP III, # 102–13–E, ZMH K-41307; 1 A F (SNB 0256), ANDEEP III, # 102–13–S, ZMH K-41308; 1 A F (SNB 0110), 1 (A-1) (SNB 0254), ANDEEP III, # 102–13–U, ZMH K-41309; 1 (A-1) (SNB 0257), ANDEEP III, # 102–13, ZMH K-41310; 1 A F (SNB 0273), ANDEEP III, # 110–8–E, ZMH K-41311; 1 (A-1) (SNB 0274), ANDEEP III, # 110–8–S, ZMH K-41312; 1 (A-1) (SNB 0111), ANDEEP III, # 110–8–U, ZMH K-41313.

Distribution. Weddell Sea, Southern Ocean (Atlantic Sector), 4059.4 to 4895.0m.

Measurements (Fig. 28). **Holotype**, LV, L 1.88mm, H 1.02mm, RV L 1.88mm; H 0.88mm.

Paratypes, A LV, L 1.86–1.94mm, H 0.99–1.04mm; (A-1) LV, L 1.46–1.63mm, H 0.76–0.89mm; (A-2) LV, L 1.15–1.27mm, H 0.65–0.69mm.

Diagnosis. Valves quite large, subovate to sub-triangular, inequilateral in lateral view. Podomere VI of AII of male with 1 long claw, 1 sexually dimorphic, “6-segmented”, medium-sized, fused seta, and 2 or 3 simple

medium-sized setae; podomere VI of AII of female with 1 long claw, simple, 1 medium-sized, fused claw, and 2 or 3 medium-sized setae. MxI with 5 to 10 strahlen and around 26 feathered setae. ApV with 6 to 11 strahlen and 5 to 8 feathered setae. Fu with 2 tiny setae on dorsal margin; 6 to 7 short setae, and 3 medium-sized setae (setae 2 and 4 longest) on ventral margin. Hemipenis with coiled vas deferens; strongly sclerotized, arched proximal lobe, and conical distal lobe, the last one armed distally with numerous chitinous spines.

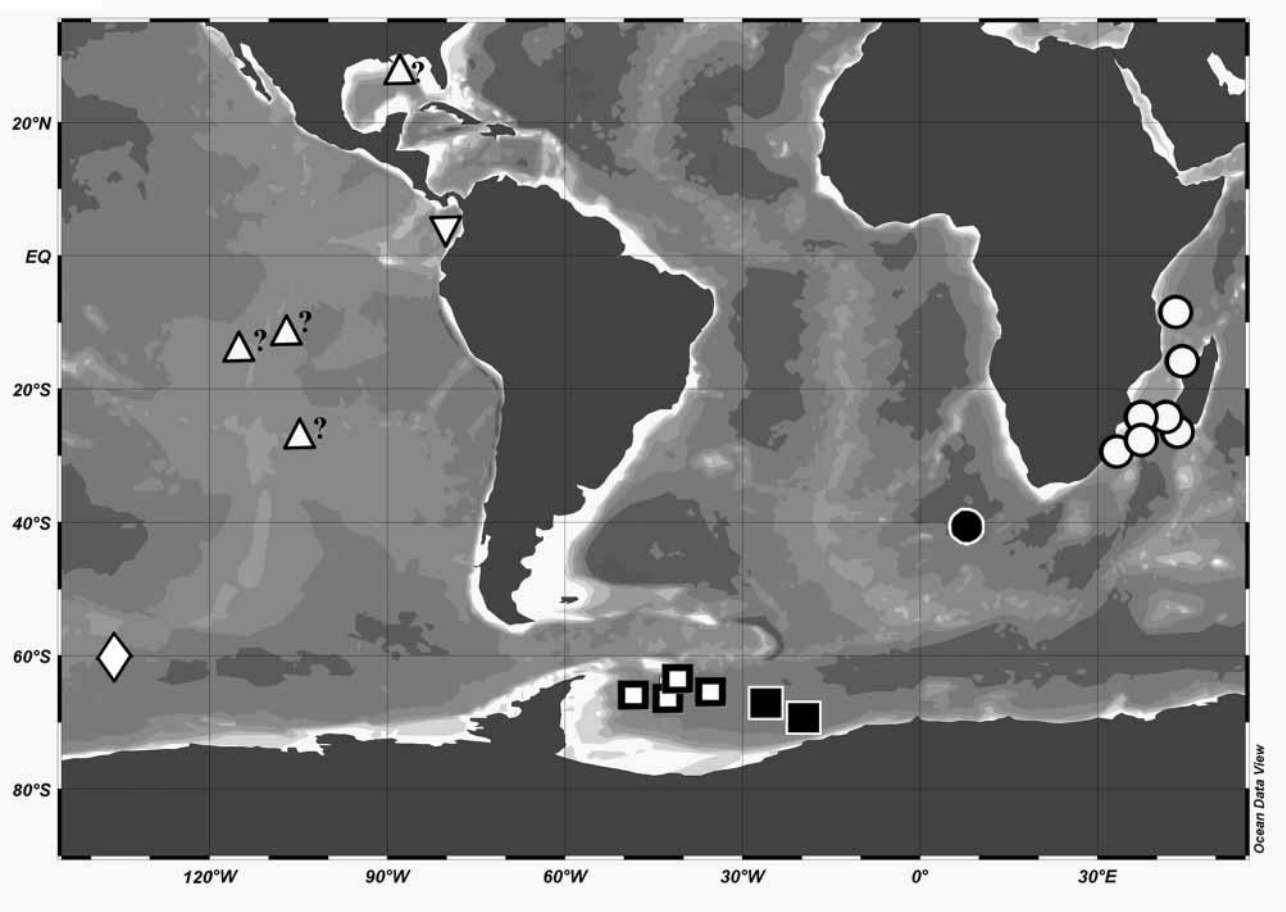


FIGURE 27. Occurrence of *Bythocypris mozambiquensis* species group. Legend: □—*B. malyutinae* sp. nov. (herein); ■—*B.* aff. *malyutinae* (herein); ●—*B.* sp. aff. *B. mozambiquensis* (herein); ○—*B. mozambiquensis* (from Maddocks 1969); △—*B. mozambiquensis?* (dubious record from Maddocks 1969); ♢—*B. eltanina* and *B. spiriscutica* (from Maddocks 1969); ▽—*B. promoza* (from Maddocks 1973).

Description. Valves quite large; elongate and inequilateral (anterior margin more broadly rounded than posterior margin) in lateral view. External surface smooth, radial pore canals simple, with or without rim. LV with rounded outline, ventral margin straight, with upswung posterior angle, smoothly rounded dorsal margin. RV fairly sinuous in outline, especially the ventral margin; with truncate anterior margin, and slightly concave anterodorsal and posterodorsal margins. Females higher in relation to length than males. Adductor muscle scars bythocytherid, with 3 anterior (subdivided) scars and 1 posterior (subdivided) scar. Zone of concrescence fairly narrow with numerous short, straight marginal pore canals. Carapace subovate in dorsal view.

AI robust with not very long setae; chaetotaty 1(0/0), 2(0/0:0-2i), 3(.2-3/0), 4(.0-2/.1), 5(.2-5/.2), 6(.2-3/.2), 7(0/0:5). Exopodite of AII with 2 long and 1 short setae; podomere VI of male with 1 long claw, 1 sexually dimorphic "6-segmented" medium-sized fused seta, and 2 or 3 simple medium-sized seta; podomere VI of female with 1 long claw, 1 sexually dimorphic simple fused medium-sized claw, 2 or 3 medium-sized sim-

ple setae; chaetotaxy 1(0/0:0-2i), 2(1/0:1i), 3(0/.3-4.1c,1,0-1r), 4(0/.2r.1c,1), 5(.1.1c,1/1,1r,1c), female-6(0/:1c,2,1fc,1), male-6(0/:1c,1,1fs,1). Base of Md with 1 anterodorsal seta, masticatory process with 5 teeth plus several short setae; exopodite with 1 very long and 2 long feathered setae (one of the mandibles of one specimen with 1 very long and 3 long setae); podomere IV of palp with 2 or 3 medium-sized setae and 2 medium-sized plumose claws; chaetotaxy of palp 1(0-1/1:1i), 2(.1.3-4/3:1i), 3(.4-5./.1:1-2,1c), 4(.1-3./0:2-3c,2). MxI with 5 to 9 strahlen (!) and 25 or 26 feathered setae; each endite with 1 to 4 plumose claws and around 5 setae; palp with 3 dorsal and 2 ventral setae, and 1 modified plumose claw. ApV with 6 to 11 strahlen and 5 to 10 feathered setae, podomere II might or might not be fused to podomere III; chaetotaxy 1(.1.2-3.3/0), 2(0/.2), [+or not]3(0/1), 4(0/.1-2), 5(0/0:.1,1c,1). Exopodite of ApVI and Ap VII with 2 medium-sized setae; one Ap of 1 specimen (SNB 0110) with 2 instead of 1 seta on podomere 4; chaetotaxy 1(.1.1.2/0), 2(0/.2), 3(0/.1), 4(0/.1-2), 5(0/0:1,1c,1). Fu with 2 rudimentary setae on dorsal margin; ventral margin with 4 or 5 short proximal setae, 1 medium-sized thin setae, 2 medium-sized robust setae, and 1 short distal seta. One short seta between Fu rods. Genital lobe subtriangular, or suboval with tubularly extended distal margin. Hemipenis with coiled vas deferens; strongly sclerotized, sub-rectangular, arched, short proximal lobe; and subconical distal lobe armed distally with numerous chitinous spines.

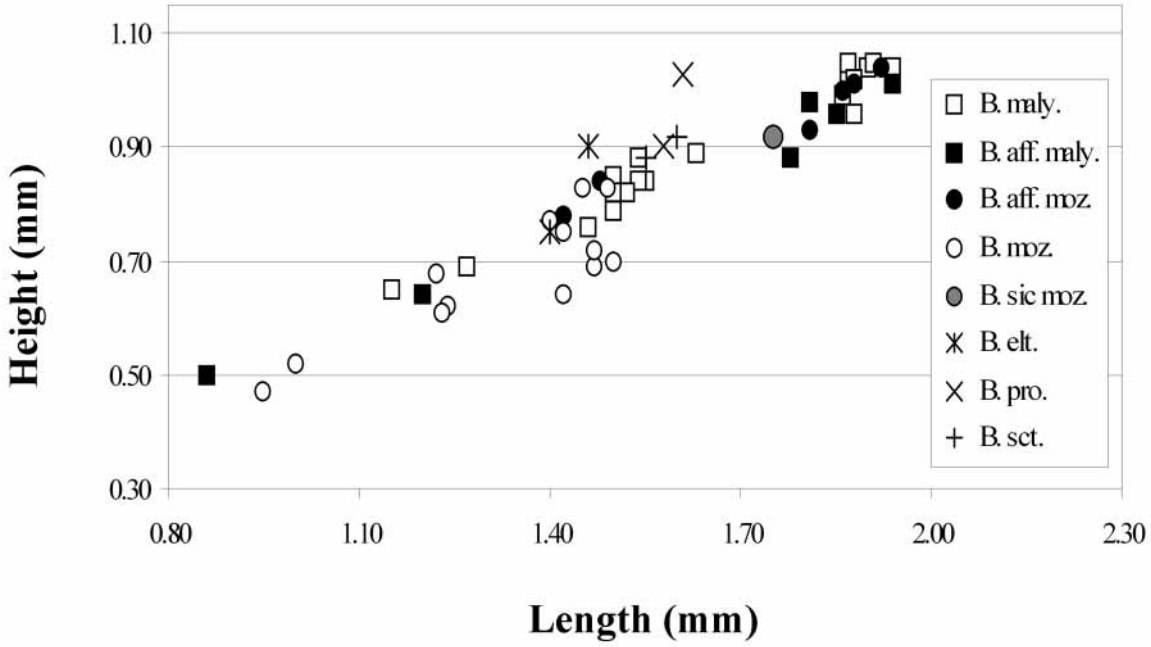
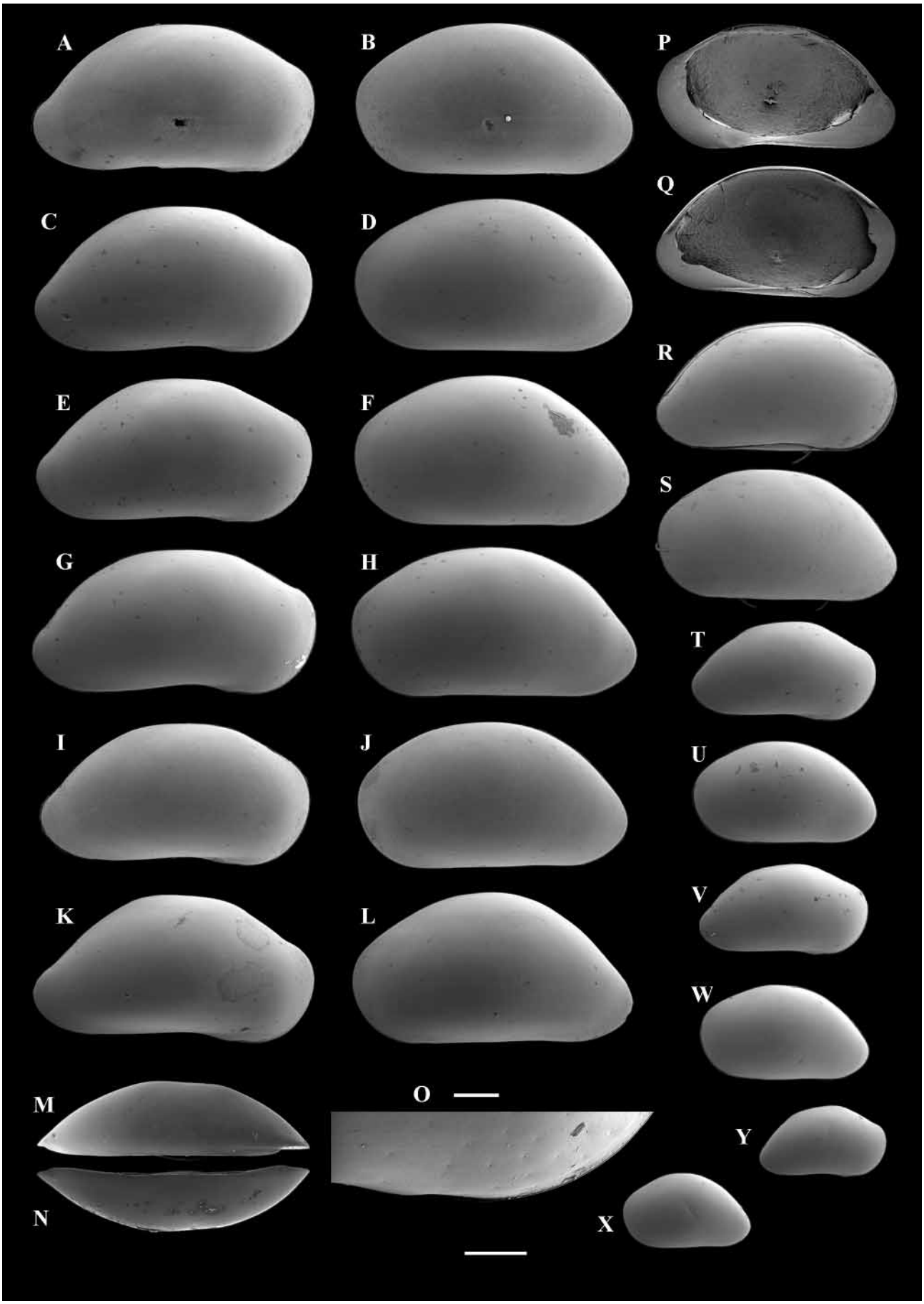


FIGURE 28. Length: height scatter plot of the valves of *Bythocypris mozambiquensis* group. Legend: B. maly.–*B. malyutinae* sp. nov. (herein); B. aff. maly.–*B.* aff. *malyutinae* (herein); B. aff. moz.–*B.* sp. aff. *B. mozambiquensis* (herein); B. moz.–*B. mozambiquensis* (measurements from Maddocks 1969); B. [sic] moz.–*B.* [sic] *mozambiquensis* (specimen USNM 121612 from Maddocks 1969, Fig. 46.P); B. elt.–*B. eltanina* (from Maddocks 1969); B. pro.– *B. promoza* (from Maddocks 1973); B. sct.–*B. spiriscutica* (from Maddocks 1969).

FIGURE 29. *Bythocypris malyutinae* sp. nov., *Bythocypris* spp. aff. *B. malyutinae* and *Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969. Legend: *Bythocypris malyutinae* sp. nov.: **A, B**, paratype, A F (ZMH K-41293, SNB 0263); **C, D**, paratype, A F (ZMH K-41307, SNB 0249), **E, F**, paratype, A F (ZMH K-41309, SNB 0110), **M, N**, paratype, A F (ZMH K-41308, SNB 0256), **P, Q**, (A-1) (SNB 0313), **R, S**, (A-1) (SNB 0083), paratypes (ZMH K-41296), **T, U**, paratype (A-2) (ZMH K-41297, SNB 0657), **V, W**, paratype (A-2) (ZMH K-41295, SNB 0304). *Bythocypris* spp. aff. *B. malyutinae* sp. nov.: **G, H**, A F (SNB 0310), **I, J**, A F (SNB 0312) (ZMH K-41306), **Y, X**, (A-3) (ZMH K-41305, SNB 0272). *Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969: **K, L**, A F (ZMH K-41300, SNB 0265), **O**, A M (ZMH K-41298, SNB 0262). **A, C, E, G, I, K, R, T, V, X**, **Y**, female RV ev; **B, D, F, H, J, L, S, U, W, X**, female LV ev; **M,** LV dv; **N**, RV dv; **O**, anteroventral part of RV; **P**, LV iv; **Q**, RV iv. Scale bars: **A–N, P–Y**, 500µm; **O**, 100 µm.

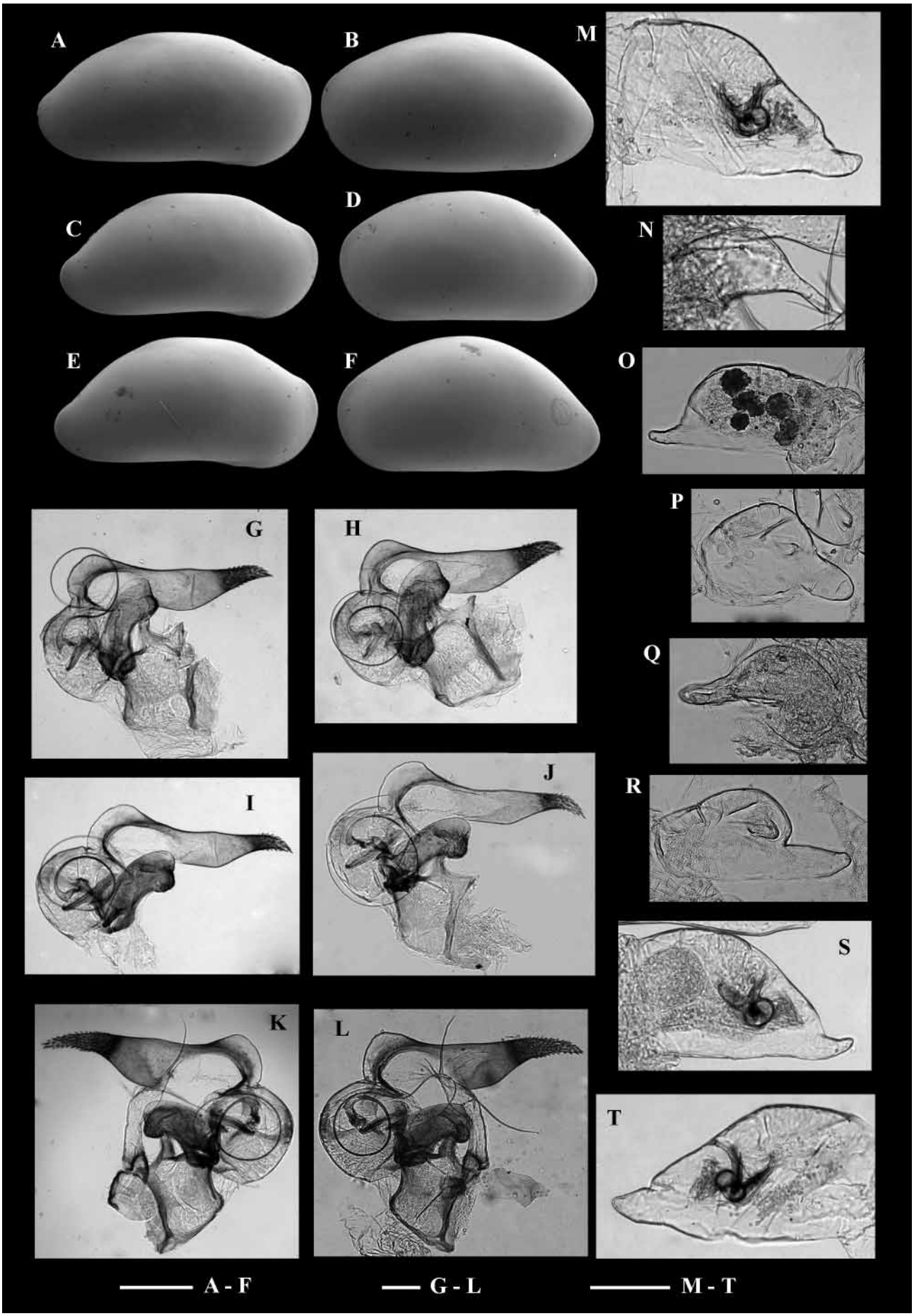

A
B
P
C
D
Q
E
F
R
G
H
S
I
J
T
K
L
U
M
O
V
N
W
Y
X

Remarks. *Bythocypris malyutinae* sp. nov. presents both bythocypridid and bairdiid characthers. It is a typical bythocypridid in: (1) carapace (subtriangular, thin and smooth), (2) antenna I with not very long setae; (3) genital lobe with short internal tube; (4) adductor muscle scars arranged in three anterior and one postero-dorsal rows. Otherwise, the antenna II in *B. polarsterni* sp. nov. presents one claw (in females) or seta (in males) fused to podomere VI, which Maddocks (1969, 1972, 1973, 1976, 1991, 1995) considered to be diagnostic of the family Bairdiidae. Actually, females of *Bythocypris eltanina* Maddocks, 1969 also present a fused claw on this podomere (Maddocks, 1969, Fig. 48.D). In the provided illustration of the male specimen (Maddocks, 1969: 48.C), it is unfortunately not possible to distinguish the insertion of the "segmented" claw from the other several setae the podomere VI.

