Challenging deep-sea cosmopolitanism: taxonomic re-evaluation and biogeography of ‘Cythere dasyderma’ Brady, 1880 (Ostracoda)

SIMONE N. BRANDÃO*1, 2 & MORIAKI YASUHARA3

1Senckenberg am Meer, Deutsches Zentrum für Marine Biodiversitätsforschung (DEZMB), Säidstr. 44, Wilhelmshaven, 26382, Germany
2Biozentrum Grindel und Zoologisches Museum, Universität Hamburg, Martin-Luther-King-Platz 3, Hamburg, 20146, Germany
3School of Biological Sciences, Swire Institute of Marine Science, and Department of Earth Sciences, University of Hong Kong, Hong Kong SAR, China
*Corresponding author (e-mail: snbrandao@gmx.net)

ABSTRACT – Cythere dasyderma Brady, 1880 was described from samples collected from all the world’s oceans during the HMS Challenger expedition in the 1870s. Subsequently, Cythere dasyderma (or Echinocythereis dasyderma, or Henryhowella dasyderma) has been recorded from the Late Eocene to Recent, from Atlantic, Arctic, Indian, Pacific and Southern oceans, and from intertidal to deep abyssal environments. However, even cursory inspection of illustrations from over 50 publications shows that several species have been included in ‘Cythere dasyderma’. Here, all syntypes of Cythere dasyderma Brady, 1880 archived in the Natural History Museum, London have been re-studied. This species is re-described, re-diagnosed and illustrated with scanning electron microscope images. Cythere dasyderma is assigned to Ayressoleberis gen. nov., which is described here. The geographical distribution of Ayressoleberis dasyderma (Brady, 1880) comb. nov. is no longer cosmopolitan, and includes only the type locality in the abyssal southeastern Pacific. Most of the specimens previously identified as Cythere dasyderma, or its synonyms, belong to other trachyleberidid genera (e.g. Henryhowella, Legitimocythere, Pennyella) and not to Ayressoleberis dasyderma comb. nov. A new species of Ayressoleberis, very similar to Ayressoleberis dasyderma comb. nov., is described and illustrated from specimens previously included amongst the syntypes of ‘Cythere acanthodera Brady, 1880’. These latter specimens were collected from the continental slope of the southwestern Indian Ocean. This new species is left in open nomenclature herein because only two left valves are currently available. J. Micropalaeontol. 32(2): 109–122, July 2013.

KEYWORDS: cosmopolitanism, geographical distribution, bathymetric distribution, taxonomy

SUPPLEMENTARY MATERIAL: Previous records of Cythere dasyderma sensu lato, and, material included and excluded from the type series of Ayressoleberis dasyderma with corrected identifications are available at http://www.geolsoc.org.uk/SUP18572.

INTRODUCTION

Ostracoda from the HMS Challenger expedition from 1873 to 1876

The HMS Challenger expedition collected numerous biological samples from hundreds of stations covering the world’s oceans, resulting in the designation of >4000 type specimens. For the class Ostracoda alone, 143 new species and three new genera were first described from the Challenger samples (Brady, 1880). Additionally, Brady (1880) formulated the basis of deep-sea ostracod taxonomy; however, he did not designate holotypes for the new taxa. Neither Brady nor any subsequent author provided details (e.g. number, age, sex and size of specimens per sample, availability of soft parts) of the material he studied. Moreover, Brady very often figured, under single specific names, specimens that according to modern ostracod taxonomic practice represent multiple species and even belong not only to different species but also to different genera. The Challenger specimens had been collected from a broad geographical range and, consequently, the morphological and biogeographical concept of many of these species has remained very broad and the identities of most of them have, until today, remained unclear. These broad morphological and biogeographical concepts combined with the absence of designated holotypes leave the type localities of the Challenger species undefined. Several deep-sea species described from the Challenger material were considered to be cosmopolitan not only by Brady (1880) but also by subsequent authors (e.g. Whatley & Ayress, 1988; Hartmann, 1997).

Bate (1963; 1964) published an inventory of the Challenger species archived both in the Natural History Museum (London) and in the Hancock Museum (Newcastle upon Tyne). Subsequently, some lectotypes were designated for six of Brady’s (1880) species, i.e. Cythere scabrocuneata, Cythere squalidentata, Cythere arata, Cythere dictyon, Cythere rastromarginata and Cythere radula (Harding & Sylvester-Bradley, 1953; Benson, 1971; 1972).

In a more extensive study Puri & Hulings (1976) designated lectotypes and provided brief descriptions, line drawings and light microscopy photographs for 131 species first described by Brady (1880) from the Challenger material. Although this paper was an important step towards the clarification of the status of the Challenger species, the illustrations and light microscope photographs are insufficient for the recognition of key morphological characters. Additionally, the details of the specimens studied were provided almost exclusively for the lectotypes, leaving important questions on the morphology and biogeography of these species unresolved. Maddocks (1990) revised three macrocyprid species described from the Challenger material: Macrocypris similis (Brady, 1880), Macrocypris tenicauda (Brady, 1880) and Macrocypris canariensis (Brady, 1880). She concluded that all three species had restricted geographical distributions, and not wide cosmopolitan ranges as previously accepted.
Mazzini (2005) provided the first scanning electron microscopy (SEM) images of lectotypes and parallected species of Challenger species: Dutoitella suhmi (Brady, 1880), Henryhowella dasyderma (Brady, 1880), Legitimocythere acanthoderma (Brady, 1880), Pseudobosquetina mucronalata (Brady, 1880) and Pennella dorsoserrata (Brady, 1880). Her work substantially reduced the taxonomic uncertainties surrounding these key deepsea ostracod species. Herein and in future publications, we seek to complement Mazzini’s work by providing taxonomic reviews (synonyms, new diagnoses, new descriptions, further illustrations) for these and other Challenger species. Jellinek et al. (2006), while revising Pseudobosquetina mucronalata (Brady, 1880) (i.e. Brady’s Cythereopteron mucronatum), challenged again the cosmopolitan model for deepsea ostracods.

The present paper results from efforts to further revise some of the key ostracod (mostly deepsea) species described by Brady (1880). The Challenger specimens, which are housed in the Natural History Museum in London, were studied and catalogued. Over 1500 SEM and 600 light microscopy images were taken. Three previous studies have shown some of the results of this project: they have dealt with Bairdopilata simplex (Brady, 1880) (Brandão, 2008a), Cythereella serratula (Brady, 1880) (Brandão, 2008b), Poseidonamicus viminea (Brady, 1880) (Brandão & Päplow, 2011). The present paper deals with ‘Cythere dasyderma’ Brady, 1880, one of the deep-sea species previously recorded as having a cosmopolitan distribution.

Key studies on ‘Cythere dasyderma’ Brady, 1880

Here we summarize only the most important publications on Cythere dasyderma; a complete list of the >50 studies can be found in the synonymy below and in the Supplementary Material.

Brady (1880) described Cythere dasyderma from 20 samples collected from the Pacific, Atlantic, Indian and Southern oceans, from latitudes ranging from 38°N to 52°S, and depths of 274 to 5010 m. However, it is obvious that his Cythere dasyderma not only includes different species but also distinct genera, e.g. Henryhowella, Legitimocythere, Pennella (Brady, 1880, pls 17.4.a–17.4.f; 18.4.a–18.4.f). In 1953, Puri assigned Cythere dasyderma to his then new genus Echinocythereis. Bate (1963; 1964) reported that material of C. dasyderma is housed both in the Natural History Museum (London) and in the Hancock Museum (Newcastle upon Tyne). Puri & Hulins (1976: 273, pl. 11.10–11.11) designated as the lectotype of ‘Cythere dasyderma’ one female left valve from the southern Pacific (station 296, 38°6′S, 88°2′W, 1825 m), housed in the NHM, and provided two stereoscopic microscope images of it. They also recorded a right valve as ‘topotypic material’, which they had picked from the sediment sample from station 185 (Torres’ Straits, 11°35′S, 144°3′E, 283 m), not from the sample from the type locality (stations 296). As discussed by Mazzini (2005), Rosenfeld & Bein (1978) were the first to assign Cythere dasyderma to the genus Henryhowella and, subsequently, most authors have followed this generic assignment (see Supplementary Material). Most of them have almost automatically considered plicate forms to be Henryhowella aspressima (Reuss, 1850) and the non-plate forms to be Henryhowella dasyderma (e.g. Dingle et al., 1990; Whateley et al., 1998b; Majoran & Dingle, 2001a, b, 2002; Mazzini, 2005). Mazzini (2005, fig. 26-P–S) discussed the most important publications on ‘Cythere dasyderma’ Brady [sic] 1869 and provided SEM images of the internal, external and dorsal views and a detailed view of the frontal and adductor muscle scars of the lectotype. However, because of the relatively small size of the SEM image (Mazzini, 2005, fig. 26-P), the secondary ornamentation cannot be discerned (cf. our Pl. 1, figs a, c, e, f). Another problem is that Mazzini (2005, figs N–O) also figured a specimen that belongs to Henryhowella but nevertheless considered it to be a parallected of ‘Cythere dasyderma’. This misidentification has added more confusion to the already confused morphological ‘concept’ of ‘Cythere dasyderma’.