The immense morphological variation observed in the valves and soft parts probably indicates that several species might be included in the names *B. malyutinae* sp. nov., *Bythocypris* sp. 1 aff. *B. malyutinae* (see description below) and *Bythocypris* sp. 2 cf. *B. mozambiquensis* (see description below), as herein defined: (1) the valves can be sub-oval (Figs. 29.I, 30.A, B) to subtriangular (Figs. 29.L, 30.F, B), with more (Fig. 30.E, F) or less (Fig. 29.C, D) protruding posterior angle; (2) the hemipenis presents variation on the distal lobe (width, and relative length of spiky distal area) (Fig. 30.G, H); (3) genital lobe can be subtriangular, sub-oval with a thin tubular extension, or sub-oval with a thick tubular extension; (4) vibratory plate of maxilla I with 5 to 10 strahlen; (5) vibratory plate of appendage V with 6 to 14 strahlen; (6) chaetotaxy of most podomeres of appendages (except AI podomere I, VII; AII podomere I, II; Md palp podomere I, ApV podomere IV, Ap VI exopodite, podomere II, IV; ApVII podomere I, III, IV) and Fu is very variable among the 13 adults examined. In particular, the highly variable number of strahlen on the vibratory plates of the maxilla I and the appendage V are strong evidence for the presence of different species. Furthermore, Hartmann (1968: 458), stated that the morphology of the genital lobe of Bairdioidea have systematic importance, since it is characteristic for each species. Unfortunately, even after the careful study of the chaetotaxy of the 16 available adults (3 males, 10 females), no consistent character defining the different species could be found. Therefore, only one new species is named (*B. malyutinae*), and the more extreme forms are left in open nomenclature (including *Bythocypris* sp. 1 aff. *B. malyutinae*, and *Bythocypris* sp. 2 cf. *B. mozambiquensis*).

Bythocypris malyutinae sp. nov. belongs to the *Bythocypris mozambiquensis* group, which includes *B. mozambiquensis* Maddocks, 1969, *B. eltanin* Maddocks, 1969, *B. spiriscutica* Maddocks, 1969 and *B. promoza* Maddocks, 1973. Some differences can be observed between *B. promoza* (Maddocks, 1972, Figs. 1–3) and *B. malyutinae*: (1) podomere V of AII in *B. promoza* conspicuously more elongate (Maddocks 1972: Fig.1C) than *B. malyutinae* sp. nov; (2) male modified seta of podomere VI of AII is "segmented" from the mid-length to the distal tip in *B. promoza* and is "segmented" just in the mid 1/3 of its length in *B. malyutinae*; (3) *B. promoza* lacks claws on Md palp, while *B. malyutinae* has 1 mediodistal claw on podomere III and 2 distal claws at podomere IV; (4) *B. promoza* lacks feathered setae on MxI palp and endites; (5) the former sp. shows 12 strahlen (instead of 6 to 11) and 6 tiny posterior setae (instead of 5 to 10 medium-sized setae); (6) the former sp. has more elongate podomeres on Ap V to VII; (7) *B. promoza* has fewer setae on Fu (4 anterior, long setae plus 3 tiny setae, instead of 2 tiny dorsal, plus 8 or 9 setae on ventral margin); (8) the hemipenis of *B. promoza* lacks the large tubular spiny distal lobe.

FIGURE 30. *Bythocypris malyutinae* sp. nov., *Bythocypris* spp. aff. *B. malyutinae* and *Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969. Legend: *Bythocypris malyutinae* sp. nov.: **A, B, G, H**, holotype A M (ZMH K-41294, SNB 0255); **M**, paratype A F (ZMH K-41293, SNB 0263); **N**, paratype A F (ZMH K-41295, SNB 0245), **O**, paratype A F (ZMH K-41311, SNB 0273), **P**, paratype A F (ZMH K-41307, SNB 0249), **Q**, paratype A F (ZMH K-41308, SNB 0256), **R**, paratype A F (ZMH K-41309, SNB 0110). *Bythocypris* spp. aff. *B. malyutinae* sp. nov.: **C, D, I, J**, A M (ZMH K-41304, SNB 0308), **T**, A F (ZMH K-41306, SNB 0310). *Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969: **E, F, K, L**, A M (ZMH K-41298, SNB 0262), **S**, A F (ZMH K-41300, SNB 0265). **A, C, E**, male RV ev; **B, D, F**, male LV ev; **G–L**, hemipenis; **M–T**, genital lobe. Scale bars: **A–F**, 500µm; **G–T**, 100 µm.


A
B
C
D
E
F
M
N
O
P
Q
R
S
T
G
H
I
J
K
L
A - F
G - L
M - T

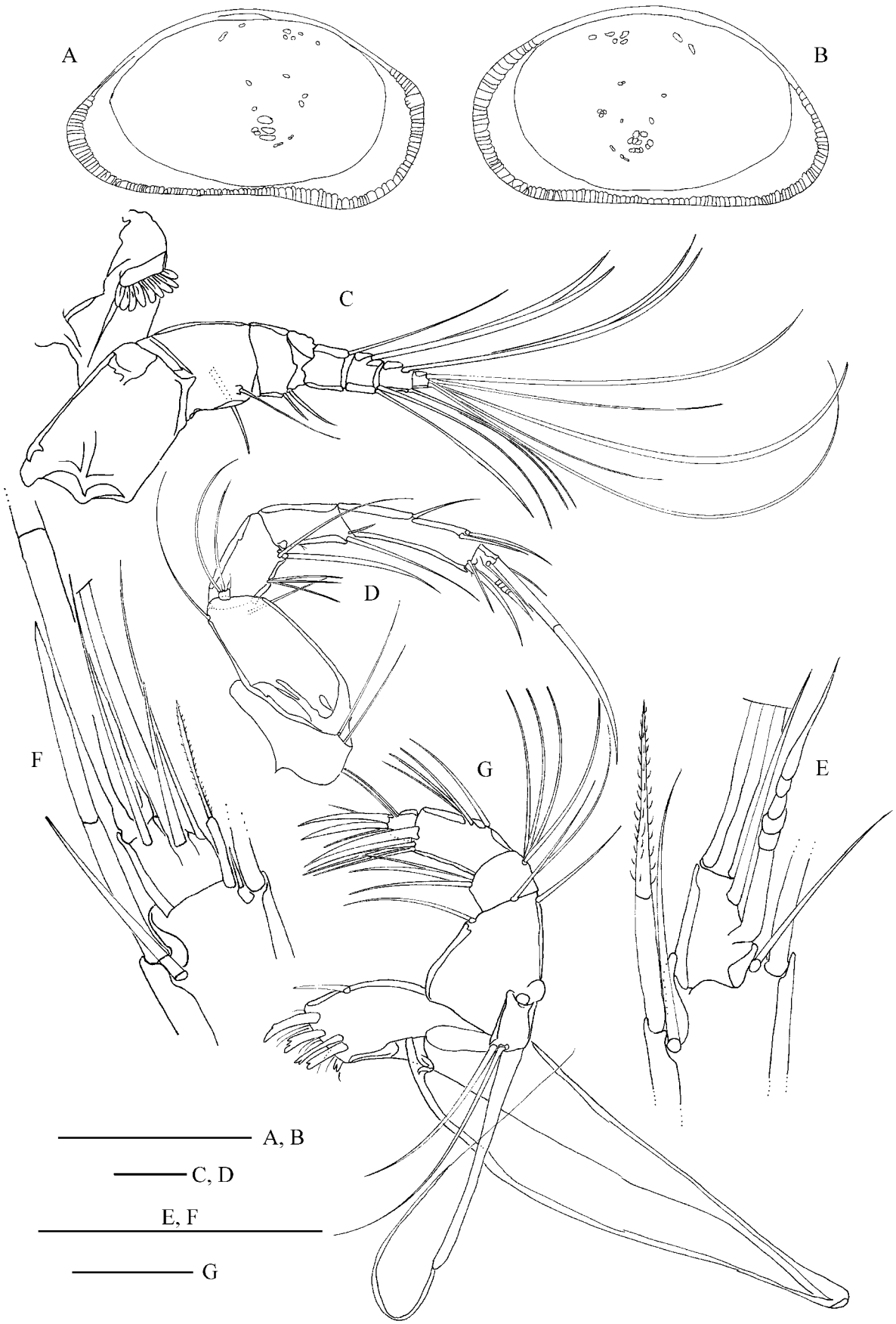


FIGURE 31. *Bythocypris malyutinae* sp. nov. Legend: **A, B**, paratype A F (ZMH K-41307, SNB 0249); **C, F, G**, paratype A F (ZMH K-41293, SNB 0263); **D, E**, holotype A M (ZMH K-41294, SNB 0255). **A**, RV ev, **B**, LV ev, **C**, AI, **D**, AII, **E**, distal podomeres of AII of male; **F**, distal podomeres of AII of female; **G**, Md . Scale bars: **A–B**, 1000µm; **C–G**, 100µm.

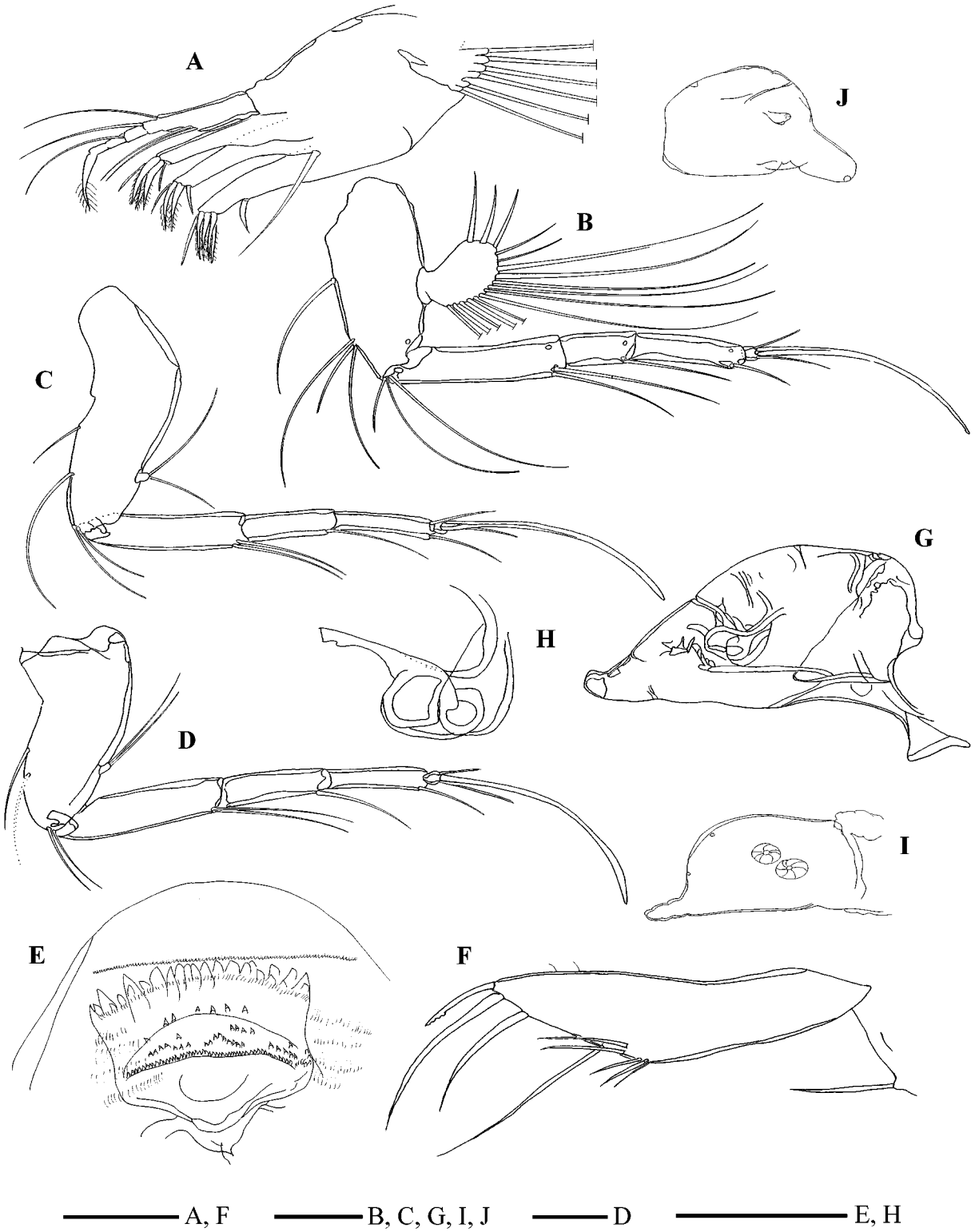


FIGURE 32. *Bythocypris malyutinae* sp. nov. Legend: **A–C, G, H**, paratype (ZMH K-41293, SNB 0263); **D**, paratype (ZMH K-41309, SNB 0110); **E, F, J**, paratype (ZMH K-41307, SNB 0249); **I**, paratype (ZMH K-41311, SNB 0273). **A**, MxI; **B**, ApV; **C**, ApVI; **D**, ApVII; **E,** Labrum and chewing organ; **F**, Fu; **G, I, J**, genital lobe; **H**, detail of **G**. Scale bars: 100µm.

Based on 103 empty valves and 2 juveniles (with soft parts), Maddocks (1969: 99–102) described *Bythocypris mozambiquensis* Maddocks, 1969 from a total of 16 samples from the Mozambique Channel (14 samples, 1140 to 3850m), Southwestern Pacific (3 samples, 1930 to 3475m) and Gulf of Mexico (1 sample,

1335m). As that author stated, it is possible to observe that, "there is an extraordinary amount of variation among forms assignable to this species" (1969: 100). In my opinion, most probably all these specimens studied by Maddocks comprise more than one sp., but this fact is masked by the total absence of soft parts. Because of that, the following comparison will be related to the holotype and other paratypes included by Maddocks in the "typical form" (Maddocks 1969, Fig. 46.E, G, K, M). *Bythocypris malyutinae* sp. nov. differs from *B. mozambiquensis*, because the former species: (1) is larger (Fig. 28), adult length 1.78 to 1.94mm, instead of 1.40 to 1.50mm (Maddocks 1969: 99–100); (2) present smoothly rounded lateral outline, with rounded anterior margin, instead of an angulate outline with truncate anterior margin; (3) is less high in relation to length.

Overall, *B. malyutinae* presents a similar valve outline to *Bythocypris eltanina* Maddocks, 1969 (except that the new species has a more rounded dorsal margin) but differs considerably in hemipenis (Fig. 30.G–L herein; Maddocks 1969, Fig. 48.G).

The new species described herein differs from: (1) *B. reniformis*, *B. affinis*, and *B. prolata* by its more subtriangular lateral view; (2) *B. elongata* in being higher in relation to length, with more smoothly rounded dorsal margin, and more sinuous LV outline; 3) *B. spiriscutica* has a more ovate outline, with less distinct posterior angle.

***Bythocypris* sp. 1 aff. *B. malyutinae* sp. nov.**
(Figs. 27, 28, 29.G–J, X, Y, 30.C, D, I, J, T)

Material. 6 live specimens. 1 A M (SNB 0308), 1 (A-2) (SNB 0309), ANDEEP III, # 88–8–U, ZMH K-41304; 3 A F (SNB 0310-12), ANDEEP III # 88–8–S, ZMH K-41306; 1 (A-3) (SNB 0272), ANDEEP III, # 94–10, ZMH K-41305.

Measurements (Fig. 28). A LV, L 1.78–1.94mm, H 0.88–1.01mm; (A-2) L 1.20mm, H 0.64m; (A-?3) L 0.86mm, H 0.50mm.

Distribution. Eastern Weddell Sea, Southern Ocean (Atlantic Sector), 4894 to 4932m.

Description. The characters not described herein are similar to the ones described in the section of *B. malyutinae* sp. nov. Posterodorsal margin of LV slightly concave.

Chaetotaxy **AI** 1(0/0), 2(0/0:1i), 3(.2/0), 4(.1-2/.1), 5(.2-5/.2), 6(.3-5/.2), 7(0/0:5). **AII** 1(0/0:2i), 2(0/0:1i), Exopodite(0/0:3), 3(0/.3.1c,1), 4(0/.2r.1c,1), 5(.1.1c,1/1,1r,1c), 6(0/.1c,2-3:1c). **Md** Base (.1/0:3-5t,3-6), Exopodite(0/0:3p), Palp 1(0/.1:1i), 2(.1.4/.1-2:1-2i), 3(.5./.1:2), 4(.3./.1.:2-3c,2). **MxI** Vibratory plate(6-10a,22-29p), Palp(.1.1.0-1/.2.:1pc). **ApV** 1(.1.3.3/0), Vibratory plate(9-14a,4-5p), 2(0/.2), [+or Not]3(0/.1), 4(0/.1), 5(0/0:.1,1c,1). **ApVI** and **ApVII** 1(.1.1.2/0), Exopodite(0/0:2), 2(0/.2), 3(0/.1), 4(0/.1-2), 5(0/0:1,1c,1). **Fu** (.1r./.3.2.1r.1.1.1.1).

Remarks. The specimens included in *Bythocypris* sp. 1 aff. *B. malyutinae* differ from *B. malyutinae* sp. nov. on the following characters: (1) slightly more protruding posterior; (2) number of strahlen and feathered setae on the vibratory plate of maxilla I and appendage V; (3) hemipenis with more elongate terminal lobe, with shorter spiny distal portion.

***Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969**
(Figs. 27, 28, 29.K, L, O, 30.E, F, K, L, S)

Material. 5 live specimens. 1 A F (SNB 0259-60), 1 A M (SNB 0262), 1 (A-1) (SNB 0261) ANDEEP III, # 16–10–S, ZMH K-41298; 1 (A-1) (SNB 0258), ANDEEP III, # 16–10–E, ZMH K-41299; 1 A F (SNB 0265), ANDEEP III, # 16–11, ZMH K-41300; *Distribution*. Cape Basin, Southeastern Atlantic, 4686 to 4727m.

Measurements (Fig. 28). A LV, L 1.81–1.92mm, H 0.93–1.04mm; (A-1) L 1.42–1.48mm, H 0.78–0.84mm.

Description. The characters not described herein are similar to the ones described in the section of *B. malyutinae* sp. nov. LV subtriangular, high in relation to length; posterodorsal margin of LV straight. RV with upswung posterior. Posterior conspicuously protruding in both valves.

Hemipenis with coiled vas deferens; strongly sclerotized sub-rectangular, arched, short proximal lobe; and sub-conical thick distal lobe armed distally with numerous chitinous spines. Genital lobe subtriangular. Chaetotaxy **AI** 1(0/0), 2(0/0:1i), 3(.2/0), 4(.1/.1), 5(.2-3/.2), 6(.3/.2), 7(0/0:5). **AII** 1(0/0:2i), 2(0/0:1i), Exopodite(0/0:3), 3(0/.3-4.1c,1), 4(0/.1r.1c,1), 5(.1.1c,1/1,1r,1c), 6(0/1c,2-3:1c). **Md** Base (.1/0:5t,4-5), Exopodite(0/0:3p), Palp 1(0/1:1i), 2(.1.3-4/0-2:0-1i), 3(.5./1:2), 4(.3/0:2-3c,1-3). **MxI** Vibratory plate(8-9a,25-26p), Palp(.1.1.1/.2.:1pc). **ApV** 1(.1.2-3.2-3/0), Vibratory plate(9-14a,4-6p), 2(0/.2-3), [+or Not fused]3(0/1), 4(0/.1), 5(0/0:.1,1c,1). **ApVI** and **ApVII** 1(.1.1.2/0), Exopodite(2), 2(0/.2), 3(0/.1), 4(0/.1), 5(0/0:1,1c,1). **Fu** (.1r./.3.2-3.1r.1.1.1.1).

Remarks. Maddocks (1969) described *B. mozambiquensis* from the Mozambique Channel, the Southwestern Pacific and the Gulf of Mexico (1140 to 3850m). The specimens studied herein: (1) are more smoothly rounded larger than the ones described by Maddocks, which present angulated lateral outline; (2) present a more acute posterior margin.

***Bythocypris polarsterni* sp. nov.**
(Figs. 24.N, O, R, S, V, W, 33–35, 36.A–D)

Etymology. From the RV *Polarstern*.

Material: 4 live specimens. **Holotype**: 1 A F (SNB 0137), ANDEEP II, # 134–4–E, ZMH K-41314. **Paratypes**: 1 (A-1) (SNB 0246), 2 (A-?2) (SNB 0383, B 0384), ANDEEP II, # 134–4–S, ZMH K-41315.

Distribution. NW Weddell Sea, Southern Ocean (Atlantic Sector), 4059.4 to 4068.7m.

Measurements (Fig. 34). Holotype, LV, L 2.23mm, H 1.07mm; RV, L 2.22mm, H 1.01mm. Paratypes, LV, (A-1) L 1.76mm, H 0.88mm; (A-2) L 1.37–1.41mm, H 0.68mm.

Diagnosis. Valves large; lateral outline quite rectilinear, subtrapezoidal; inequilateral, both anterior and posterior margins narrowly rounded, but anterior broader than posterior; ventral margin straight in LV and fairly straight in RV. Podomere VI of AII with 1 long articulated claw, 1 short fused (!) claw, and 1 or 2 short thin setae. Vibratory plate of MxI with 4 or 5 strahlen and 21 or 22 feathered setae. Vibratory plate of ApV with 4 strahlen plus around 8 setae. Fu with 3 small, 1 long, and 3 medium sized setae. Genital lobe sub-hemispherical with double coiled internal tube.

Description. Valves large; lateral outline of both valves rectilinear, subtrapezoidal; inequilateral, both anterior and posterior margins narrowly rounded, but anterior broader than posterior; dorsal margin broadly rounded, posterodorsal and anterodorsal margins straight, but without conspicuous angles; ventral margin straight in LV and fairly straight in RV. Adductor muscle scars subdivided but bythocypridid in aspect, occupying a very small area (less than 1/7 of valve height). Calcified inner lamella broad. Zone of concrescence very narrow, marginal pore canals straight and short. Radial pore canals simple, with wide rim.

Appendages strongly pigmented, dark brown, conspicuous even through closed valves. AI with slender thin podomeres I–II; very short podomeres IV–VII; chaetotaxy 1(0/0), 2(0/0), 3(.2/0), 4(.1/.1), 5(.2/.2), 6(.3/.2), 7(0/0:3-4). Exopodite of AII with 2 long and 1 short setae; podomere VI with 1 long, articulated claw, 1 short fused (!) claw, and 1 or 2 short thin setae; chaetotaxy 1(0/0:2i), 2(.1/0:1i), 3(0/.2-3.1,1), 4(0/.2-3r.1,1), 5(.1.2./.1.1c), 6(0/0:1c,1-2,1fc). Base of Md with 1 dorsal seta, 1 or 2 bifurcate teeth, and 3 to 4 trifurcate teeth; palp podomere III elongated; chaetotaxy 1(0/0:1i), 2(.2/.1:1i), 3(.3./.1:2i), 4(.1/0:2c,2). Vibratory plate of Mx I with 4 or 5 strahlen and around 21 feathered setae. Vibratory plate of ApV with 4 strahlen and around

10 feathered setae; chaetotaxy (.1.2.3/0), 2(0/.2), 3(0/.1), 4(0/.1), 5(0/0:1c,1). ApVI and ApVII with 1 tiny seta on expodite; 1(.1.1.2/0), 2(0/.2), 3(0/0), 4(0/.1), 5(0/0:1c,1). Fu with 3 short proximal setae, 1 long seta, and 3 medium-sized distal setae. One long seta between Fu rods. Genital lobe subhemispherical, with double coiled internal tube.

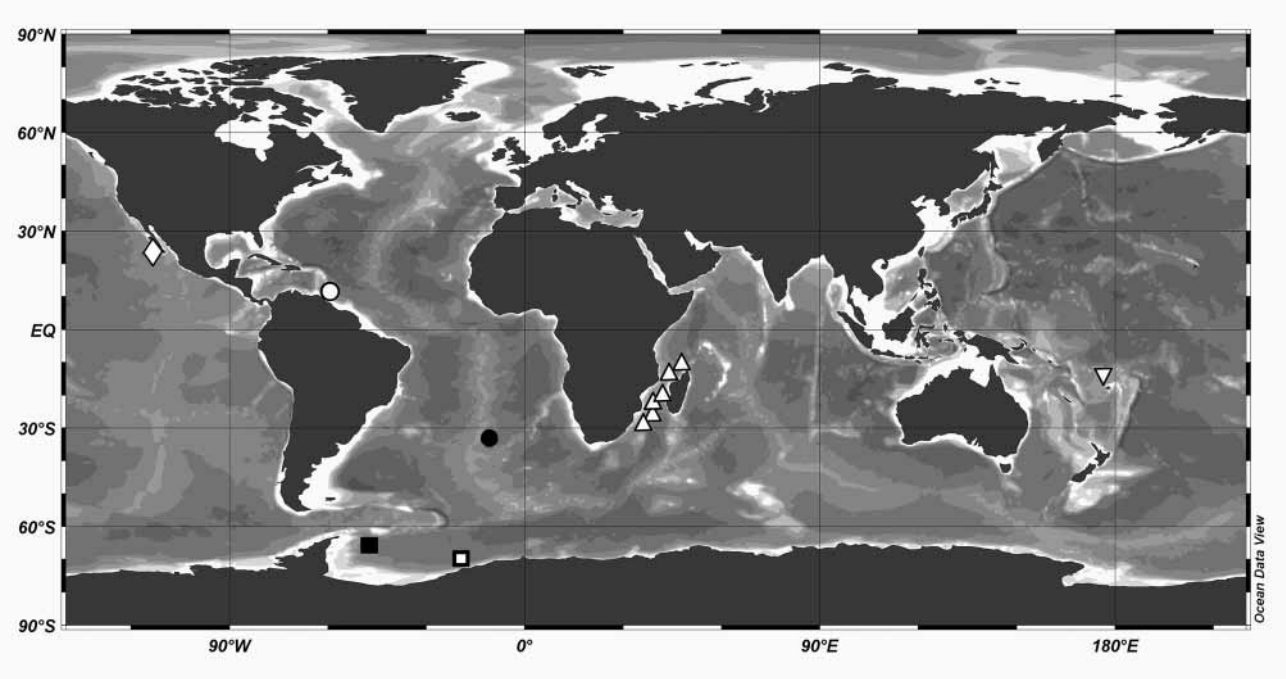


FIGURE 33. Occurrence of *Bythocypris polarsterni* sp. nov, *Bythocypris* sp. aff. *B. polarsterni* sp. nov. and *B. elongata* informal species group (published information). Legend: ●—type locality of *B. elongata* Brady (1880) and Puri and Hulings (1976); ▽—Chapman (1910); ♢—Le Roy (1943); ○—Key (1954); △—Maddocks (1969); ■—*B. polarsterni* sp. nov. (herein); □—*Bythocypris* sp. aff. *B. polarsterni* sp. nov. (herein).

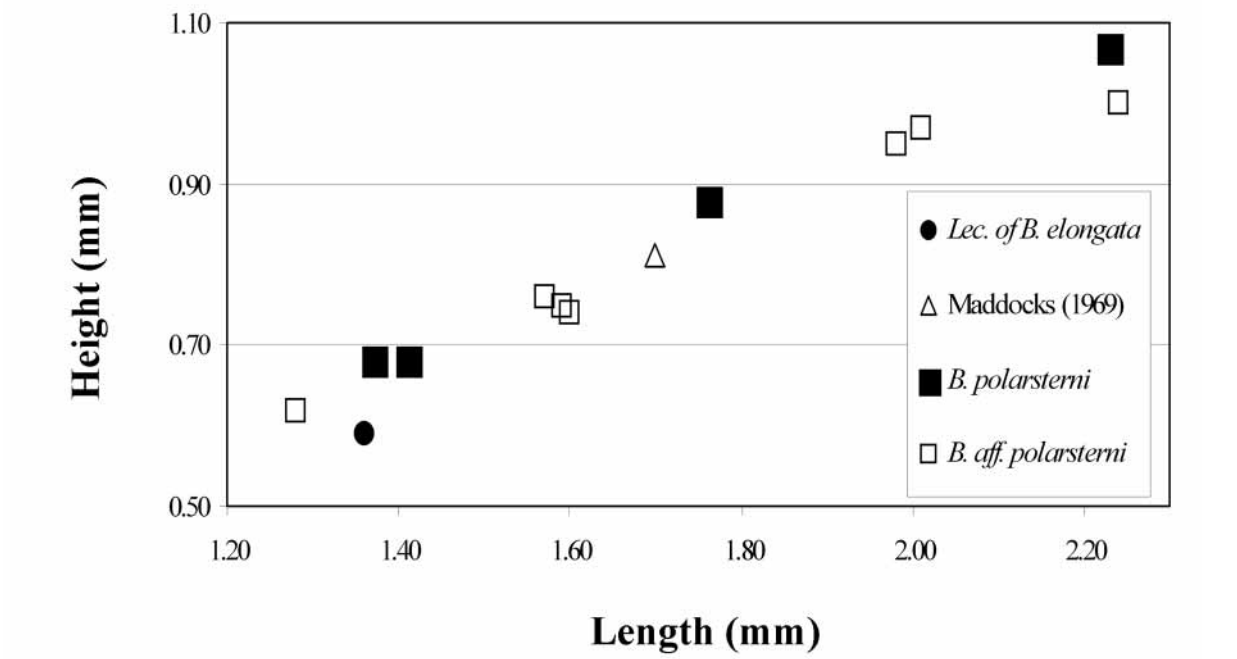


FIGURE 34. Length: height ratios of the valves of *Bythocypris polarsterni* sp. nov., *B.* sp. aff. *B. polarsterni* sp. nov. and *B. elongata* informal species group (published measurements).

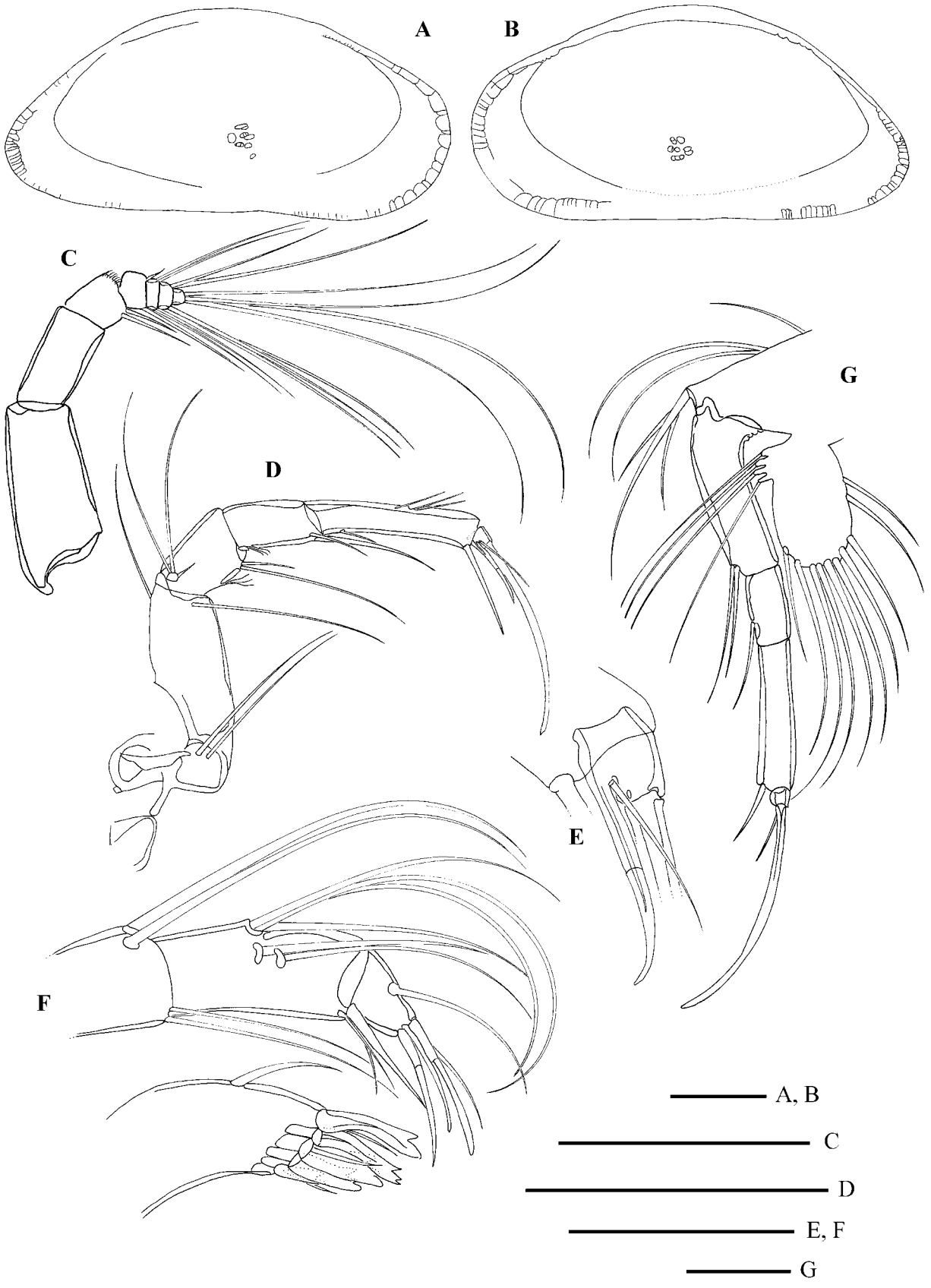


FIGURE 35. *Bythocypris polarsterni* sp. nov. Legend: **A–F**, holotype, A F (ZMH K-41314, SNB 0137). **A**, RV ev, **B**, LV ev, **C**, AI, **D**, AII, **E**, distal podomeres of AII; **F**, Md, **G**, ApV. Scale bars: **A–B**, 500µm; **C–G**, 100 µm.

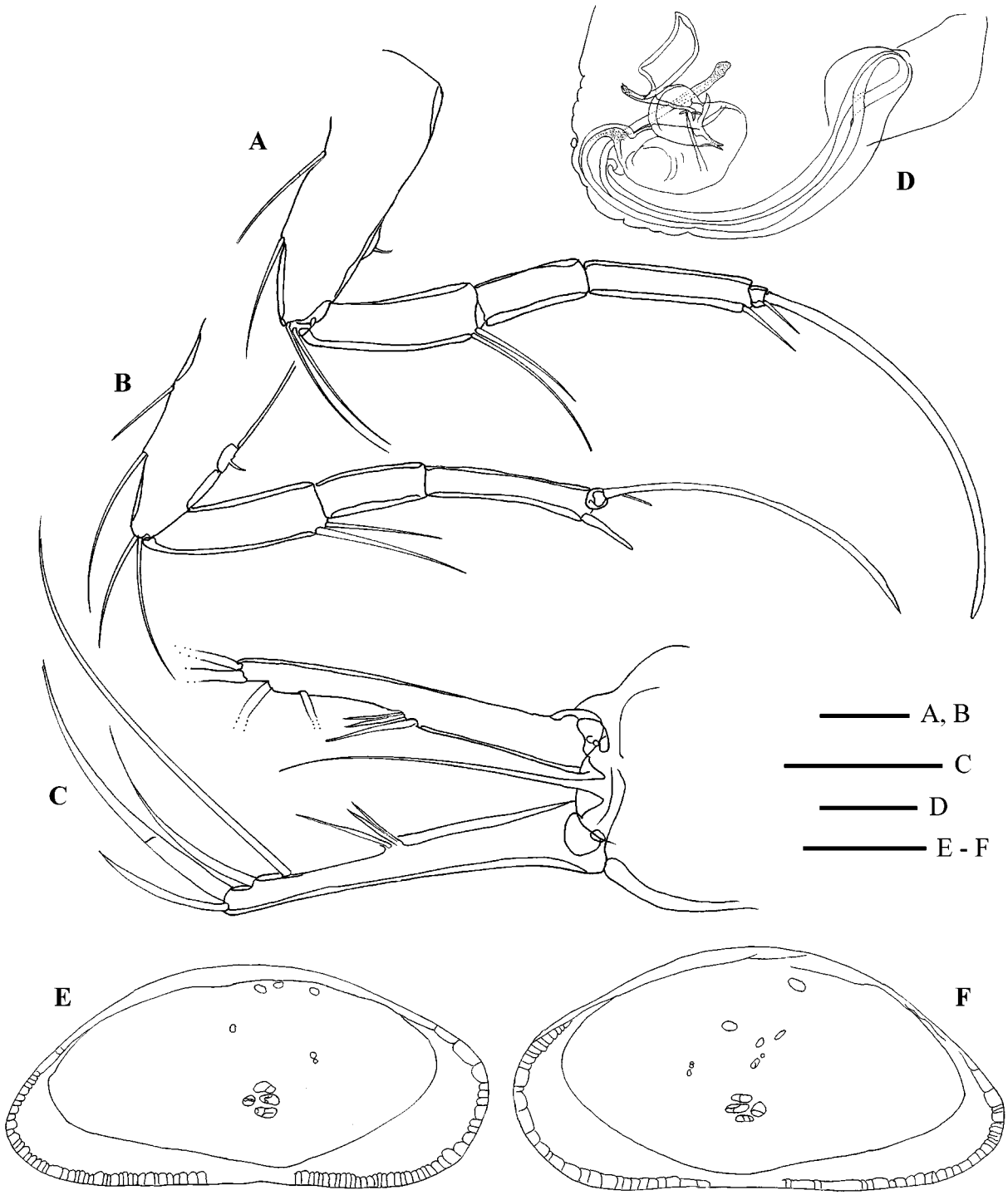


FIGURE 36. *Bythocypris polarsterni* sp. nov. and *B.* sp. aff. *B. polarsterni* sp. nov. Legend: **A–D**, holotype, A F (ZMH K-41314, SNB 0137). *B.* sp. aff. *B. polarsterni* sp. nov.: **E, F**, A F (ZMH K-41319, SNB 0269). **A**, ApVI; **B**, ApVII; **C**, Fu; **D**, genital lobe; **E**, RV ev, **F**, LV ev. Scale bars: **A–D**, 100µm; **E, F**, 500µm.

Remarks. Like *Bythocypris malyutinae* sp. nov. (see above), *Bythocypris polarsterni* sp. nov. present several bythocypridid characters: (1) carapace (subtriangular, thin and smooth), (2) antenna I with not very long setae; (3) genital lobe with short internal tube; (4) adductor muscle scars arranged in three anterior and one posterodorsal rows. Otherwise, the antenna II in *B. polarsterni* sp. nov. presents the bairdiid claw fused to podomere VI. Similarly, the female genitalia and the furcae of *B. polarsterni* sp. nov. are very similar to that

of *Zabythocypris helicina* Maddocks, 1969. Otherwise, the valves of *B. polarsterni* sp. nov. are typical of the genus *Bythocypris*.

Bythocypris polarsterni sp. nov. is similar to *B. elongata*, but the former differs in being higher in relation to length, with a more smoothly rounded dorsal margin, and straighter ventral margin, and in presenting subdivided adductor muscle scars. The lateral outline of the valves of the new species described herein differs from: (1) *B. reniformis, B. affinis, B. prolata, B. praerenis* sp. nov. and *B. richarddinglei* sp. nov in being more subtriangular; (2) *B. mozambiquensis, B. promoza, B. eltanina, B. spiriscutica* and *B. malyutinae* sp. nov. in being more elongated, and rectilinear.

***B.* sp. aff. *B. polarsterni* sp. nov.**
(Figs. 24.M, P, Q, T, U, X, Y, Z, 33, 34, 36.E, F)

Material: 5 live specimens, 1 RV. 1 (A-1) (SNB 0266), ANDEEP III, # 80–6, ZMH K-41316; 1 A F (SNB 0267), ANDEEP III # 80–9–E, ZMH K-41317; 1 (A-1) (SNB 0244), 1 RV, ANDEEP III, # 80–9–S, ZMH K-41318; 1 A F (SNB 0269), 1 (A-2) (SNB 0270), ANDEEP III # 80–9–U, ZMH K-41319.

Distribution. NE Weddell Sea, Southern Ocean (Atlantic Sector), 2970.to 3136m.

Measurements (Fig 34). A LV, L 1.98–2.01mm, H 0.95–0.97mm; (A-1) L 1.57–1.70mm, H 0.74mm.H 0.76mm; (A-2) L 1.28mm, H 0.62mm.

Description. The characters not described herein are similar to the ones described in the section of *B. polarsterni* sp. nov. Valves large; lateral outline of both valves subtrapezoidal; inequilateral, anterior margin broader than posterior.

Chaetotaxy **AI** 1(0/0), 2(0/0), 3(.2/0), 4(.1/.2), 5(.2/.2), 6(.3/.2), 7(0/0:3-4). **AII** 1(0/0:2i), 2(0-1/0:1i), Exopodite(3), 3(0/.3.1,1), 4(0/.2r.1,1), 5(.1.2-3/1c), 6(0/0:1c,1-2,1fc). **Md** Base (.1/0:5t,3-6), Exopodite(3p), Palp 1(0/0:1i), 2(.0-1.2/.1.0-1:1-2i), 3(.3./.1:.2.0-2i), 4(.1./0:3c,0-2). **MxI** Vibratory plate(5a,~20p), Palp(.2/.1.:1,1c,1). **ApV** 1(.1.2-3.3/0), Vibratory plate(4a,8-10p), 2(0/.1-2), 3(0/.1-2), 4(0/.1-2), 5(0/0:.1,1c). **ApVI** and **ApVII** 1(.0-1.1.1.1.2/0), Exopodite(1), 2(0/.2), 3(0/0), 4(0/.1), 5(0/0:1,1c). **Fu** (0/.3.1.1.1.1).

Remarks. This species is very similar to *B. polarsterni* sp. nov. but is conspicuously smaller, with more smoothly rounded dorsal margin.

***Bythocypris richarddinglei* sp. nov.**
(Figs. 18, 37, 38)

Etymology. In honour of Dr. Richard V. Dingle for his important contribution to the knowledge of deep-sea fossil and recent Ostracoda, especially from the south-eastern Atlantic.

Material: 5 live specimens. **Holotype**: 1 A F (SNB 0253), ANDEEP III, # 16–11, ZMH K-41289. **Paratypes:** 1 A F (SNB 0095), ANDEEP III, # 16–11, ZMH K-41290; 1 A F (SNB 0093), ANDEEP III, # 16–7, ZMH K-41291; 1 A F (SNB 0250), 1 (A-1) (SNB 0252), ANDEEP III, # 16–10–S, ZMH K-41292.

Distribution. Cape Basin, Southeastern Atlantic, 4686 to 4723m.

Measurements (Fig. 18). Holotype, LV–L 1.27mm, H 0.73mm; RV–L 1.26mm, H 0.64mm. Paratypes, LV–A F L 1.21–1.26mm, H 0.70–0.72mm; (A-1) L 1.02mm, H 0.60mm.

Diagnosis. LV outline sub-rectangular, with smoothly arched dorsal margin, maximum height posterior to mid-length. RV subtrapezoidal with fairly straight anterodorsal margin and highly arched posterodorsal margin. LV and RV with slightly concave ventral margin and obtuse posterior angle. Podomere VI of AII wider than long, with 1 long and 1 medium-sized claws, 2 medium-sized setae and 1 tiny seta. MxI with 7 strahlen and 24 or 25 feathered setae. Vibratory plate of ApV with 4 or 5 strahlen and 10 setae. Fu with 2 short, 1 medium-sized and 2 long feathered setae. Genital lobe suboval with tubular internal process.