Cythere dasyderma (or Echinocythereis dasyderma, Henryhowella dasyderma …) has been recorded (in at least 50 publications) from the Late Eocene to Recent, from Atlantic, Arctic, Indian, Pacific and Southern oceans (northern limit 85°19.4′N; southern limit 70°36′80″S), and from intertidal to deep abyssal environments (from 1 to 5480 m) (e.g. Benson, 1964a; Jones et al., 1999; Majoran & Dingle, 2002) (see details in Supplementary Material). However, these records have resulted from the confusion of at least seven different species belonging to several genera (i.e. Ayressoleberis gen. nov., Echinocythereis, Henryhowella, Legitimocythere, Pennella, cf. Wichmannella). The overall spatial and temporal ranges of these records have encompassed very distinct ecological conditions, the extremes being the Challenger station #192 on the continental shelf in the tropical Indo-Pacific (Brady, 1880) and the subpolar shallow environment off the Marion Island in the Southern Ocean (Dingle, 2003).

The aim of the present publication is to establish a stable morphological concept for ‘Cythere dasyderma’ Brady, 1880. Hence, one of us (SNB) re-examined Brady’s (1880) material housed in the Natural History Museum in London, and we assign ‘Cythere dasyderma’ Brady, 1880 to Ayressoleberis gen. nov., which is described below. An emended diagnosis of Ayressoleberis dasyderma comb. nov. is provided, together with SEM images of the different sexes and instars. We also provide SEM images for other species included by Brady (1880) in his concept of ‘Cythere dasyderma’ Brady, 1880. Four of Norman’s (Brady & Norman, 1889) ‘Cythere dasyderma’ slides were also studied and re-identified. Finally, we compared previously published illustrations of specimens reported as ‘Cythere dasyderma’ (or Henryhowella dasyderma, Echinocythereis dasyderma, Legitimocythere dasyderma, Wichmannella? dasyderma, etc.) with the type material of Ayressoleberis dasyderma and hence revise the geographical and stratigraphical distribution for this species.

One of us (SNB) tried without success to study the Brady material housed in the Hancock Museum (Newcastle upon Tyne), but this collection is currently unavailable because it is being moved and reorganized. However, since the lectotype and parallected species of ‘Cythere dasyderma’ are studied herein, the information on further specimens might add detail to the present study, but would not change its conclusions.

MATERIAL AND METHODS

All specimens studied are housed in the collection of the Zoology Department of the Natural History Museum, London (NHM) (see Supplementary Material). When there was more than one slide with the same collection number (e.g. NHM 1961.12.4.39), one of us (SNB) has added a distinct capital letter after the number (e.g. NHM 1961.12.4.39.A, NHM 1961.12.4.39.B, NHM 1961.12.4.39.C). Several of the slides cited below were found to contain the valves of more than one species. In such cases, SNB
Biogeography and taxonomy of ‘Cythere dasyderma’

has left the valves of one of the species on the original slide and transferred the valves of other species to distinct slides (one species per slide). The collection number for the old slide has been retained but supplemented with a letter (mostly A). The new slides with the different species have been assigned the same collection number but supplemented with a distinct letter (i.e. B, C, D ...). For example, there were three slides with the collection number NHM 1961.12.4.39; each of these slides was assigned a distinct capital letter after the collection number: (1) Puri’s slide with the lectotype of ‘Cythere dasyderma’ (NHM 1961.12.4.39.A); (2) another Puri slide labelled paralectotypes (NHM 1961.12.4.39.B); and (3) Brady’s original slide (NHM 1961.12.4.39.C). On the slide NHM 1961.12.4.39.B there were three valves of three distinct species: (a) the coated left valve (LV) of A. dasyderma comb. nov. retained in the slide NHM 1961.12.4.39.B; (b) while the coated right valve (RV) of Legitimocythere sp. was transferred to a new slide with the numbers NHM 1961.12.4.39.F and SNB-1 056a (this last number gives SNB’s initials and refers to a list of all new slides that SNB added to the Challenger ostracod collection in the NHM); and finally (c) the coated LV of Henryhowella sp. was transferred to a third slide numbered 1961.12.4.39.G (SNB-1 058). Some slides previously in the NHM collection also received a SNB number. Uncoated valves were digitally imaged with Zeiss environmental SEM LEO 1455VP in the Natural History Museum, London.