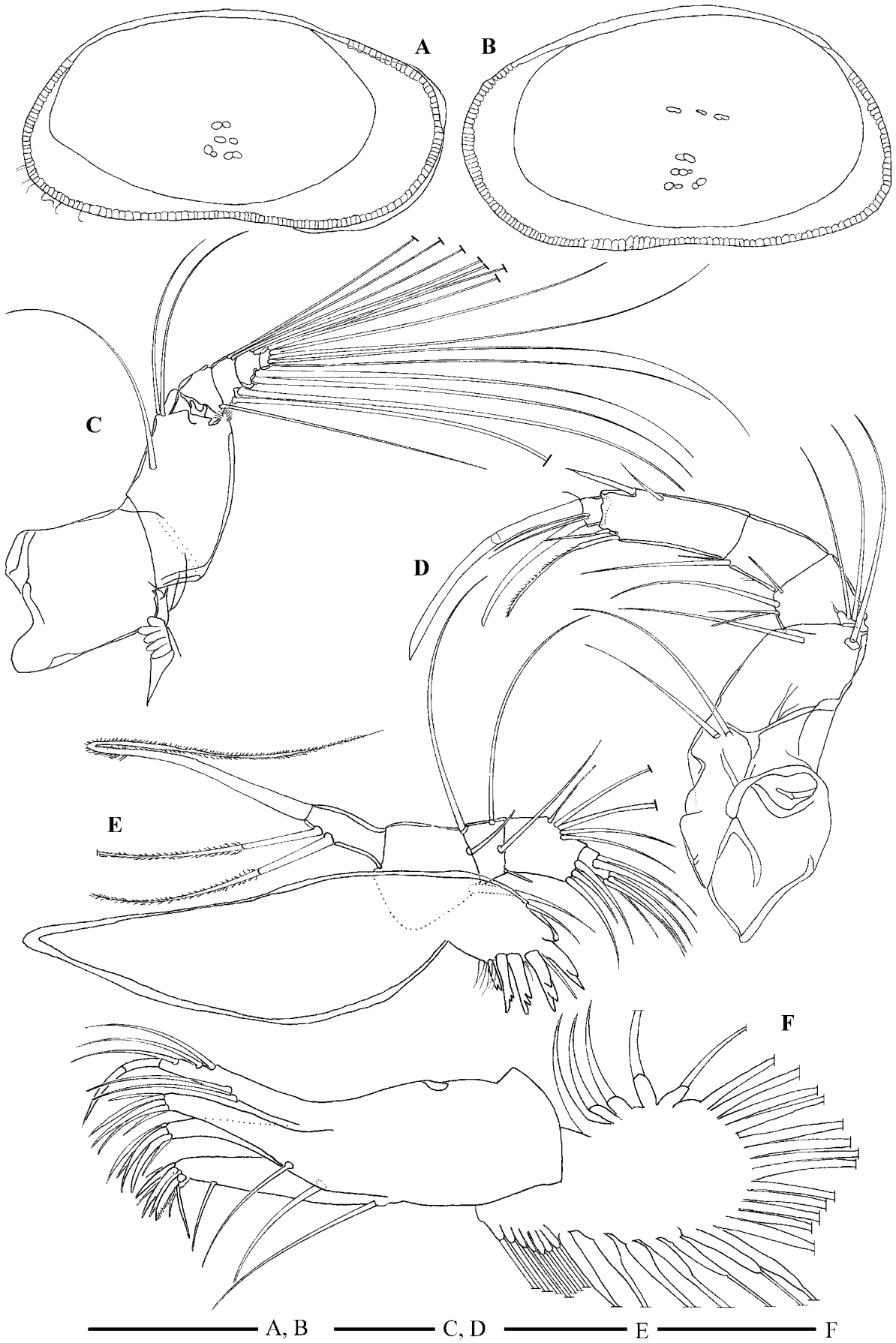


FIGURE 37. *Bythocypris richarddinglei* sp. nov. Legend: **A–F**, holotype, A F (ZMH K-41289, SNB 0253). **A**, RV ev, **B**, LV ev, **C**, AI, **D**, AII, **E**, Md, **F**, MxI. Scale bars: **A–B**, 500µm; **C–F**, 100 µm.

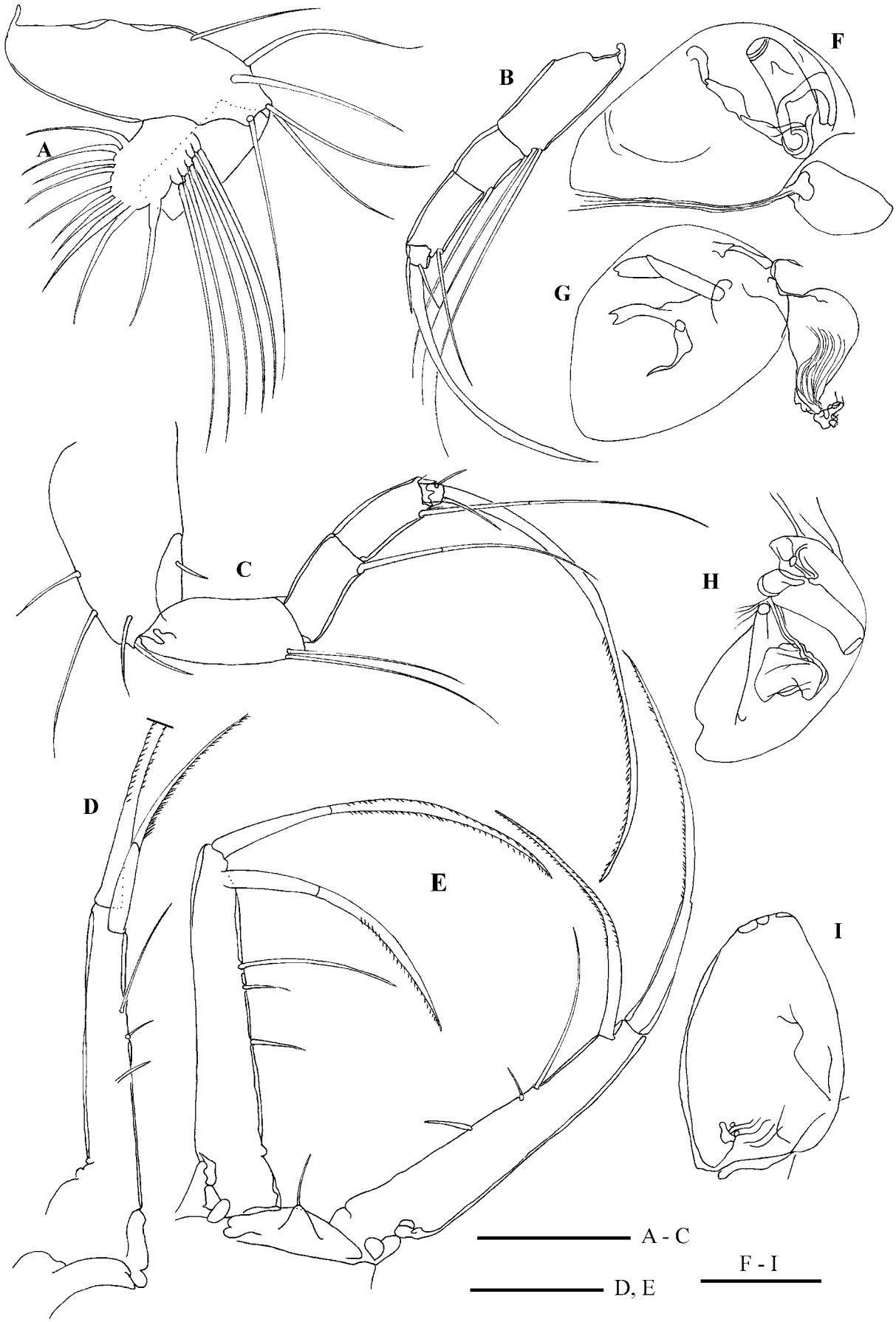


FIGURE 38. *Bythocypris richarddinglei* sp. nov. Legend: **A–C, E, G**, holotype, A F (ZMH K-41289, SNB 0253); **D, F, H**, paratype, A F (ZMH K-41290, SNB 0095); **I**, paratype, A F (ZMH K-41292, SNB 0250). **A–B**, ApV; **C**, ApVI; **D–E,** Fu; **F–I**, genital lobe. Scale bars: 100µm.

Description. LV outline sub-rectangular; with smoothly arched dorsal margin; steep posterodorsal margin; broadly rounded anterior margin; slightly concave ventral margin; maximum height posterior to mid-length. RV subtrapezoidal; with fairly straight anterodorsal margin; sinuate posterodorsal margin; truncate anterior margin; concave ventral margin; maximum height at mid-length. LV and RV with obtuse posterior angle. Maximum length inferior to mid-height. Calcified inner lamella fairly narrow; zone of concrescence very narrow, with numerous straight marginal pore canals. Adductor muscle scars bythocypridid, occupying less than 1/3 of valve height.

AI very robust; with relatively short and very strongly sclerotized setae; podomeres II and III fused; chaetotaxy 1(0/0), 2(0/.1)+3(0/.2), 4(1/0), 5(.2/.3), 6(.2/.3), 7(0/0:5). AII stout; with short podomeres III, IV and VI; exopodite with 2 long and 1 tiny setae; podomere VI wider than long, with 1 long and 1 medium-sized claws, 1 tiny seta, and 2 medium-sized setae; chaetotaxy 1(0/0:2i), 2(.1/0:1i), 3(0/.2.1.1), 4(0/.2r.2), 5(.1.1c./.1.1), 6(0/0:1r,1c,2,1c). Md with 3 feathered setae on the exopodite; masticatory process with 1 or 2 bifurcate and 3 or 4 trifurcate teeth and several short setae; chaetotaxy of palp 1(.1/.1:1i), 2(.1./.1:1i), 3(.5./.1:2-3i), 4(.2./0:3-4). MxI with 7 strahlen and 24 or 25 feathered setae; ventral endite with 2 ventral setae and several broad, feathered, distal claws; other endites with 1 ventral seta each plus several simple distal setae; all setae of palp not feathered; palp chaetotaxy (.1.1.1./.2.:1c). Vibratory plate of ApV with 4 or 5 long strahlen and 10 medium-sized setae; podomeres of ApV to ApVII robust, with long and feathered terminal claws; exopodite of ApVI and VII without or with 1 tiny seta; chaetotaxy of ApV-VII ApV-1(.1.1.0-2/0:1i,1), ApVI-VII-1(.1.1.1/0:1i), ApV-VII-2(.2/0), 3(.1/0), 4(.1/0), (0/0:2,1c). Fu with 2 short, 1 medium-sized, and 2 long feathered setae; one tiny seta between Fu rods. Genital lobe sub-oval with tubular internal process.

Remarks. The valves of *Bythocypris richarddinglei* sp. nov. differ from *Bythocypris reniformis* Brady, 1880 *sensu* Puri and Hulings (1976: Pl. 2.7–10, Fig. 1) and *B. praerenis* sp. nov. by the more rounded outline, greater height in relation to length, and larger size (LV L: 1.21 to 1.27mm, instead of 1.09mm) of the former species. The valves of *Bythocypris* [sic] *reniformis* recorded by Maddocks (1969, Fig. 45.J–M) from the south-western Atlantic (*Albatross*, #2763, 24°17'S, 42°48'30''W, 1227m) are larger (LV L: 1.52–1.61mm), and more subtriangular than those of the new species described herein, with the maximum height of LV and RV at mid-length, instead of posterior to it. *Bythocypris* [sic] *reniformis* recorded by Maddocks (1969, Fig. 45.N–U) from the Mozambique Channel, Southwestern Indian Ocean (R. V. *Anton Bruun*, cruises 7 and 8, #365D, 23°20'S, 43°33E, 695-475m) present more similar, rectilinear outline to *B. richarddinglei* sp. nov., but a more arcuate LV dorsal margin, and more rounded RV dorsal margin.

B. eltanina Maddocks, 1969, *B. spiriscutica* Maddocks, 1969, *B. promoza* Maddocks, 1973, *Bythocypris mozambiquensis* Maddocks, 1969, and *B. polarsterni* sp. nov. are more subtriangular than *Bythocypris richarddinglei* sp. nov.

Bythocypris elongata Brady, 1880, *Bythocypris prolata* Maddocks, 1969 are more elongated than *B. richarddinglei* sp. nov. *Bythocypris affins affins* Brady, 1886 (*sensu* Brady & Norman 1889: 242) is smaller and more elongate, with a more smoothly rounded posterior angle. *Bythocypris affins madagascarensis* Maddocks, 1969 is higher in relation to length and with the maximum height of LV at mid-length instead of conspicuously posterior to it.

***Bythocypris weddellensis* sp. nov.**
(Figs. 18, 39–42)

Etymology. In reference to its occurrence in the Weddell Sea.

Material. 3 A. **Holotype**: 1 A M (SNB 0191), ANDEEP III # 142–5–E, ZMH K-41325. **Paratypes:** 1 A M (SNB 0398), ANDEEP II, # 136–4–E, ZMH K-41327. 1 A F (SNB 0251), ANDEEP III # 80–9–E, ZMH K-41326.

Distribution. Weddell Sea, Southern Ocean (Atlantic Sector), 3102 to 4782m.

Measurements (Fig. 18). Holotype, LV, L 1.04mm, H 0.52mm; RV, L 1.04mm, H 0.50mm. Paratypes, LV, A M L 1.07mm, H 0.53mm; AF, L 1.22mm, H 0.63mm.

Diagnosis. Valves small, smooth, glossy, oval/sub-rectangular in lateral view. Podomere VI of AII with 1 large claw, 2 medium-sized setae, and 1 short seta. Vibratory plate of MxI with 7 strahlen and around 25 feathered setae. Vibratory plate of ApV with 4 or 5 strahlen and around 10 feathered setae; podomere V with 1 large claw and 2 short setae. Fu with 5 tiny proximal setae and 3 medium-sized distal setae. Hemipenis with sub-hemispherical basal capsule; with a tubular, short and thick distal process, copulatory tube short and curved. Genital lobe sub-oval with a distal, strongly sclerotized, beak-shaped process.

Description. Valves small, smooth, glossy, oval/sub-rectangular in lateral view. Larger valve with rounded outline; smaller valve with slightly angulated outline; posterior margin obtuse, and less broadly rounded than anterior margin; dorsal margin slightly arched; faint or no ventral indentation; fused marginal zone narrow, with numerous straight marginal pore canals; vestibules constricted. Carapace compressed laterally. Adductor muscle scars composed of 3 anterior scars plus one posterodorsal scar. Single female valves considerably larger than both males. In the holotype RV is larger than LV, in both paratypes LV is larger than RV.

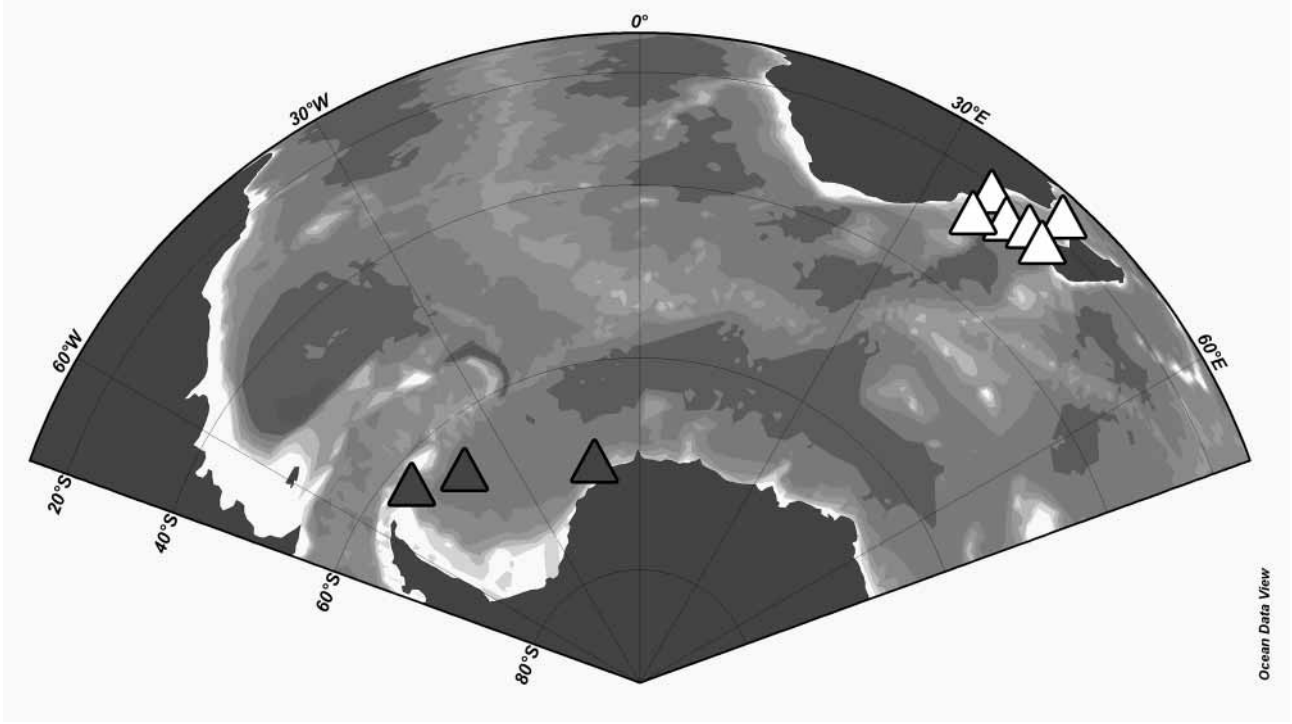


FIGURE 39. Occurrence of *Bythocypris weddellensis* sp. nov. and *Anchistrocheles antemacella* Maddocks, 1969 (from Maddocks 1969). Legend: ▲—*Bythocypris weddellensis* sp. nov.; △—*Anchistrocheles antemacella*.

Labrum and hypostome bairdioid in structure (not elongated). AI robust, with not very long setae; chaetotaxy 1(0/0), 2(1/0), 3(2/0), 4(0/0-1), 5(2/2), 6(3/2), 7(0/0:5). AII robust, with short and thick podomeres; exopodite with 2 long and 1 short setae; podomere VI with 1 large claw, 1 short seta and 2 medium-sized setae, all of them flexibly articulated to podomere distal margin; chaetotaxy 1(0/0:2), 2(0/0:2i), 3(0/.3.2), 4(.2r/1,1r), 5(.1/.2), 6(0/0:1,1c,2). Masticatory process of Md with 2 bifid plus 3 trifid teeth and several setae; exopodite with 3 long feathered setae; chaetotaxy of palp 1(0-1/.1:1i), 2(.2/.1:1i), 3(.6/1:2e), 4(.2/0:3-4,1c). Vibratory plate of MxI with 7 strahlen and around 25 feathered setae; endites with several broad claws and simple setae; ventral endite with 2 ventral setae; other 2 endites with 1 ventral seta each; palp with 4 dorsal simple setae, 2 ventral simple setae, and 1 distal robust finely feathered claw. Vibratory plate of ApV with 4 or

5 strahlen and around 10 feathered setae; chaetotaxy 1(1.1.2/0:2i), 2(.2/0), 3(.1/0), 4(.1/0), 5(0/0:1r,1c,1). ApVI with 1 or 2 setae on exopodite, chaetotaxy 1(.1.1.1-2/0), 2(.1-2/0), 30/0), 4(.1/0), 5(0/0:1r,1c,1). ApVI 2 setae on exopodite, chaetotaxy 1(.1.1.2/0), 2(.2/0), 3(0-1/0), 4(.1/0), 5(0/0:1r,1c,1). Fu with 5 tiny ventral setae and 3 medium-sized feathered distal setae; 1 tiny seta between Fu rods. Brush-shaped organ symmetrical, with short rods and numerous very long setae. Hemipenis with sub-hemispherical basal capsule, plus tubular, thick distal process, and curved copulatory process attached near a sub-circular, rugose process. Genital lobe rounded, with distally strongly sclerotized, beak-shaped process, and a short, coiled, thick, internal tube.

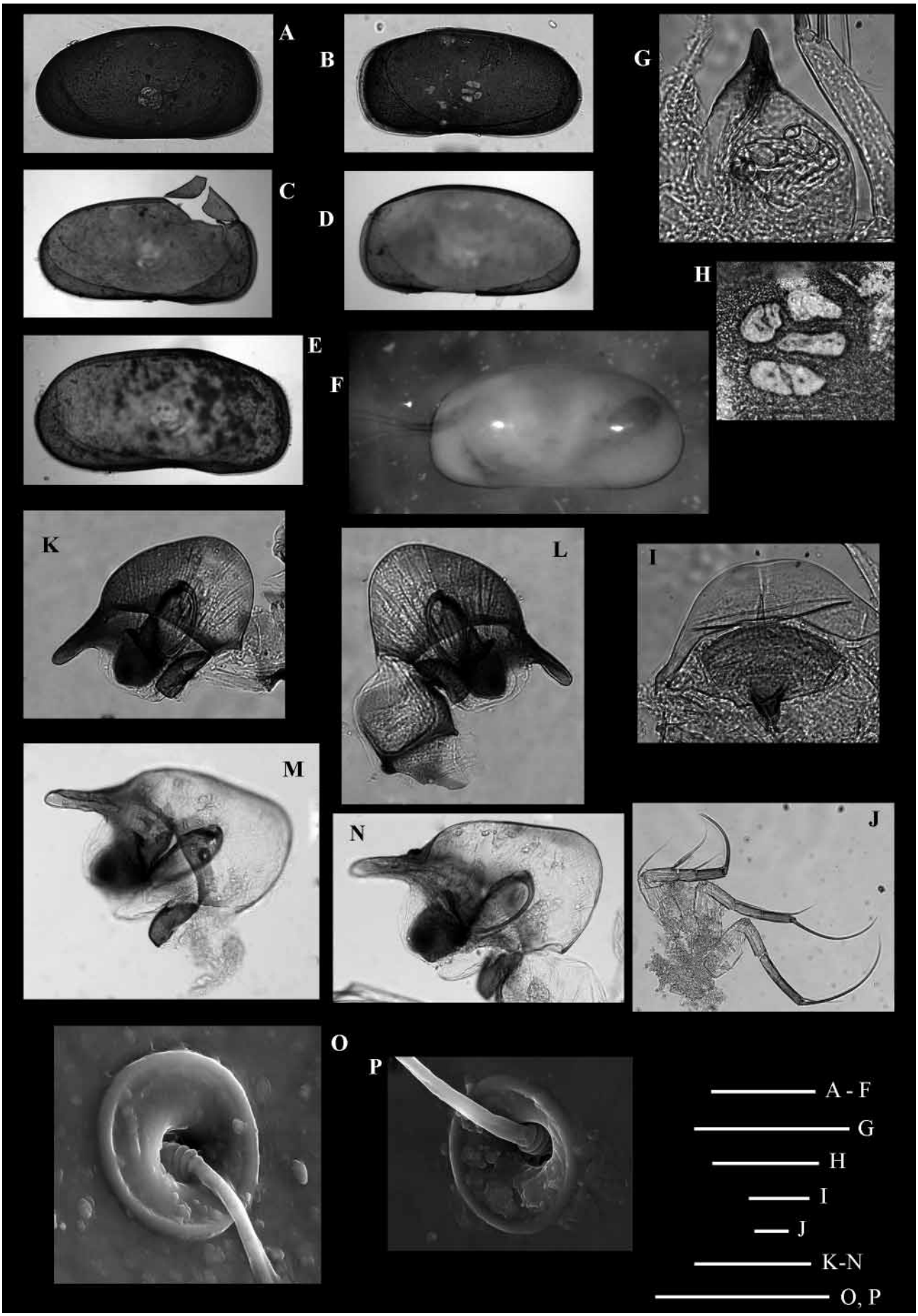
Remarks. *Bythocypris weddellensis* sp. nov. resembles the genus *Anchistrocheles* in the valve morphology (very delicate, with sub-rectangular outline, narrow zone of concrescence and restricted vestibule), and the genus *Bythocypris* in soft part morphology (labrum and hypostome "normal" bairdioid, not prolonged anteroventrally in flexible jawlike snout; podomere 6 of AII with long distal claw and 3 smaller setae; distal claws of AII and appendages V to VII not terminated by right angled, bevelled hook; Md and MxI also "normal" bairdioid, not elongated; maxillar vibratory plate with 7 strahlen; furca with 3 long and 5 very short setae). Since the carapace of bairdioids appear to show more evolutionary plasticity than the soft parts, and other species of the genus *Bythocypris* also present small, sub-rectangular carapaces, *Bythocypris weddellensis* sp. nov. is herein assigned to the genus *Bythocypris.*

Bythocypris weddellensis sp. nov. is very similar to *Anchistrocheles antemacella* Maddocks, 1969, which was described from 62 subfossil specimens collected in the Mozambique Channel (1280 to 2750m); but *Bythocypris weddellensis* presents the following characters: (1) more rounded outline, instead of sub-rectangular; (2) anterodorsal margin straight, instead of curved; (3) more acute and elevated posterior margin; (4) dorsal margin arcuate, instead of straight and subparallel to ventral margin.