Abbreviations

(A-1), last juvenile instar; LV, left valve; RV, right valve; L, length; H, height; MP, micropalaeontological slide; ICZN, International Code of Zoological Nomenclature; NHM, Zoology collection of the Natural History Museum, London; SEM, scanning electron microscope.

General results on ‘Cythere dasyderma Brady, 1880’

Before SNB began her series of five visits (from November 2008 to February 2011) to the NHM, London, the Museum’s collection included 17 card micropalaeontological slides labelled ‘Cythere dasyderma’ (see Supplementary Material):

(1) nine are Brady’s original, light brown card slides with a black cavity.
(2) two are white card slides with a black cavity labelled by Puri prior to the publication of Puri & Hulings (1976).
(3) one is a white plastic slide with a black cavity, which was used for valves picked in the 1970s from dried sediment from the Challenger samples deposited in the NHM. This material was included in Puri & Hulings’ (1976) paper.
(4) one white card slide with a rectangular cavity that was used and labelled by Mazzini (I. Mazzini, personal communication).
(5) four are Norman’s original, brown card slides with black holes.

All the valves included in ‘Cythere dasyderma’ by Brady (1880) are now on 28 micropalaeontological slides (details in Supplementary Material): the ones described above plus 11 new slides, which are white with a black, rounded cavity that have been used to separate specimens from distinct species.

Finally, one slide labelled by Brady as Cythere acanthoderma contained one new species, i.e. Ayressoleberis sp. nov., which is described but not named herein.

GENERIC ASSIGNMENT OF ‘CYTHERE DASYDERMA BRADY, 1880’

The assignment of ‘Cythere dasyderma’ to the genus Henryhowella or Fallachowella Jellinek & Swanson, 2003 for ‘Cythere’ dasyderma, because, in her opinion, only poorly preserved specimens were available in its syntype series. Despite Jellinek & Swanson’s (2003, p. 40) comparisons of Henryhowella or Fallachowella, we think that Henryhowella still requires revision, so that the two genera can be unambiguously differentiated. However, as mentioned above, we are convinced that Ayressoleberis dasyderma does not belong to either of these two genera because: (a) it has a more sinusous lateral outline; (b) it has secondary reticulation; (c) it has multifurcate spines; and (d) it has larger, more robust and more widely spaced spines.

TAXONOMY

Class Ostracoda Latreille, 1802
Subclass Podocopa Sars, 1866
Order Podocopida Sars, 1866
Suborder Cytherocopina Baird, 1850
Superfamily Cytheroidea Baird, 1850
Family Trachyleberididae Sylvester-Bradley, 1948

Remarks. The higher classification is based on Horne et al. (2002). In order to clarify the biogeography of Ayressoleberis dasyderma, we include in the taxonomic sections below all specimens previously contained in the syntype series of ‘Cythere dasyderma’, i.e. the following taxa Ayressoleberis dasyderma (Brady, 1880) comb. nov., Henryhowella spp., Legitimocythere spp., Pennyella sp., Trachyleberididae indet. and Bythocytheridae indet. Also included below is Ayressoleberis sp. nov., which is very similar to Ayressoleberis dasyderma but was previously included in the syntype series of ‘Cythere acanthoderma’. Finally, the specimens identified by Brady & Norman (1889) as Cythere dasyderma, but which actually belong to Henryhowella, are also listed below.

Genus Ayressoleberis gen. nov.

Type species. Trachyleberis bathymarina Ayress, 1993.

Derivation of name. In honour of Dr Michael A. Ayress, Ichron Limited, UK, for his work on Recent and fossil ostracods.