Anchistrocheles hartmanni Maddocks, 1976 is similar in valve outline to *B. weddellensis*, but the former species presents the following differences in the soft parts: (1) hemipenis and genital lobe outline, (2) fused podomere VI and VII of AI; (3) fused podomere IV and V of ApV; (4) Fu with just 3 setae. *Anchistrocheles mcquadei* Maddocks, 1976 and *A. angulata* (Brady, 1870) has a very distinct hemipenis and more elongated Md and MxI.

The valves of *Bythocypris weddellensis* sp. nov. differ from *Bythocypris reniformis* Brady, 1880 *sensu* Puri and Hulings (1976: Pl. 2.7–10, Fig. 1) because the former species presents a more rounded outline, greater height in relation to length, and larger size (LV L: 1.21 to 1.27mm, instead of 1.09mm). The valves of *Bythocypris* [sic] *reniformis* recorded by Maddocks (1969, Fig. 45.J–M) from the south-western Atlantic (*Albatross*, #2763, 24°17'S, 42°48'30''W, 1227m) are larger (LV L: 1.52–1.61mm), and more subtriangular than those of the new species described herein, with the maximum height of LV and RV at mid-length, instead of posterior to it. *Bythocypris* [sic] *reniformis* recorded by Maddocks (1969, Fig. 45.N–U) from the Mozambique Channel, south-western Indian Ocean (RV *Anton Bruun*, cruises 7 and 8, #365D, 23°20'S, 43°33E, 695–475m) present more similar, rectilinear outline to *B. weddellensis* sp. nov., but a more arcuate LV dorsal margin, and more rounded RV dorsal margin.

FIGURE 40. *Bythocypris weddellensis* sp. nov., *Bythocypris polarsterni* sp. nov, and *Bythocypris* sp. aff. *B. polarsterni* sp. nov. Legend: *Bythocypris weddellensis* sp. nov.: **A, B, H, K, L**, holotype A M (ZMH K-41325, SNB 0191); **C, D, M, N**, Paratype A M (ZMH K-41327, SNB 0398); **E, F, G, I, J**, paratype A F (ZMH K-41326, SNB 0251). *Bythocypris polarsterni* sp. nov.: **O**, paratype (A-1) (ZMH K-41315, SNB 0246). *Bythocypris* sp. aff. *B. polarsterni* sp. nov.: **P**, A F (ZMH K-41319, SNB 0269). **A, C, E**, RV, ev; **B, D, F**, LV, ev; **G**, genital lobe; **H**, Adductor muscle scars from **A**; **I**, labrum; **J**, ApV, ApVI, and ApVII; **K–N**, hemipenis; **O, P**, radial pore canals. Scale bar: **A–F**, 500µm; **G**, **H, J–N**, 100µm; **I**, 50µm **O, P**, 5µm.


A
B
G
C
D
H
E
F
K
L
I
M
N
J
O
P
A - F
G
H
I
J
K-N
O, P

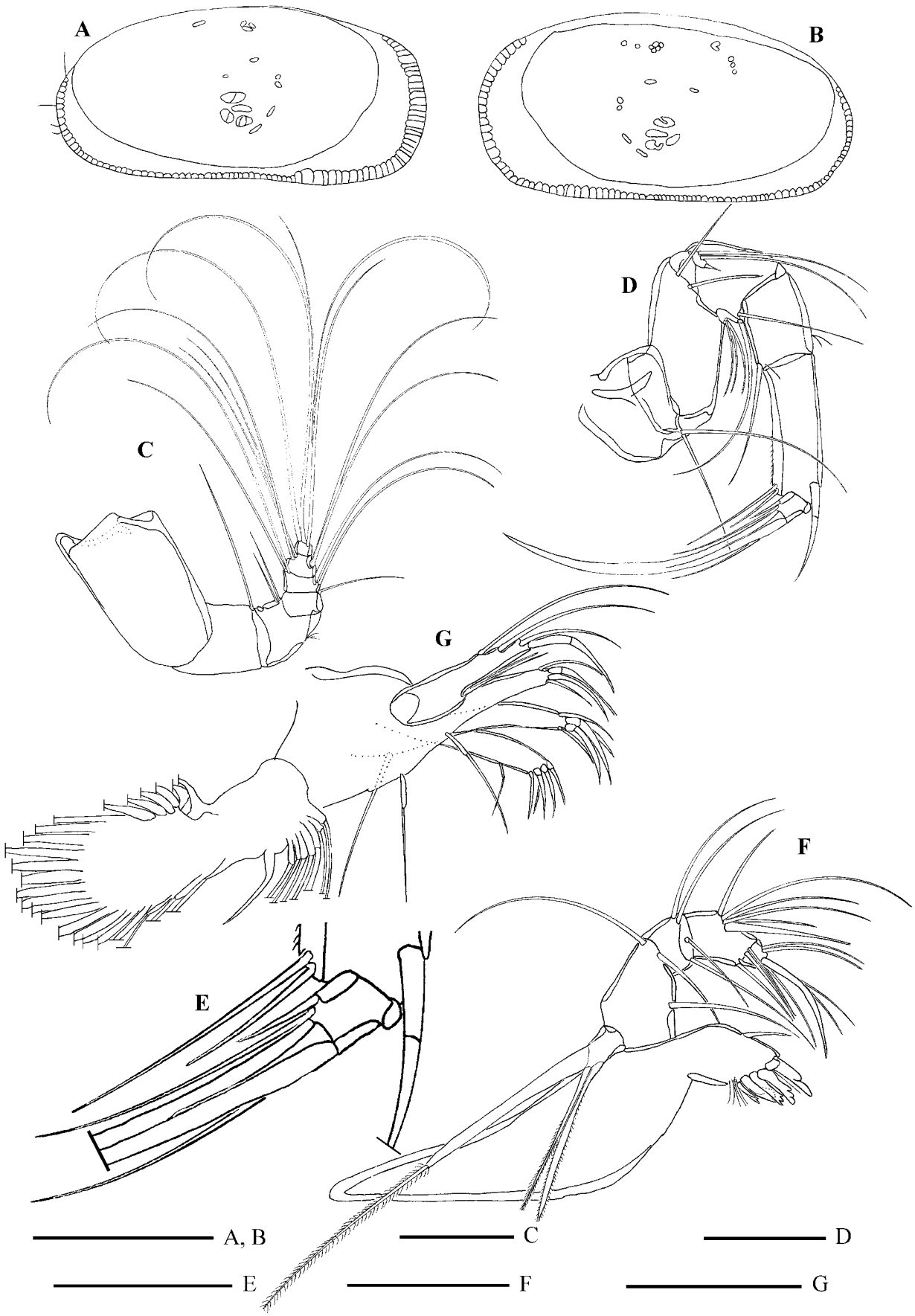


FIGURE 41. *Bythocypris weddellensis* sp. nov. Legend: nov. **A–G,** holotype A M (ZMH K-41325, SNB 0191). **A**, LV, ev, **B**, RV, ev, **C**, AI, **D**, AII, **E**, AII, detail of distal part; **F**, Md; **G**, MxI. Scale bars: **A, B**, 500µm; **C, D, F, G**, 100 µm; **E**, 50 µm.

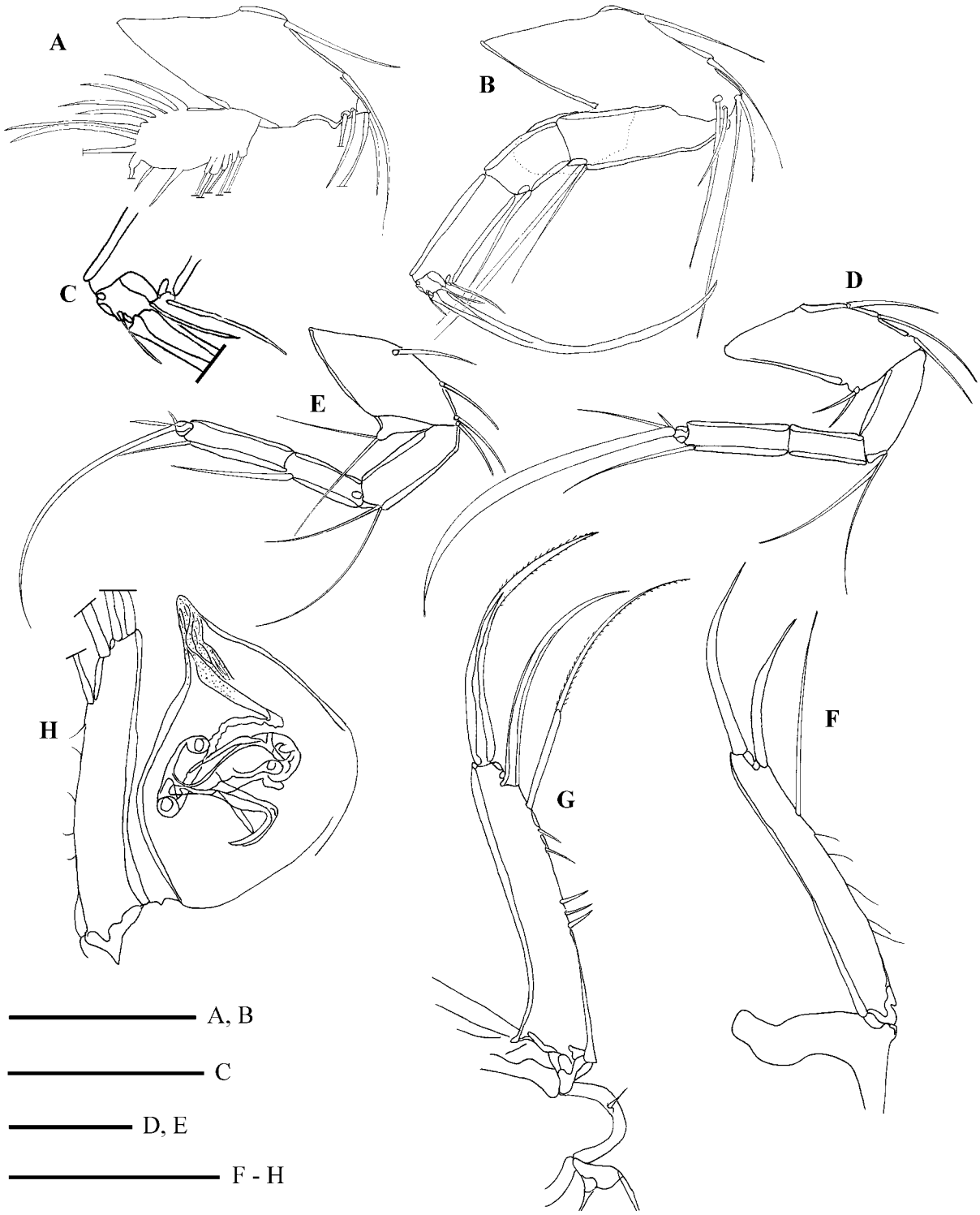


FIGURE 42. *Bythocypris weddellensis* sp. nov. Legend: **A–F,** holotype A M (ZMH K-41325, SNB 0191); **G, H**, paratype A F (ZMH K-41326, SNB 0251). **A–C**, ApV; **D**, ApVI; **E**, ApVII; **F, G,** Fu; **H**, genital lobe. Scale bars: **A, B, D–H**, 100µm; **C**, 50µm.

B. eltanina Maddocks, 1969, *B. spiriscutica* Maddocks, 1969, *B. promoza* Maddocks, 1973, *Bythocypris elongata* Brady, 1880, *Bythocypris mozambiquensis* Maddocks, 1969, and *Bythocypris prolata* Maddocks, 1969 are more subtriangular than *B. weddelensis* sp. nov. Additionally, *B. affins affins* Brady, 1886 (*sensu* Brady & Norman 1889: 242), *Bythocypris affins madagascarensis* Maddocks, 1969, and *Bythocypris richard-dinglei* sp. nov. are more subquadrate and less elongate than *B. weddellensis* sp. nov.

Genus *Bythopussella* Warne, 1990

Type species. *Anchistrocheles aculeata* Müller, 1908 (original designation).

Species included (listed by original binomen). *Bairdoppilata microguttata* Whatley *et al.*, 1998b n. comb.; *Anchistrocheles?* sp. aff. *A.? aculeata* of Maddocks (1969); *Anchistrocheles* sp. A of Cronin (1983); *Anchistrocheles?* cf. *A.? aculeata* of Mazzini (2005).

***Bythopussella aculeata* (Müller, 1908)**
(Figs. 43, 45.P–S)

1908		*Anchistrocheles aculeata* Müller: 100–102, Pl. 14.7–14, Pl. 15.1–5.
1969	non	*Anchistrocheles?* sp. aff. *A. aculeata*, Maddocks: 113, Fig. 60m.
1990		*Anchistrocheles aculeata*, Warne: 114.
1997		*Anchistrocheles ? aculeata*, Hartmann: 55, Fig. 16.

Material. Since *B. aculeata* is the type species of the genus *Bythopussella*, I prefer not to designate a lectotype for *B. aculeata*, because the 5 adult specimens available are in very bad conditions (fragmented soft parts and valves). I think that the designation of a lectotype should be done when new material (in good condition) is available.

The syntype series of *B. aculeata* includes one glass containing specimens in alcohol and labelled "*Anchistrocheles aculeata* Müller, Gauss-Station , 385m, Deut. Südpolar Exp., 1902-1903, ZMB 13086":

1) This vial contained seven juveniles with completely decalcified valves – 6 (A-1), 1 (A-2).

Additionally, four glass slides with dissected specimens and valves also form part of Müller's syntype series:

2) Glass slide with permanent medium containing appendages, 1 RV and pieces of LV of 1 A F, and labelled "*Anchistrocheles aculeata*, 1649, Gauss., 177b female, 11.02".

3) Glass slide with permanent medium containing very fragmented appendages, 1 RV and pieces of LV of 1 A M, and labelled "*Anchistrocheles aculeata*, 1652, Gauss., 177b male, 12.02".

4) Glass slide with permanent medium containing very fragmented appendages, 1 RV and pieces of LV of 1 A M, and labelled "*Anchistrocheles aculeata*, 1662, Gauss., 177b male, 12.02".

5) Glass slide with permanent medium containing fragmented appendages, 1 LV and pieces of RV of 1 juvenile?, plus one RLV positioned in dorsal view, and labelled "*Anchistrocheles aculeata*, 1677, Gauss., 177b, 1.03".

Other specimens studied herein were in the vial of the types of *Bairdoppilata labiata* (ZMB 13069):

6) 1 A M (dissected by myself, SNB 0687), and 1 (A-2) were previously together with the type series of *Bairdoppilta labiata* (Müller, 1908), in the vial labelled "*Nesidea labiata* G. W. Müller, Gaus Station (177a), 385m, Deut. Südpolar Exp., 1901-1903, ZMB 13069, 177a - 12.02". The adult male specimen is herein illustrated (Fig. 45.P–S);

7) 1 (A-2) in vial labelled were previously together with the type series of *Bairdoppilta labiata* (Müller, 1908), in the vial labelled "*Nesidea labiata* G. W. Müller, Gaus Station (177a), 385m, Deut. Südpolar Exp., 1901-1903, ZMB 13069, 177a – 1.03".

Distribution. Only known from the type locality, Southern Ocean (Indic Sector), 385m.

Measurements. Syntypes: LV, A M (SNB 0657) L 0.94mm, H 0.54mm; (A-1) L 0.84mm, H 0.48mm; (A-2) L 0.63mm, H 0.40mm.

Diagnosis. Valves fairly large, bairdiid in aspect, with conspicuous lateral punctation in the central area of lateral surface (anterior and posterior are smooth); both valves with small spines on anterior margin; LV with 1 medium-sized spine on posterior margin. AII with elongate, slender podomeres; podomere VI with 1 long claw, and 1 medium-sized and 1 small setae in males and females. MxI with 7 strahlen. ApV robust.

Podomere V of ApV to VII with 1 long terminal claw, and one vestigial seta. Fu with 1 large and 1 medium-sized claws, and 2 medium-sized setae. Genital lobe subcircular with short, internal tube. Hemipenis with elongated/sub-hemispherical basal capsule, which presents a beaked-shaped distal part; short, fairly straight copulatory tube, and one rigid, chitinized, short, medial process.

Remarks. Details in chaetotaxy could not be studied in *B. aculeata* since all adults dissected and are preserved in a large quantity of permanent medium, which impedes their observation under the larger microscope objective magnification (100X).

***Bythopussella brandtae* sp. nov.**
(Figs. 43, 44, 45.A–D, 46, 47.A–F)

2005 ? *Anchistrocheles?* cf. *A.? aculeata* Müller, 1908, Mazzini: 20, Figs. I–K.

Etymology. Named in honour of Prof. Dr. Angelika Brandt, who coordinated the ANDEEP project.

Material: 20 live specimens, 203 V. **Holotype**: 1 A M (SNB 0281), ANDEEP II, # 133–3–E, ZMH K-41320. **Paratypes:** 3 A F (SNB 0280, SNB 0282, SNB 0283), 8 A, 1 (A-1), 79 V, 11 RLV, ANDEEP II, # 133–3–E, ZMH K-41358; 3 A M (SNB 0661-0663), 3 A F (SNB 0658-0660), 15 RV, 17 LV, 8 RLV, 54 V, ANDEEP II, # 132–2–S, ZMH K-41322; 1 A F (SNB 0678), ANDEEP III # 133–2, ZMH K-41323.

Distribution. NW Weddell Sea, Southern Ocean (Atlantic Sector), 1123 to 2084m.

Measurements (Fig. 43). Holotype, LV, L 1.00mm, H 0.56mm; RV, L 1.00mm, H 0.53mm. Paratypes, LV, L 1.08mm, H 0.62mm; A F L 1.05–1.08 mm, H 0.60–0.62mm; A M L 1.00–1.05 mm, H 0.56–0.57mm; A (sex indeterminate) L 0.95–1.12 mm, H 0.53–0.64mm; (A–1) L 0.80–0.87mm, H 0.44–0.49mm; (A–2) L 0.67 mm, H–0.39 mm.

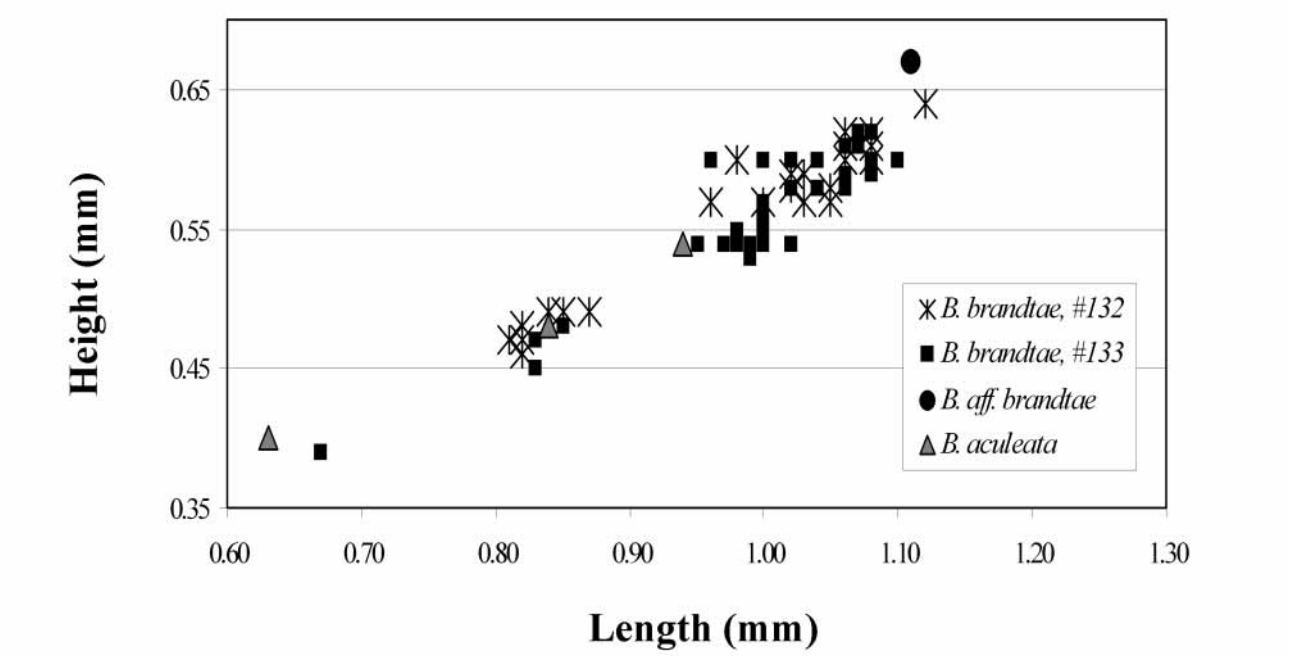


FIGURE 43. Length: height scatter plot of the valves of *Bythopussella aculeata* (Müller, 1908), *Bythopussella brandtae* sp. nov. and *Bythopussella* sp. aff. *B. brandtae* sp. nov.