Diagnosis. A trachyleberidid with elongate lateral outline. Lateral surface of carapace spinous; spines nodose and often multifurcate; ventrolateral ridge and subcentral tubercle absent. Four adductor scars in a vertical row, frontal scar v-shaped. Hinge holamphidont. In internal view, marginal frill absent. Sexual dimorphism conspicuous, males more elongate, lower in relation to length than females.

Comparisons with similar genera. Henryhowella Puri, 1957 is similar to the new genus, but the right valve of the former genus has a conspicuous and broad marginal frill in internal valve margin. Ayressoleberis gen. nov. can be distinguished from Cythereis Jones, 1849 because the former lacks a ventrolateral ridge and a subcentral tubercle. Taracythere Ayress, 1995 is the most similar to Ayressoleberis gen. nov., but the former tends to have a more upturned posterior margin and less spinous lateral carapace surface. Furthermore, Taracythere has a divided frontal muscle scar, which is composed of an elongate scar and a small rounded scar (M. Yasuhara, unpublished data). In contrast, Ayressoleberis gen. nov. has a v-shaped frontal scar.

Stratigraphic and geographical occurrence. Eocene to Recent. Southern Pacific and Southern Ocean, continental shelf to abyssal depths (Fig. 1).

Evolution. Since the highest diversity (i.e. three species) and the oldest record of Ayressoleberis gen. nov. are from the southwestern Pacific Ocean, we suggest that the new genus originated in this region at some time during or before the Late Eocene (Ayress, 1995). Additionally, the morphological resemblance of the new genus to Taracythere suggests that both genera are phylogenetically close to each other. However, a more precise model of the evolution of trachyleberidid genera will be possible only after several of these genera have been revised. Finally, molecular data would be useful to test a morphologically based, phylogenetic theory.

Taxonomic revision of Ayressoleberis dasyderma (Brady, 1880) comb. nov.

Ayressoleberis dasyderma (Brady, 1880) comb. nov.

1880 in part Cythere dasyderma n. sp. Brady: 105–106; non pl. 17, figs 4.a–4.f, pl. 18, figs 4.e–4.f.

1884 C. dasyderma Brady; Seguenza: 309

Explanation of Plate 1. Valves of Ayressoleberis dasyderma (Brady, 1880), Challenger station 296, off Chile, southeastern Pacific, 38°6’S, 88°2’W, 3338 m, 09.11.1875. figs a, c, c’, c”, e, e’, e”, f. Paralectotypes: (a) (NHM 1961.12.4.39.D), male RV, external view; (c, c’, c”) (NHM 1961.12.4.42.A), male RV – (c) external view, (c’) internal view, (c") dorsal view; (e, e’, e") (NHM 1961.12.4.41.A), (A-1) RV – (e) external view, (e’) internal view, (e") dorsal view; (f) (NHM 1961.12.4.42.A), (A-1) LV, external view. fig. b. Lectotype (NHM 1961.12.4.39.A), LV, external view. fig. d. Not type, material re-sorted from dry sediment of Challenger station 296 (NHM 2012.1473, SNB-1 054), female RV, external view. Photos: SNB, © Natural History Museum, London.
Biogeography and taxonomy of ‘Cythere dasyderma’
?1885 Cythere dasyderma Brady; Carus: 300.
?1887 Cythere dasyderma Brady; Brady: 165.

non 1889 Cythere dasyderma, Brady; Brady and Norman: 153–154 (surely not the species housed in the Norman collection of the NHM: *Porcupine* expedition, 1869, station 19 and *Valorous* expedition, 1875, station 12).

?1889 Cythere dasyderma, Brady; Brady and Norman: 154–155, ?pl. 15, figs 28–29. (the material from the ‘Côtes de Landes, Bay of Biscay, Marquis de Folin’ (G.S.B.) was not found in the NHM (Zoology) Ostracoda collection).

non 1900 Cythere dasyderma circumdentata (Brady, 1880); Namias: 102, non pl. 15.8.


1912 in part Cythereis dasyderma (Brady, 1880); Müller: 362.

non 1914 Cythere dasyderma G. S. Brady; Chapman: 34, non pl. 6.10.


1954 Echinocythereis dasyderma (Brady, 1880); Brouwers: 32–33.

1963 Cythere dasyderma Brady; Bate: 80, tab. 1.

non 1964 Echinocythereis dasyderma (Brady); Benson (1964a): 34–35, non text-fig. 25; Benson (1964b): 416.