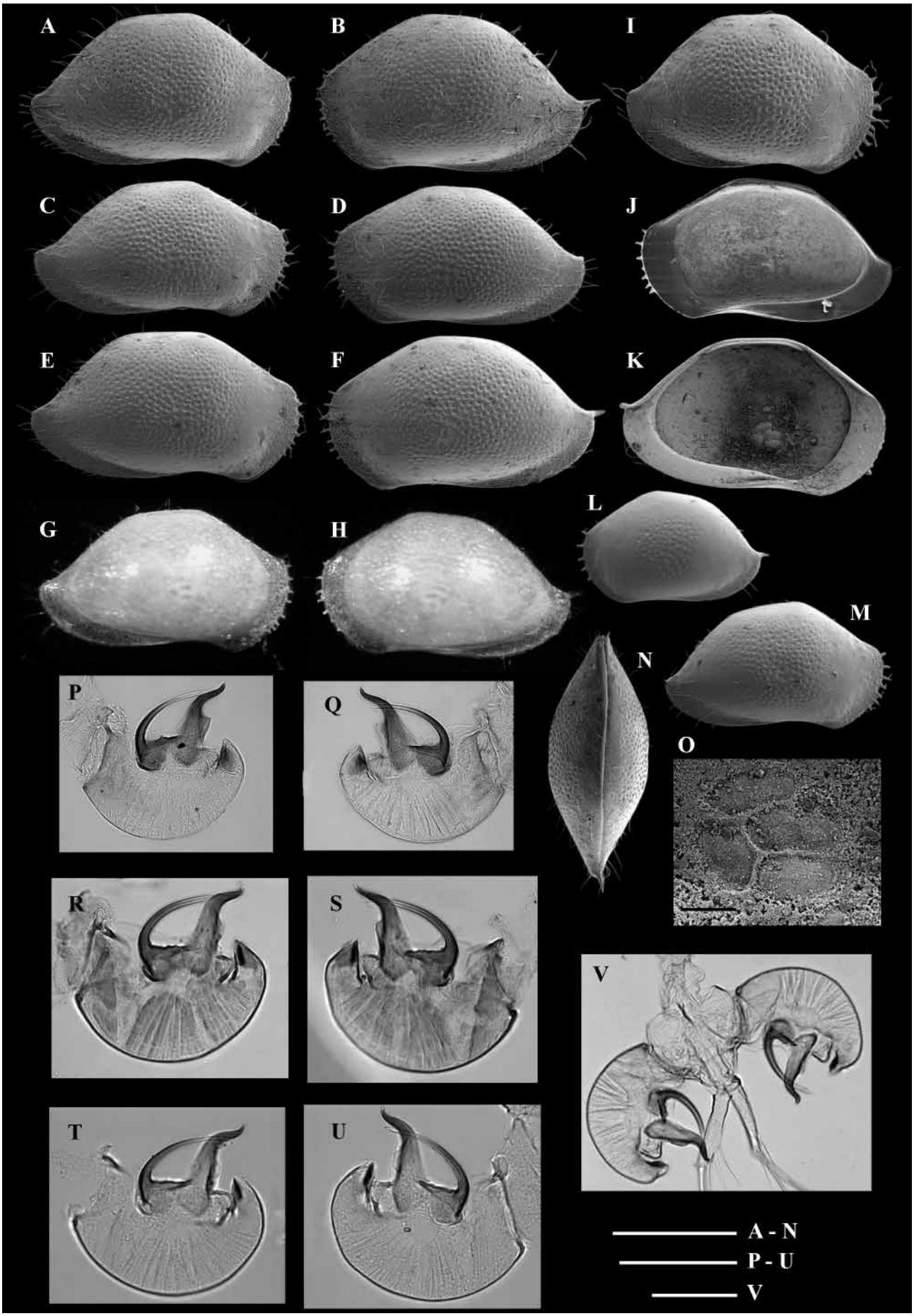
Diagnosis. Valves large, bairdiid in aspect, with conspicuous lateral punctation; both valves with 8 to 10 short spines on anterior margin; LV with 1 long spine on posterior margin. Podomere VI of AII with 1 long claw, and 1 medium-sized and 1 small setae in males; females present 1 long claw, and 1 medium-sized and 2 small setae. MxI with 7 strahlen. Distal claw of podomere V of ApV robust. Podomere V of ApV to VII with 1 long terminal claw, and 1 vestigial seta. Fu with 2 medium-sized claws, and 2 medium-sized setae. Genital lobe subcircular with short, internal tube. Hemipenis with sub-hemispherical basal capsule, which is distally beaked; short, curved copulatory tube, and one rigid, chitinized, flexibly articulated medial process ending in a slender hook.

Description. Valves large, with bairdiid outline in lateral view; lateral surface of valves punctate, except on the anterior and the ventral areas in adults; in juveniles just the central area is punctate; numerous long, conspicuous sensilla present. Dorsal margin of both valves tri-segmented, in LV more smoothly rounded than in RV, posterodorsal segment concave; anterior margin of both valves with 8 to 10 short spines; ventral margin sinuous with conspicuous concavity in mouth region and upswung posterior. Adductor muscle scars pattern with 3 anterior and 1 posteroventral scars. Calcified inner lamella and zone of concrescence fairly broad with numerous, straight radial pore canals, vestibules constricted. Radial pore canals simple, with or without rims. Male valves not as long as, and less high in relation to length than female valves. In dorsal view, carapace compressed, sub-hexagonal, maximum width slightly posterior to mid-length.

Labrum and hypostome anteroventrally prolonged. AI robust with 7 podomeres, none fused; 1 of the terminal setae very long; chaetotaxy 1(0/0), 2(1/0), 3(1/0), 4(0/0-1), 5(2-3/1), 6(1-3/1), 7(0/0:?2-?5). AII podomeres elongated, especially podomere V; exopodite with 1 long and 1 short setae; podomere VI with 1 long claw, and 1 medium-sized and 1 small setae in males, females present 1 long claw, and 1 medium-sized and 2 small setae, all setae articulated; chaetotaxy 1(0/0:1int), 2(0/1), 3(0/.1-3r.1), 4(.2/0), 5(.2pq./.1), 6(0/0:1,1c,0-1,1). AII and ApV to VII terminal claws with tiny terminal hooks. Md and MxI also very elongate. Md with 4 trifurcate teeth on masticatory base, exopodite with 3 long setae; palp chaetotaxy 1(0/.1.:1i), 2(.1.1/1:0-1i), 3(.1.1.0-1/1-2:1i), 4(.1/0:1c,?4). Vibratory plate of MxI with 7 strahlen and around 20 feathered setae; palp with 2 dorsal, 1 ventral, and 3 distal, medium-sized setae; 3 endites without proximal seta. ApV with quite short podomeres, vibratory plate with 4 strahlen and around 8 feathered setae; chaetotaxy 1(.1.1.0-1.0-1.2/0), 2(.2/0), 3(0/0), 4(.1r/0), 5(0/0:1c,1r). ApVI and ApVII without setae on exopodite (=ventral setae); chaetotaxy 1(.1.1.1r/0), 2(.2/0), 3(0/0), 4(.1r/0), 5(0/0:1r,1c). Fu with 1 large and 1 medium-sized claw, and 2 medium-sized setae. One short seta between both Fu rods. Brush-shaped organ symmetrical. Genital lobe subcircular, with short internal tube. Hemipenis with sub-hemispherical basal capsule, which is distally beaked; the short, strongly chitinized, curved copulatory tube extends less than the distal part of the basal capsule; plus one rigid, also chitinized, flexibly articulated process ending in a slender hook.

Remarks. Warne (1990) described the genus *Bythopussella* in order to accommodate species previously assigned (based on soft parts) to the genus *Anchistrocheles*, but which present a bairdiid carapace. *Bythopussella brandtae* sp. nov. fits exactly this last description: with bairdiid carapace and anchistrocheline soft part characters – (1) anteroventrally prolonged labrum and hypostome, forming a flexible jawlike snout; (2) elongated mandible and maxilla I; (3) appendages VI and VII lack setae on exopodite (= ventral setae on basal podomere); (4) distal setae of antenna II and appendages V to VII terminated by tiny hook.

FIGURE 44. *Bythopussella brandtae* sp. nov. Legend: **A, B,** paratype A F (ZMH K-41358, SNB 0282); **C, D, V**, paratype A M (SNB 0662), **E**, paratype A F (SNB 0660), **R, S**, paratype A M (SNB 0661), **T, U**, paratype A M (SNB 0663) (last 8 ZMH K-41322); **F, I, K, O**, subfossil paratypes A (ZMH K-41358). **G, H, P, Q**, holotype A M (ZMH K-41320, SNB 0281). **J, N**, subfossil paratypes A, **L**, subfossil paratype (A-1); **M**, subfossil paratype (A-2) (ZMH K-41358). **A, C, E, G, I, M**, RV ev; **B, D, F, H, L**, LV ev; **J**, RV iv; **K**, LV iv; **N**, RLV dv; **O**, Adductor muscle scars from **K, P–V**, hemipenis. Scale bars: **A–N**, 500µm; **O**, 50µm; **P–V**, 100µm.


A
B
I
C
D
J
E
F
K
G
H
L
M
N
P
Q
O
R
S
V
T
U
A - N
P - U
V

Contrary to the wide variation observed in *B. malyutinae* sp. nov., *Bythopussella brandtae* sp. nov. shows very little, if any, intraspecific morphological variability in valves and hemipenis (Fig. 44.A–I, P–V), male specimens collected from both stations (at 1123 and 2082m depth) present the same hemipenis outline, beaked basal capsule, equal relative length of copulatory tube and elongated process.

Bythopussella brandtae sp. nov. is very similar to *Bythopussella microguttata*, but the former species is higher in relation to length; and presents 1 long posterior spine, larger anterior spines, more arcuate dorsal margin in LV, rounder dorsal margin in RV, and less marginal pore canals anteriorly and posteriorly (appr. 30 instead of 44 and 41).

Valves of *B. brandtae* sp. nov. are similar in shape and size to *B. aculeata* (Müller, 1908), which was recorded only from the Indic sector of the Southern Ocean (65°S, 90°E, 385m) (Fig. 45.P–S). The new species can be distinguished from *B. aculeata* by the following characters: 1) ventral margin of both valves is more sinuous in the new species (especially RV); 2) the new species is more compressed in dorsal view; 3) the punctation is more widely distributed and deeper in the new species; 4) hemipenis – a) in the *B. brandtae* sp. nov. the hemipenis is sub-hemispherical (more elongate in *B. aculeata*) and has a large, elongated, strongly chitinized process perpendicular to dorsal hemipenis margin and terminating in a hook, while *B. aculeata* presents a shorter, L-shaped process; b) the copulatory rod of the new species is curved at approximately 90° instead of 180° in *B. aculeata*.

The LV of *Anchistrocheles?* cf. *A.? aculeata* from the South Tasman Rise illustrated by Mazzini (2005, Fig. 10.I–K) is similar to *B. brandtae* sp. nov. but presents greater height/length ration, slightly more rounded dorsal margin, and lacks the anterior and posterior spines (or they might be broken).

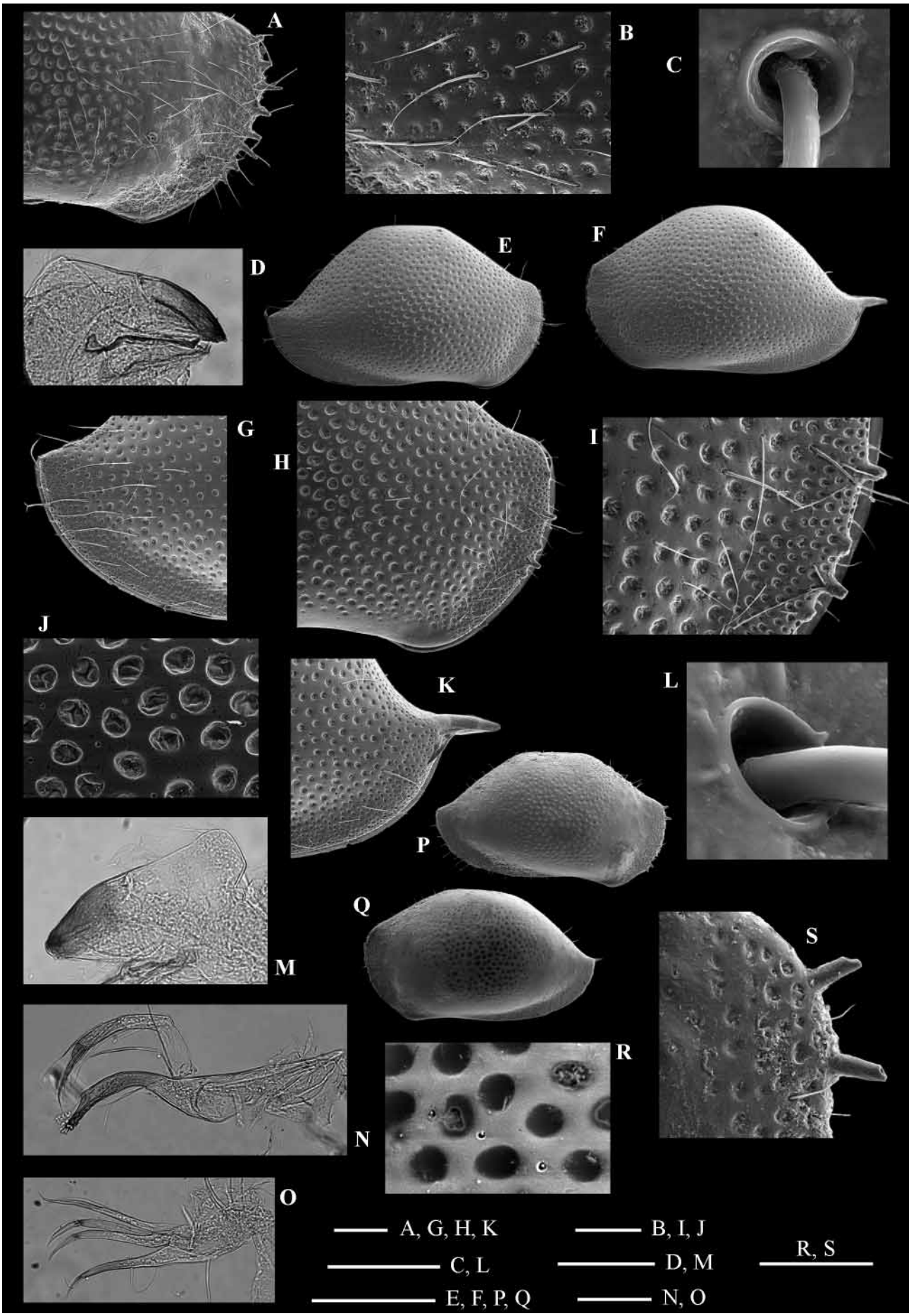
The valves of *Anchistrocheles angulata* (Brady, 1870) *sensu* Brady (1880, Pl. 11.5a–d) have a distinct lateral and dorsal outline: (1) lateral – more sub-reniform, without the long spine on the posterior edge of LV; (2) dorsal – less inflated, more sub-oval outline. *Anchistrocheles angulata* (Brady, 1880) *sensu* Maddocks (1976, Pl. 7.11) has a very similar hemipenis to *Bythopussella brandtae* sp. nov., especially in the copulatory tube and chitinized process, but the distal part of the basal capsule is not beak-shaped in the first species. Furthermore, antenna I has 7 articulated podomeres in the new species and only 6 podomeres in Brady's species (Maddocks 1976, Pl. 7.2); antenna II of the new species is more elongated, especially podomere V; appendage V presents about 8 feathered setae (instead of 2). A comparison of the carapace morphology of *Anchistrocheles angulata* (Brady, 1880) *sensu* Maddocks, 1976 is not possible because the carapace of this specimen was decalcified and consequently no illustrations of the valves were provided.

Bythopussella brandtae sp. nov. is similar in outline to *Anchistrocheles*? sp. aff. *A. angulata* (Maddocks 1969:113, Fig. 60M) but lacks the long spine on the anterior of LV.

Anchistrocheles? n. sp. from Triebel (1960, Pl. 20.44a, b) from Bass Strait, has a more subreniform outline and lacks the long, posterior spine on the LV.

The shallow water species *Anchistrocheles mcquadei* Maddocks, 1976, *Anchistrocheles barnharti* Maddocks, 1976 and *Anchistrocheles hartmanni* Maddocks, 1976 from the Caribbean, *Anchistrocheles acerosa* (Brady, 1868) from Northeastern Atlantic, *Anchistrocheles bradyi* Scott, 1905 and *Anchistrocheles fumata* Brady, 1890 both from the Indian Ocean, are very distinct from the new species herein owing to their valve subreniform outline in lateral view.

FIGURE 45. *Bythopussella brandtae* sp. nov., *Bythopussella* sp. aff. *B. brandtae* sp. nov. and *Bythopussella aculeata* (Müller, 1908). Legend: *Bythopussella brandtae* sp. nov.: **A–C**, paratype A M (ZMH K-41322, SNB 0662); **D**, paratype A F (ZMH K-41358, SNB 0280). *Anchistrocheles* sp. aff. *B. brandtae* sp. nov.: **E-O**, A F (ZMH K-41324, SNB 0295). *Bythopussella aculeata* (Müller, 1908): **P–S**, syntype A M (ZMB 13086, SNB 0687). **A, H, I, S**, anterior of RV, ev; **B, J, R**, valve lateral ornamentation; **C, L**, radial pore canals; **D, M**, prolonged labrum; **E, P**, RV, ev; **F, Q**, LV, ev; **G**, posterior of **E**; **K**, posterior of **F**; **N**, Md; **O**, MxI. Scale bars: **A, D, G, H, K, M–O**, 100µm; **B, I, J, R, S**, 50µm; **C, L**, 5µm; **E, F, P, Q**, 500µm.


A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
A, G, H, K
B, I, J
C, L
D, M
E, F, P, Q
N, O
R, S

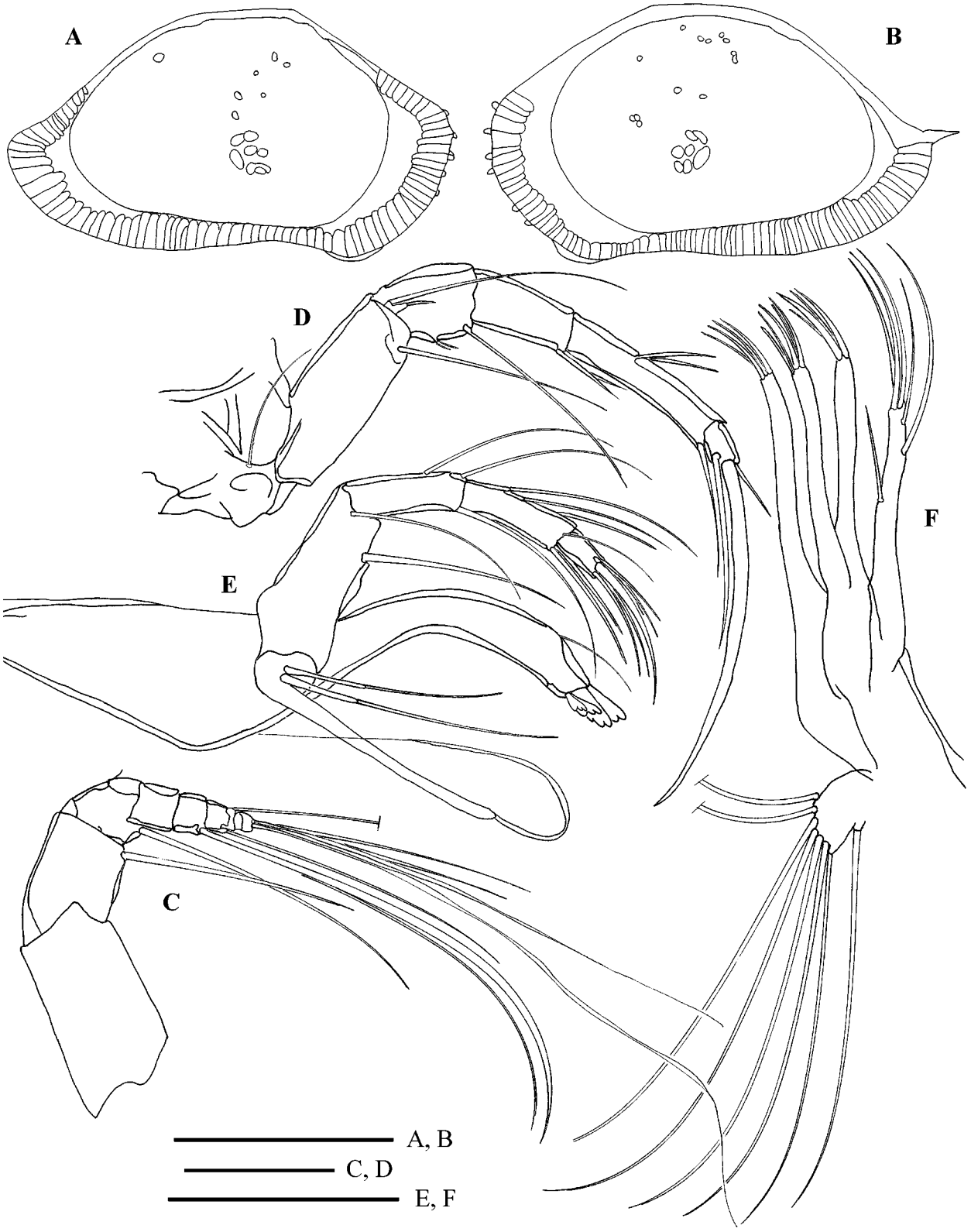


FIGURE 46. *Bythopussella brandtae* sp. nov. Legend: **A–F**, holotype A M (ZMH K-41320, SNB 0281). **A**, RV, ev, **B**, LV, ev, **C**, AI, **D**, AII, **E**, Md; **F**, MxI. Scale bars: **A, B**, 500µm; **C–F**, 100 µm.

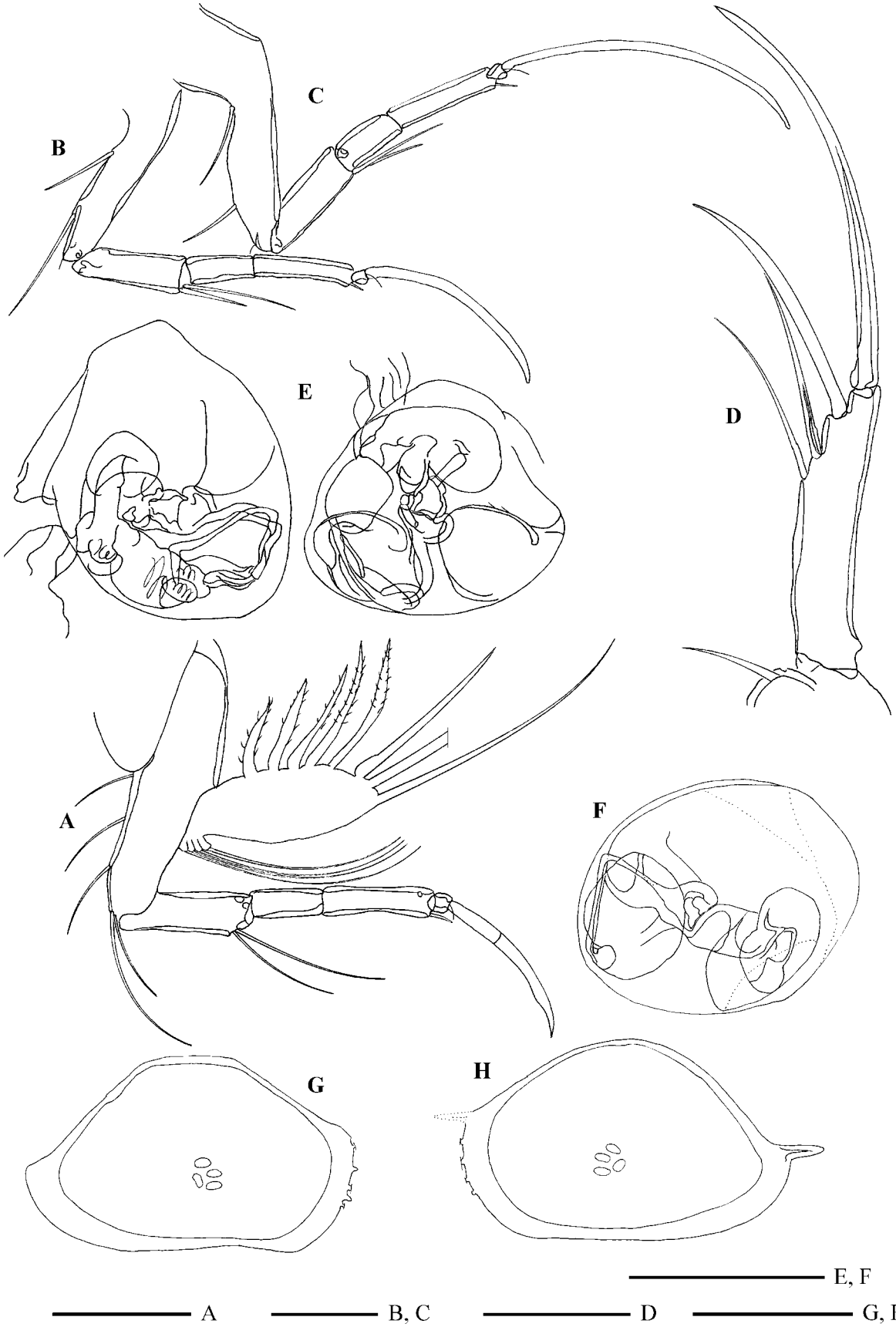


FIGURE 47. *Bythopussella brandtae* sp. nov.: **A, F**, paratype A F (ZMH K-41358, SNB 0282); **B, C, D**, holotype A M (ZMH K-41320, SNB 0281). **E**, paratype A F (ZMH K-41358, SNB 0283). **A**, ApV; **B**, ApVI; **C**, ApVII; **D**, Fu; **E, F**, genital lobes, **G,** RV, ev; **H**, LV, ev. Scale bars: **A–C**, 100µm; **D–F**, 50µm; **G, H**, 500µm.

The presence of these five morphologically similar species around Antarctica – *B. brandtae* sp. nov., *B. microguttata*, *B. aculeata*, *A?.* cf. *?A. aculeata* G. W. Müller, 1908 (from Mazzini, 2005) and *B.* sp. aff. *B. brandtae* sp. nov. (herein) – indicates that even with the circum-antarctic current, which favours the migration and consequent genetic flux among populations located around Antarctica, podocopid species are probably not able to migrate in the velocity and frequency necessary to keep the genetic flux and to prevent speciation. It also indicates that many of the species previously believed to have a circum-antarctic distribution could actually be groups of species. The possibility of a vicariant speciation due the isolation of several populations as a consequence of larger ice extension during glaciation periods is herein considered improbable since these species also occur in the continental slope, and it is very improbable that the water column was frozen to such depths.

Bythopussella* sp. aff. *B. brandtae
(Figs. 43, 45.D–O, 47.F, G)

1969 ? *Anchistrocheles?* sp. aff. *A. aculeata*, Maddocks: 113, Fig. 60m.

Material. 1 A F (SNB 0295), ANDEEP I, # 129–2–S, ZMH K-41324.

Distribution. Scotia Sea, Southern Ocean (Altantic Sector), 3631 to 3637m.

Measurements (Fig. 43). LV, L 1.11mm, H 0.67mm.

Description. Valves large, with bairdiid outline in lateral view; entire lateral surface of valves strongly punctate, several conspicuous sensilla present. Dorsal margin of both valves tri-segmented, but LV more smoothly rounded, posterodorsal segment concave; anterodorsal segment of RV also concave; anterodorsal segment of LV slightly convex; anterior margin of both valves with 4 or 5 small spines; ventral margin of RV sinuous with conspicuous concavity in mouth region and upswung posterior; ventral margin of LV fairly straight, except posteriorly. Adductor muscle scars pattern with 3 anterior and 1 posteroventral scars.

Labrum and hypostome anteroventrally prolonged. AI robust with 7 podomeres, all sutures between podomeres conspicuous or fairly conspicuous. AII elongated, especially podomeres V. Md and MxI also very elongate. AII and ApV to VII terminal claws with tiny terminal hook. AII with elongate, slender podomeres; exopodite with 1 long and 1 medium-sized setae; podomere VI with 1 long claw, and 1 medium-sized and 2 small setae, all setae articulated. Md with 3 bifurcate teeth on masticatory base, exopodite with 3 long setae. Vibratory plate of MxI with 7 strahlen and more than 20 feathered setae; palp with 2 dorsal, 1 ventral, and 3 or 4 distal, medium-sized setae. ApV robust, vibratory plate with 5 strahlen and around 8 feathered setae. Podomere V of ApV to VII with 2 distal setae on podomere II; 1 long terminal claw, and 1 vestigial seta on podomere V. Exopodite of ApVI and VII without setae. Fu with 1 large and 1 medium-sized claw, and 2 medium-sized setae; 1 short seta between both Fu rods.

Remarks. No genital lobe was present in the single female of *Bythopussella* sp. aff. *B. brandtae* studied herein. The presence of 5 strahlen on the vibratory plate is not typical of this genus (usually there are 4).

Bythopussella sp. aff. *B. brandtae* differs from *Bythopussella brandtae* because the former species presents: (1) one long spine (broken during dissection) on the anterior of LV; (2) longer spine on the posterior margin of LV; (3) greater length in relation to height of carapace; (4) more conspicuous ornamentation, which is present on the entire lateral surface of valves; (5) exopodite of antenna II with 1 long and 1 medium-sized setae (instead of 1 long and 1short setae); (6) vibratory plate of ApV with 5 strahlen (instead of 4).

Bythopussella sp. aff. *B. brandtae* similar to *Anchistrocheles?* sp. aff. *A. aculeata* illustrated by Maddocks (1969: 113, Fig. 60m) from the continental slope off Peru.

Acknowledgements

I thank Dr. Dietmar Keyser (ZMH, University of Hamburg) for his very careful supervision during my Ph.D.; Dr. Carol Schöning for revising the English; Renate Walter (ZMH, University of Hamburg) for assisting in SEM-photos. I also acknowledge Prof. Dr. Angelika Brandt and Dr. Brigitte Ebbe for the coordination of the ANDEEP project, and the crew and the scientists on board of the RV *Polarstern* during the 3 ANDEEP cruises. The revisions from Dr. Alan Lord (Senckenberg Museum), Dr. Moriaki Yasuhara (NMNH), Dr. Anna Syme (Museum Victoria) and one anonymous referee greatly improved this publication. Both institutions DAAD (Germany) and CAPES (Brazil) financially supported the author. This is ANDEEP publication no.100.

References

Ayress, M. A., De Deckker, P. & Coles, G. P. (2004) A taxonomic and distributional survey of marine benthonic Ostracoda off Kerguelen and Heard Islands, South Indian Ocean. *Journal of Micropalaeontology,* 23(1), 15–38.

Benson, R. H. (1979) In search of lost oceans: a paradox in discovery. *Proceedings of the Annual Biology Colloquium*, 37, 379–389.

Benson, R. H. & Maddocks, R. F. (1964) Recent ostracodes of Knysna Estuary, Cape Province, South Africa. *University of Kansas Paleontological Contributions,* 5, 1–39.

Bonaduce, G., D. Barra, Aiello, G. (1999) The genus *Henryhowella* Puri, 1957 (Crustacea, Ostracoda) in the Atlantic and Mediterranean from Miocene to Recent. *Bollettino della Societa Paleontologica Italiana,* 38(1), 59–72.

Brandão, S. N. (2008) First Record of a Recent Platycopida (Crustacea, Ostracoda) in High Antarctic Deep Waters–*Cytherella scotia* sp. nov.—With a Discussion on *Cytherella serratula* (Brady, 1880). *Zootaxa*, 1866, 359–382.

Brandt, A., De Broyer, C., Gooday, A. J., Hilbig, B. & Thomson, M. R. A. (2004) Introduction to ANDEEP (ANtarctic benthic DEEP-sea biodiversity, colonization history and recent community patterns) — a tribute to Howard L. Sanders. *Deep-Sea Research II*, 51, 1457–1465.

Brandt, A., Gooday, A. J., Brandão, S. N., Brix, S., Brökeland, W., Cedhagen, T., Choudhury, M., Cornelius, N., Danis, B., De Mesel, I., Diaz, R. J., Gillan, D. C., Hilbig, B., Howe, J., Janussen, D., Kaiser, S., Linse, K., Malyutina, M., Pawlowski, J., Raupach, M. & Vanreusel, A. (2007a) The Southern Ocean deep sea: first insights into biodiversity and biogeography. *Nature*, 447, 307–311.

Brandt, A., De Broyer, C., De Mesel, I., Ellingsen, K. E., Gooday, A. J., Hilbig, B., Linse, K., Thomson, M. R. A. & Tyler, P. A., (2007b) The biodiversity of the deep Southern Ocean benthos. *Philosophical Transactions of the Royal Society of London*, B 362, 39–66.

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. Zoology,* 1(3), 1–184.

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.

Brady, G. S. and A. M. Norman (1889) A monograph of the marine and fresh-water Ostracoda of the North Atlantic and of north-western Europe. Section I: Podocopa. *Scientific Transactions of the Royal Dublin Society,* 4(2), 63–270.

Brenke, N. (2005) An Epibenthic Sledge for Operations on Marine Soft Bottom and Bedrock. *Marine Technology Society Journal*, 39(2), 10–21.

Briggs, W. M. (1978) Ostracoda from the Pleistocene Taylor Formation, Ross Island, and the Recent of the Ross Sea and MacMurdo Sound region, Antarctica. *Antarctic Journal of the United States*, 13(4), 27–29.

Chapman, F. (1902). On some Ostracoda from Funafuti. *Proceedings of the Zoological Society of London,* 38, 228–233.

Chapman, F. (1910) On the Foraminifera and Ostracoda from soundings (chiefly deep-water) collected round Funafuti by H.M.S. Penguin. *Journal of the Linnean Society of London,* 30, 388– 444.

Chapman, F. (1941) Report on Foraminifera sounding 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, 145–211.

Dingle, R. V. (1992) Quaternary ostracods from the continental margin off south-western Africa. Part 1. Dominant taxa. *Annals of the South African Museum*, 102(1), 1–89.

Dingle, R. V. (1993) Quaternary ostracods from the continental margin off south-western Africa. Part 2. Minor taxa. *Annals of the South African Museum*, 103(1), 1–165.

Dingle, R. V. (1995) Continental shelf upwelling and benthic Ostracoda in the Benguela System (southeastern Atlantic Ocean). *Marine Geology,* 122(3), 207–225.

Dingle R.V. (2000) Ostracoda from CRP-1 and CRP-2/2A, Victoria Land Basin, Antarctica. *Terra Antarctica,* 7(4-5),

479–492.
Dingle, R.V. (2003) Recent Subantarctic benthic ostracod faunas from the Marion and Prince Edward Islands Archipelago, Southern Ocean. *Revista Española de Micropaleontologia*, 35 (1), 119–155.
Dingle, R. V., Bremmer, J. M., Giraudeau, J. & Buhmann, D. (1996) Modern and palaeo-oceanographic environments under Benguela upwelling cells off southern Namibia. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 123(1-4), 85–105.
Dingle, R. V. & Giraudeau, J. (1993) Benthic Ostracoda in the Benguela System (SE Atlantic), a multivariate analysis. *Marine Micropaleontology*, 22(1–2), 71–92.
Dingle, R. V. & Lord, A. R. (1990) Benthic ostracods and deep water-masses in the Atlantic Ocean. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 80(3–4), 213–235.
Dingle, R. V., Lord, A. R. & Boomer, I. D. (1989) Ostracod faunas and water masses across the continental margin off southwestern Africa. *Marine Geology*, 87(2–4), 323–328.
Dingle, R. V., McMillan, I. K., Majoran, S. & Bisset, L. (2001) Palaeo-oceanographical implications of Early-Middle Miocene subtropical ostracod faunas from the continental shelf of the SE Atlantic Ocean. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 173(1–2), 43–60.
Fauth, G., J. Seeling, Luther, A. (2003) Campanian (Upper Cretaceous) ostracods from southern James Ross Island, Antarctica. *Micropaleontology*, 49(1), 95–107.
Hartmann, G. (1968) Ostracoda. *Klassen und Ordnungen des Tierreiches 5: Arthropoda, Abt. 1: Crustacea. 2. Buch, 4. Teil, Ostracoda: 3.Lieferung. Bronn*, 409–568.
Hartmann, G. (1974) Teil III: Die Ostracoden des Untersuchungsgebiets. In: Hartmann-Schröder, G. & Hartmann, G. (Eds.), 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. *Mitteilungen aus dem hamburgischen Zoologischen Museum und Institut, Ergänzungsband*, 69, 229–520.
Hartmann, G. (1989) Antarktische benthische Ostracoden. 4. Auswertung der wahrend der Reise von FFS 'Walther Herwig' (68/1) bei Sud-Georgien gesammelten Ostracoden. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 86, 209–230.
Hartmann, G. (1993) Antarktische benthische Ostracoden 9. Ostracoden von der Antarktischen Halbinsel und von der Isla de los Estados (Feuerland/Argentinien) Auswertung der 'Polarstern'-Reise PS ANT/X/1b. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 90, 227–237.
Hartmann, G. (1997) Antarctic and subantarctic Podocopa (Ostracoda). *Theses Zoologicae,* 26, 1–355.
Jellinek, T. & Swanson, K. M. (2003) Report on the taxonomy, biogeography and phylogeny of mostly living benthic Ostracoda (Crustacea) from deep-sea samples (Intermediate Water depths) from the Challenger Plateau (Tasman Sea) and Campbell Plateau (Southern Ocean), New Zealand. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft Frankfurt am Main*, 558, 1–329.
Jellinek, T., Swanson, K. & Mazzini, I., 2006. Is the cosmopolitan model still valid for deep-sea ostracods? With the discussion of two new species of the genus *Pseudobosquetina* Guernet & Moullada 1994 and *Cytheropteron testudo* (Ostracoda) as case studies. *Senckenbergiana maritima*, 36(1), 29–50.
Key, A. J. (1954) Ostracoda. *In:* Andel, T. & Postma, H. (Eds.), *Recent Sediment of the Gulf of Paria. Reports of the Orinico Shelf Expedition, Vol. 1*, pp. 219–231.
Kaesler, R. L., S. Smith, Whatley, R. C. (1979) Ostracoda and petroleum pollution in the Strait of Magellan. In: Krstic, N. (Ed.), Taxonomy, biostratigraphy and distribution of ostracodes. Serbian Geological Society, Belgrade, pp.137–242.
LeRoy, L. W. (1943) Pleistocene and Pliocene Ostracoda of the coastal of Southern California. *Journal of Paleontology*, 17, 354–373.
Maddocks, R. F. (1969) Revision of recent Bairdiidae (Ostracoda). *U.S.National Museum Bulletin*, 296, 1–126.
Maddocks, R. F. (1972) Two new living Species of Saipanetta (Ostracoda, Podocopida). *Crustaceana*, 23(1), 28–42.
Maddocks, R. F. (1973) *Bythocypris promoza* n. sp. and males of *Zabythocypris helicina* and *Bairdoppilata hirsuta* (Ostracoda, Podocopida). *Crustaceana*, 24, 33–42.
Maddocks, R. F. (1976) Pussellinae are interstitial Bairdiidae (Ostracoda). *Micropaleontology,* 22(2), 194–214.
Maddocks, R. F. (1991) New Bairdiidae (Ostracoda) from Tulear, Madagascar. *Journal of Micropalaeontology,* 9(2), 189–204.
Maddocks, R. F. (1995) Bairdiidae (Ostracoda) of Nosy Be, Madagascar. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 92, 197–236.
Majoran, S. & Dingle, R. V. (2001a) Palaeoceanographical changes recorded by Cenozoic deep-sea ostracod assemblages from the South Atlantic and the Southern Ocean (ODP Sites 1087 and 1088). *Lethaia* 34(1), 63–83.
Majoran, S. & Dingle, R. V. (2001b) Cenozoic deep-sea ostracods from southwestern South Atlantic (DSDP/ODP sites 329, 513 and 699). *Revista Española de Micropaleontologia*, 33(2), 205–215.
Majoran, S. & Dingle, R. V. (2002) Cenozoic deep-sea ostracods from Maud Rise, Weddell Sea, Antarctica (ODP Site

689): A palaeoceanographical perspective. *Geobios*, 35(1), 137–152.
Majoran, S., Widmark, J. G. V. & Kucera, M. (1997) Palaeoecological preferences and geographical distribution of Late Maastrichtian deep-sea ostracods in the south Atlantic. *Lethaia*, 30(1), 53–64.
Mazzini, I. (2005) Taxonomy, biogeography and ecology of Quaternary benthic Ostracoda (Crustacea) from circumpolar deep water of the Emerald Basin (Southern Ocean) and the S Tasman Rise (Tasman Sea). *Senckenbergiana maritima*, 35(1), 1–119.
Müller, G. W. (1908) Die Ostracoden der Deutschen Südpolar-Expedition 1901-1903. *Deutsche Südpolar-Expedition*, 10(Zool. 2), 51–181.
Neale, J.W. (1967). An ostracod fauna from Halley Bay, Coats Land, British Antarctic Territory**.** *British Antarctic Survey, Scientific Reports*, 58, 1–50.
Puri, H. S. & Hulings, N. C. (1976) Designation of lectotypes of some ostracods from the Challenger expedition. *Bulletin of the British Museum*, 29(5), 251–315.
Schlitzer, R. (2007) Ocean Data View. Available from: http://odv.awi.de (accessed 4 July 2007).
Schornikov, E. I. (2005) The question of cosmopolitanism in the deep-sea ostracod fauna: the example of the genus *Pedicythere*. *Hydrobiologia*, 538, 193–215.
Schornikov, E. I. & Keyser, D. (2004) The morphology and classification of Paradoxostomatinae (Ostracoda) from the nearshore zone of Madeira and the Canary Islands. *Revista Española de Micropaleontologia*, 36(1), 57–81.
Triebel, E. (1960) Die taxonomische Stellung und die Gattungen der Unterfamilie Macrocypridinae (Ostracoda). *Senckenbergiana Biologica*, 41, 109–124.
Warne, M. T. (1990). Bythocyprididae (Ostracoda) from the Miocene of the Port Phillip and Western Port Basins, Victoria. *Proceedings of the Royal Society of Victoria*, 102(2), 105–115.
Whatley, R. C. & Cusminsky, C. (2002) Upper Pliocene Ostracoda from the Burdwood Bank, SW Atlantic. *Revista Española de Micropaleontologia*, 34(1), 53–80.
Whatley, R. C., Eynon, M., Moguilevsky, A. (1998a) The depth distribution of Ostracoda from the Greenland Sea. *Journal of Micropalaeontology*, 17(1), 15–32.
Whatley, R. C., Moguilevsky, A., Toy, N., Chadwick, J. & Ramos, M. I. F. (1997a) Ostracoda from the South west Atlantic. Part 2. The littoral fauna from between Tierra del Fuego and the Rio de la Plata. *Revista Española de Micropaleontologia*, 29(2), 5–83.
Whatley, R. C., Moguilevsky, A., Ramos, M. I. F. & Coxill, D. J., (1998b) Recent deep and shallow water Ostracoda from the Antarctic Peninsula and the Scotia Sea. *Revista Española de Micropaleontologia*, 30(3), 111–135.
Whatley, R. C., Staunton, M. & Kaesler, R. L (1997b) The depth distribution of recent marine Ostracoda from the southern Strait of Magellan. *Journal of Micropalaeontology*, 16(2), 121–130.
Whatley, R. C., Staunton, M. & Kaesler, R. L., Moguilevsky, A. (1996) The taxonomy of Recent Ostracoda from the southern part of the Strait of Magellan. *Revista Española de Micropaleontologia*, 28(3), 51–76.
Whatley, R. C., N. Toy, Moguilevsky, A. & Coxill, D. (1995) Ostracoda from the south west Atlantic. Part 1. The Falkland Islands. *Revista Española de Micropaleontologia*, 27(1), 17–38.

TABLE 1. ANDEEP stations with samples containing bairdioids.

Station	Cruise (Ship)	Cruise (Project)	Cruise	Date	Time	Latitude		Longitude	
						begin	end	begin	end
129 - 2	PS61 / ANT XIX-3	ANDEEP I	AI, PS61/ XIX-3	23.02.02	01:01 - 02:39	59° 52,55' S	59° 52,20' S	59° 57,26' W	59° 58,63' W
132 - 2	PS61 / ANT XIX-4	ANDEEP II	AII, PS61/ XIX-4	06.03.02	16:33 - 17:39	65° 18,25' S	65° 17,62' S	53° 22,79' W	53° 22,86' W
133 - 3	PS61 / ANT XIX-4	ANDEEP II	AII, PS61/ XIX-4	07.03.02	11:55 - 12:36	65° 20,40' S	65° 20,09' S	54° 14,11' W	54° 14,36' W
134 - 4	PS61 / ANT XIX-4	ANDEEP II	AII, PS61/ XIX-4	09.03.02	05:57	65° 19,71' S	65° 19,05' S	48° 6,27' W	48° 2,92' W
135 - 4	PS61 / ANT XIX-4	ANDEEP II	AII, PS61/ XIX-4	11.03.02	00:33 - 02:54	65° 0,83' S	64° 59,97' S	43° 3,03' W	43° 0,83' W
136 - 4	PS61 / ANT XIX-4	ANDEEP II	AII, PS61/ XIX-4	12.03.02	23:13 - 01:38	64° 1,46' S	64° 1,51' S	39° 9,86' W	39° 6,88' W
140 - 8	PS61 / ANT XIX-4	ANDEEP II	AII, PS61/ XIX-4	22.03.02	01:31 - 03:10	58° 15,21' S	58° 16,29' S	24° 52,90' W	24° 54,10' W
16 - 7	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	25.01.05	21:16	41° 7,75' S	-	9° 56,06' E	-
16 - 10	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	26.01.05	08:40 - 10:41	41° 7,57' S	41° 7,03' S	9° 55,97' E	9° 54,88' E
16 - 11	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	26.01.05	15:00 - 16:43	41° 7,66' S	41° 7,41' S	9° 56,26' E	9° 54,83' E
80 - 6	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	22.02.05	16:54 - 18:08	70° 39,37' S	70° 40,48' S	14° 43,51' W	14° 43,77' W
80 - 9	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	23.02.05	02:03 - 03:12	70° 38,46' S	70° 39,19' S	14° 42,87' W	14° 43,44' W
88 - 8	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	27.02.05	03:03 - 05:03	68° 3,85' S	68° 3,64' S	20° 31,42' W	20° 27,50' W
94 - 11	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	02.03.05	13:15 - 15:14	66° 37,64' S	66° 38,16' S	27° 8,76' W	27° 4,81' W
102 - 13	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	06-07.03.05	22:22 - 00:25	65° 33,19' S	65° 34,31' S	36° 33,25' W	36° 31,04' W
110 - 8	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	10.03.05	14:41 - 16:29	64° 59.21' S	65° 0.91' S	43° 2.06' W	43° 2.10' W
133 - 2	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	16.03.05	19:05 - 19:44	62° 46.73' S	62° 46.34' S	53° 2.57' W	53° 4.14' W
142 - 5	PS67 / ANTXXII-3	ANDEEP III	AIII, PS67/ XXII-3	18.03.05	10:48 - 12:10	62° 11.37' S	62° 11.37' S	49° 27.63' W	49° 29.58' W
H in 4	-	ROSSMIZE	RO, 19th Ant. Exp.	16.02.04	NI	72°17.1'S	-	170°14.0'W	-

Legend: AI–Stations of the ANDEEP I cruise (PS 61 / XIX-3); AII–Stations of the ANDEEP II cruise (PS 61 / XIX-4); AIII–Stations of the ANDEEP III cruise (PS 67 / XXII-3); GSPE–German South Polar Expedition; Gausst.–Gausstation; MP–micropaleontological slide; NI–No information available; RO, 19th Ant. Exp.–19th Antarctic expedition of RV *Italica* to the Ross Sea; SP–soft parts. For other abbreviations see Material and Methods.

TABLE 1 (continued)

Station	Depth (m)		Gear	CTD temp	CTD sal	sand	silt	clay	steepness
	begin	end		(°C)	(‰)	(%)	(%)	(%)	(m)
129 - 2	3631.0	3637.0	EBS	0.63	34.71	NI	NI	NI	6
132 - 2	2082.0	2084.0	EBS	-0.65	34.65	35	55	10	1
133 - 3	1123.0	1123.0	EBS	-0.71	33.64	70	15	15	0
134 - 4	4059.4	4068.7	EBS	-0.24	34.04	5	30	65	3
135 - 4	4676.0	4678.1	EBS	0.49	34.08	5	30	65	2
136 - 4	4782.5	4745.1	EBS	0.89	34.12	5	40	55	2
140 - 8	2965.0	2962.0	EBS	1.42	33.99	15	60	25	10
16 - 7	4723.0	-	GKG	1.05	34.73	4	54	42	-
16 - 10	4721.0	4686.0	EBS	1.05	34.73	4	54	42	35
16 - 11	4727.0	4694.0	AGT	1.05	34.73	4	54	42	33
80 - 6	3095.0	2970.0	AGT	-0.11	34.66	16	58	26	125
80 - 9	3136.0	3102.0	EBS	-0.11	34.66	16	58	26	34
88 - 8	4927,0	4932,0	EBS	-0.43	34.65	2	64	34	5
94 - 11	4894.0	4895.0	AGT	-0.44	34.65	NI	NI	NI	1
102 - 13	4818.0	4803.0	EBS	-0.51	34.64	NI	NI	NI	15
110 - 8	4696.0	4697.0	EBS	-0.60	34.64	1	47	52	1
133 - 2	1582.0	1581.0	EBS	-0.30	34.64	NI	NI	NI	1
142 - 5	3404.0	3407.0	EBS	-0.77	34.63	3	66	31	3
H in 4	196	-	Rauschert dredge	NI	NI	NI	NI	NI	N

TABLE 2. Specimens analyzed and numbered by the present author. Legend: MP.–micropaleontological slide.

Number	Species	Expedition (Tab. 1)	Station	Preservation	Sex, Instar	Comments
SNB 0083	*Bythocypris malyutinae* sp. nov.	PS61 / ANT XIX-4	135 - 4	2V MP	J	subfossil
SNB 0093	*Bythocypris richarddinglei* sp. nov.	PS67 / ANTXXII-3	16 - 7	SP in glass slide+ 2V MP	A F	
SNB 0095	*Bythocypris richarddinglei* sp. nov.	PS67 / ANTXXII-3	16 - 11	SP in glass slide+ 2V MP	A F	
SNB 0110	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	102 - 13	SP in glass slide+ 2V MP	A F	
SNB 0111	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	110 - 8	SP in glass slide+ 2V MP	(A-1)	
SNB 0137	*Bythocypris polarsterni* sp. nov.	PS61 / ANT XIX-4	134 - 4	SP in glass slide+ 2V MP	A F	
SNB 0191	*Bythocypris weddellensis* sp. nov	PS67 / ANTXXII-3	142 - 5	SP in glass slide+ 2V MP	A M	
SNB 0209	*Bythocypris praerenis* sp. nov.	PS67 / ANTXXII-3	133 - 2	SP in glass slide+ 2V MP	(A-1)	
SNB 0244	*Bythocypris* sp. aff. *B. polarsterni* sp. nov.	PS67 / ANTXXII-3	80 - 9	SP in glass slide+ 2V MP		
SNB 0245	*Bythocypris malyutinae* sp. nov.	PS61 / ANT XIX-4	134 - 4	SP in glass slide+ 2V MP	A F	
SNB 0246	*Bythocypris polarsterni* sp. nov.	PS61 / ANT XIX-4	134 - 4	SP in glass slide+ 2V MP		
SNB 0249	*Bythocypris malyutinae sp. nov*	PS67 / ANTXXII-3	102 - 13	SP in glass slide+ 2V MP	A F	
SNB 0250	*Bythocypris richarddinglei* sp. nov.	PS67 / ANTXXII-3	16 - 10	SP in glass slide+ 2V MP	A F	
SNB 0251	*Bythocypris weddellensis* sp. nov	PS67 / ANTXXII-3	80 - 9	SP in glass slide+ 2V MP	A F	
SNB 0252	*Bythocypris richarddinglei* sp. nov.	PS67 / ANTXXII-3	16 - 10	in alcohol 96%	J	
SNB 0253	*Bythocypris richarddinglei* sp. nov.	PS67 / ANTXXII-3	16 - 11	SP in glass slide+ 2V MP	A F	
SNB 0254	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	102 - 13	SP in glass slide+ RV MP	J	no LV
SNB 0255	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	102 - 13	SP in glass slide+ 2V MP	A M	
SNB 0256	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	102 - 13	SP in glass slide+ 2V MP	A F	
SNB 0257	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	102 - 13	in alcohol 96%	J	
SNB 0258	*Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969	PS67 / ANTXXII-3	16 - 10	in alcohol 96%		
SNB 0259	*Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969	PS67 / ANTXXII-3	16 - 10	in alcohol 96%		
SNB 0260	*Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969	PS67 / ANTXXII-3	16 - 10	SP in glass slide+ 2V MP		fragmented RV and SP
SNB 0261	*Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969	PS67 / ANTXXII-3	16 - 10	in alcohol 96%		
SNB 0262	*Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969	PS67 / ANTXXII-3	16 - 10	SP in glass slide+ 2V MP	A M	
SNB 0263	*Bythocypris malyutinae* sp. nov.	PS61 / ANT XIX-4	134 - 4	SP in glass slide+ 2V MP	A F	
SNB 0264	?*Nesidea keyseri* sp. nov.	PS61 / ANT XIX-4	140 - 8	SP in glass slide+ RV MP	A F	
SNB 0265	*Bythocypris* sp. aff. *B. mozambiquensis* Maddocks, 1969	PS67 / ANTXXII-3	16 - 11	SP in glass slide+ 2V MP	A F	
SNB 0266	*Bythocypris* sp. aff. *B. polarsterni* sp. nov.	PS67 / ANTXXII-3	80 - 6	SP in glass slide+ 2V MP	J	
SNB 0267	*Bythocypris* sp. aff. *B. polarsterni* sp. nov.	PS67 / ANTXXII-3	80 - 6	in alcohol 96%		
SNB 0268	*Bythocypris* sp. aff. *B. polarsterni* sp. nov.	PS67 / ANTXXII-3	80 - 9	SP in glass slide+ 2V MP		
SNB 0269	*Bythocypris* sp. aff. *B. polarsterni* sp. nov.	PS67 / ANTXXII-3	80 - 9	SP in glass slide+ 2V MP		
SNB 0270	*Bythocypris* sp. aff. *B. polarsterni* sp. nov.	PS67 / ANTXXII-3	80 - 9	SP in glass slide+ 2V MP		
SNB 0272	*Bythocypris* sp. aff. *B. polarsterni* sp. nov.	PS67 / ANTXXII-3	94 - 11	SP in glass slide+ 2V MP	J	
SNB 0273	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	110 - 8	SP in glass slide+ RV MP	A F	

.....continued

TABLE 2 (continued)

Number	Species	Expedition (Tab. 1)	Station	Preservation	Sex, Instar	Comments
SNB 0274	*Bythocypris malyutinae* sp. nov.	PS67 / ANTXXII-3	110 - 8	SP in glass slide+ 2V MP	J(A-1)	
SNB 0275	*Bythocypris praerenis* sp. nov.	PS61 / ANT XIX-4	133 - 3	SP in glass slide+ 2V MP	A F	
SNB 0276	*Bythocypris praerenis* sp. nov.	PS61 / ANT XIX-4	133 - 3	in alcohol 96%		
SNB 0277	*Bythocypris praerenis* sp. nov.	PS61 / ANT XIX-4	133 - 3	in alcohol 96%		
SNB 0280	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	133 - 3	SP in glass slide+ 2V MP	A F	
SNB 0281	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	133 - 3	SP in glass slide+ 2V MP	A M	
SNB 0282	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	133 - 3	SP in glass slide+ 2V MP	A F	
SNB 0283	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	133 - 3	SP in glass slide+ 2V MP	A F	
SNB 0295	*Bythopussella* sp. aff. *B. brandtae* sp. nov.	PS61 / ANT XIX-3	129 - 2	SP in glass slide+ 2V MP	A F	
SNB 0304	*Bythocypris malyutinae* sp. nov.	PS61 / ANT XIX-4	134 - 4	SP in glass slide+ 2V MP	J	
SNB 0308	*Bythopussella brandtae* sp. nov.	PS67 / ANTXXII-3	88 - 8	SP in glass slide+ 2V MP	A M	
SNB 0309	*Bythopussella brandtae* sp. nov.	PS67 / ANTXXII-3	88 - 8	SP in glass slide+ 2V MP	J	
SNB 0310	*Bythopussella brandtae* sp. nov.	PS67 / ANTXXII-3	88 - 8	SP in glass slide+ 2V MP	A F	
SNB 0311	*Bythopussella brandtae* sp. nov.	PS67 / ANTXXII-3	88 - 8	SP in glass slide+ 2V MP	A F	
SNB 0312	*Bythopussella brandtae* sp. nov.	PS67 / ANTXXII-3	88 - 8	SP in glass slide+ 2V MP	A F	
SNB 0313	*Bythocypris malyutinae* sp. nov.	PS61 / ANT XIX-4	135 - 4	SP in glass slide+ 2V MP	J	dried SP
SNB 0314	*Bythocypris malyutinae* sp. nov.	PS61 / ANT XIX-4	135 - 4	SP in glass slide+ 2V MP	J	dried SP
SNB 0383	*Bythocypris polarsterni* sp. nov.	PS61 / ANT XIX-4	134 - 4	SP in glass slide+ 2V MP	J	
SNB 0384	*Bythocypris polarsterni* sp. nov.	PS61 / ANT XIX-4	134 - 4	SP in glass slide+ 2V MP	J	
SNB 0385	*Bairdoppilata* spp. aff. *B. (B.) labiata*	PS67 / ANTXXII-3	133 - 2	SP in glass slide+ 2V MP	A F	
SNB 0386	*Bairdoppilata* spp. aff. *B. (B.) labiata*	PS67 / ANTXXII-3	133 - 2	SP in glass slide+ 2V MP	A F	
SNB 0387	*Bythocypris praerenis* sp. nov.	PS67 / ANTXXII-3	133 - 2	SP in glass slide+ 2V MP	A F	
SNB 0388	*Bythocypris praerenis* sp. nov.	PS67 / ANTXXII-3	133 - 2	SP in glass slide+ 2V MP	A F	
SNB 0398	*Bythocypris weddellensis* sp. nov	PS61 / ANT XIX-4	136 - 4	SP in glass slide+ 2V MP	A M	
SNB 0652	?*Nesidea keyseri* sp. nov.	PS61 / ANT XIX-4	140 - 8	SP in glass slide+ 2V MP	J	
SNB 0657	*Bythocypris malyutinae* sp. nov.	PS61 / ANT XIX-4	135 - 4	SP in glass slide+ 2V MP	J	
SNB 0658	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	132 - 2	SP in glass slide+ 2V MP	A F	
SNB 0659	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	132 - 2	SP in glass slide+ 2V MP	A F	
SNB 0660	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	132 - 2	SP in glass slide+ 2V MP	A F	
SNB 0661	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	132 - 2	SP in glass slide+ 2V MP	A M	Broken LV
SNB 0662	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	132 - 2	SP in glass slide+ 2V MP	A M	
SNB 0663	*Bythopussella brandtae* sp. nov.	PS61 / ANT XIX-4	132 - 2	SP in glass slide+ 2V MP	A M	RV + LV broken
SNB 0682	*?Bairdoppilata labiata* (Müller, 1908)	GSPE	Gausst. 177a-12.02	SP in glass slide+ 2V MP	A F	
SNB 0683	*?Bairdoppilata labiata* (Müller, 1908)	GSPE	Gausst. 177a-12.02	SP in glass slide+ 2V MP	A M	
SNB 0684	*?Bairdoppilata labiata* (Müller, 1908)	GSPE	Gausst. 177a-12.02	2V MP	A F	subfossil
SNB 0685	*?Bairdoppilata labiata* (Müller, 1908)	GSPE	Gausst. 177a-12.02		(A-1)	
SNB 0686	*?Bairdoppilata labiata* (Müller, 1908)	GSPE	Gausst. 177a-10.02		(A-1)	

TABLE 3. Records on *Bairdoppilata simplex* (Brady, 1880), *?Bairdoppilata labiata* (Müller, 1908), and *?Bairdoppilata* spp. aff. ?B. labiata (Müller, 1908).

Author year	Recorded as	Locality	Ocean	Age	Depth	Illustrations	Fig. 3
Brady 1880	*Bairdia simplex* Brady, 1880	off Heard Island, Subantarctic Region	Southern Ocean	Recent	137m	1 LV ev, 1 RLV dv + v v + fv	1
Brady 1890	*Bairdia simplex* Brady, 1880	Vuna Point, taviuni, Fiji	SW Pacific	Recent	eulittoral	-	2
Benson & Maddocks 1964	*Bairdia villosa?* Brady, 1880[1]	Knysna Estuary, South Africa	SE Atlantic	Recent	littoral	1 LV ev, RV ev+iv	3
Briggs 1978	*Bairdioppilata (Bairdioppilata) simplex* (Brady, 1880)	Ross Sea	Southern Ocean	?Pleistocene, ?Recent	NI	-	4
Chapman 1902	*Bairdia simplex* Brady, 1880	Funafuti	SW Pacific	Recent	eulittoral	-	5
Dell 1972	*Bairdia labiata* Müller, 1908	Antarctic - compilation of existing data	-	-	-	-	-
Dingle 1993	*Bairdioppilata simplex* (Brady, 1880)	off Southwestern Africa (26°S to 34°S)	SE Atlantic	Quaternary	15 to 545m	1 LV ev, RV ev+iv, RV MuS	6
Dingle 1995	*Bairdioppilata simplex* (Brady, 1880)	off Southwestern Africa	SE Atlantic	Quaternary	continental shelf	-	7
Dingle 2000	*Bairdioppilata (Bairdioppilata) simplex* (Brady, 1880)	Victoria Land Basin, Antarctica	Southern Ocean	Quaternary	continental shelf	1 LV ev	8
Dingle *et al* 1996	*Bairdioppilata (Bairdioppilata) simplex* (Brady, 1880)	off Southern Namibia	SE Atlantic	Pleistocene	continental margin	-	9
Dingle & Giraudeau 1993	*Bairdioppilata (Bairdioppilata) simplex* (Brady, 1880)	off Southwestern Africa	SE Atlantic	Quaternary	continental margin	-	10
Hartmann 1974	*Bairdioppilata* sp. 44[2]	Lüderitz Bay, Namibia	SE Atlantic	Recent	littoral	1 LV ev, 1 RV ev	11
Hartmann 1989	*Bairdioppilata simplex* (Brady, 1880)	off South Georgia, Scotia Sea	Southern Ocean	Recent	137m	-	12
Hartmann 1993	*Bairdioppilata simplex* (Brady, 1880)	off Northeastern Antarctic Peninsula	Southern Ocean	Recent	97m	-	13
Hartmann 1997	*Bairdioppilata (Bairdioppilata) simplex* (Brady, 1880)	Compilation of preexisting data		-	-	Compilation	-
Kaesler et al 1979	*Bairdioppilata simplex* (Brady, 1880)	Strait of Magellan	SW Atlantic	Recent	littoral	-	14
Maddocks 1969	*Bairdioppilata (Bairdioppilata) simplex* (Brady, 1880)	South Indian-Antarctic Basin, 915 to 1153m; off Northern Antarctic Peninsula, 311 to 426m; False Bay, South Africa, 6m	SW Atlantic, Southern Ocean	Recent	6 to 1153m	1 RV iv, 1 LV iv, SP	15-17
Müller 1908	*Nesidea labiata* (Müller, 1908)[3]	Gausstation, off Antarctica	Southern Ocean	Recent	385m	1 LV ev, 1 RV ev, 1 RLV dv, SP	18
Neale 1967	*Bairdia labiata* (Müller, 1908)[4]	Halley Bay, Antarctic peninsula	Southern Ocean	Recent	206m	1 LV iv + dv	19
Puri & Hulings 1976	*Bairdia simplex* Brady, 1880	designation of Lecto- and topotypes - off Heard Island	Southern Ocean	Recent	137m	1 LV ev+iv, 1 RV ev+iv	20

.....continued

TABLE 3 (continued)

Author year	Recorded as	Locality	Ocean	Age	Depth	Illustrations	Fig. 3
Whatley, Toy, Moguilevsky & Coxill 1995	*Bairdoppilata sp. cf. B. simplex* (Brady, 1880)	Malvinas Island	SW Atlantic	Recent	mid-eulittoral	1 LV ev, 1 RV iv+ev, 1 MuS LV, 1 MuS RV, 1 RLV dv	21
Whatley, Stauton, Kaesler & Moguilevsky 1996	*Bairdoppilata sp. cf. B. simplex* (Brady, 1880)	Straight of Magellan	SW Atlantic	Recent	17.7 to 456.3m	1 RV ev	22
Whatley, Staunton & Kaesler 1997	*Bairdoppilata sp. cf. B. simplex* (Brady, 1880)	Straight of Magellan	SW Atlantic	Recent	littoral, continental shelf	-	23
Whatley, Moguilevsky, Toy, Chadwick & Ramos 1997	*Bairdoppilata sp. cf. B. simplex* (Brady, 1880)	littoral of Argentina (40 to 47°S)	SW Atlantic	Recent	eullittoral, immediate sublittoral	1 RV ev, 1 MuS RV, 1 Mus LV	24
Whatley Moguilevsky Ramos & Coxill 1998	*Bairdia simplex* Brady, 1880	Halley Bay, Antarctic peninsula	Southern Ocean	Recent	206m	1 LV ev	25
herein - ZMH K-41359	*?Bairdoppilata* sp. 2 aff. *?B. labiata* (Müller, 1908)	Western Weddell Sea	Southern Ocean	Recent	1581 to 1582m	several valve and soft part illustrations	26
herein - ZMH K-41363	*?Bairdoppilata* sp?p. 1 aff. *?B. labiata* (Müller, 1908)	Ross Sea	Southern Ocean	Recent	196m	1 RV ev + iv	27

[1] These specimens were assigned to *B. simplex* by Dingle (2003).
[2] These specimens were assigned to *B. simplex* by Dingle (2003).
[3] These specimens were assigned to *B. simplex* by Maddocks (1969)
[4] These specimens were assigned to *B. simplex* by Maddocks (1969)

TABLE 4. Previous records on *Bythocypris reniformis* (Brady, 1880).

Author year	As	Locality	Ocean	Age	Depth
Brady 1880	*Bythocypris reniformis* Brady, 1880	# 24 - Culebra Islands, 713m. # 120 and # 122 - off North Brazil, 340 and 1234m. Off Prince Edward Island, 91 to 274m. Off Moncoeur Island, Bass Strait, 70 to 73m	NW Atlantic, SW Atlantic, Southern Ocean, SW Pacific - Southern Ocean	Recent	70 to 1234m
Briggs 1978	*Bythocypris reniformis* Brady, 1881	Ross Island, Antarctica	Southern Ocean	Pleistocene	-
Chapman 1941	*Bythocypris reniformis* Brady, 1880	Southeastern Australia	SW Pacific	Recent	860 to 924m
Dingle 2003	*Bythocypris* sp. cf. *B. reniformis* Brady, 1880	Marion and Prince Edward Islands Archipelago	Southern Ocean	Recent	139 to 474m
Maddocks 1969	*Bythocypris reniformis* Brady, 1880	Off Southeastern Brazil, 1227m; Mozambique Channel, 475 to 3530m.	SW Atlantic, SW Indic - Southern Ocean	Recent	475 to 3530m
Puri & Hulings 1976	*Bythocypris reniformis* Brady, 1880	# 24 - Culebra Islands, 713m (designation of lecto- and topotypes)	NW Atlantic, Southern Ocean	Recent	91 to 713m