1976 in part Cythere dasyderma Brady; Puri & Hulings: 273, pl. 11, figs 10–11.

non 1977 Echinocythereis dasyderma (Brady); Joy & Clark: 142, non pl. 2, figs 14–17, non text-fig. 5.

non 1978 Henryhowella dasyderma; Rosenfeld & Bein: 18, non pl. 1, fig. 24.

non 1982 Echinocythereis cf. *E. dasyderma* (Brady, 1880); Brouwers: 32–33.


non 1987 Henryhowella dasyderma (Brady); Whatley & Coles: 36.


non 1988 Wichmannella? dasyderma (Brady); Ruan and Hao: 365, pl. 66, figs 6–11.

?1988 Wichmannella dasyderma (Brady); Ruan & Hao, tab. 2.

non 1988 ‘Echinocythereis’ *dasyderma* (Brady); Wang et al.: 252, pl. 46, fig. 6.

1988 in part Henryhowella dasyderma (Brady, 1880); Whatley & Ayress: in part text-fig. 2, tab. 3.

non 1989 Wichmannella dasyderma (Brady); Hao: 128, pl. 24, figs 6–8.

non 1989 Echinocythereis spec. Ant. 6817; Hartmann: 214, non pl. 1, figs 5–8.

1990 in part Henryhowella dasyderma (Brady, 1880); Dingle & Lord: in part tab. 2–3.

1990 in part Henryhowella dasyderma (Brady, [sic] 1886); Coles, Ayress & Whatley: in part tab. 2.

1991 in part Henryhowella dasyderma (Brady, 1880); Whatley & Coles: in part fig. 4.

non 1996 Henryhowella dasyderma (Brady, 1880); Whatley, Staunton, Kaesler & Moguilevsky: 67, non pl. 3, figs 8–9.

non 1997 Echinocythereis dasyderma (Brady, 1880); Hartmann: 91–92, non fig. 31.

1997 in part Henryhowella dasyderma; Ayress, Neil, Passlow, & Swanson: 292.


non 1997 Henryhowella dasyderma (Brady, 1880); Whatley, Staunton & Kaesler: non fig. 5–6, non tab. 2.


non 1998a Henryhowella dasyderma (Brady, 1880); Whatley, Eynon & Moguilevsky: non pl. 3, figs 20–21.

non 1998b Henryhowella dasyderma (Brady, 1880); Whatley, Moguilevsky, Ramos & Coxill, 1998b: 129, non fig. 3, non pl. 4, figs 24–27.


?1999 Henryhowella dasyderma (Brady, 1880); Whatley & Roberts: 13.

non 2000 Henryhowella sp. cf. *H. dasyderma* (Brady); Didié & Bauch: non tab. 2, non pl. 1, figs 1–2.

non 2001 Henryhowella sp. cf. *H. dasyderma* (Brady); Didié: 107, non tab. 2, non pl. 1, figs 1–2.

non 2001b Henryhowella dasyderma (Brady, 1880); Majoran & Dingle: 214, pl. 1, figs 8–10.

non 2002 Henryhowella dasyderma (Brady, 1880); Dingle: non tab. 1.

non 2002 Henryhowella dasyderma (Brady, 1880); Majoran & Dingle: 144, non fig. 4.3, non tab. 2.

non 2003 Henryhowella dasyderma (Brady) 1880 sensu Whatley et al., 1998b; Dingle: 148, non pl. 5, fig. 3.

non 2004 Henryhowella cf. dasyderma (Brady); Ayress, DeDecker & Coles: 18, non fig. 4, non pl. 1, fig. 13, non tab. 3.

non 2005 Henryhowella dasyderma (Brady); Zhao: non pl. 3, fig. 19., non tab. 1.


non 2007 Legitimocythere? dasyderma (Brady, 1880); Hou and Gou: 458, pl. 179, fig. 16, pl. 180, fig. 9, pl. 181, figs 6–8.

non 2009 Henryhowella dasyderma (Brady); Alvarez Zarikian: 6, pl. 9, figs 6–8.

non 2009 Henryhowella dasyderma (Brady); Alvarez Zarikian et al.: 80.

**Diagnosis.** Valves ovate in lateral outline; anterior and posterior margins evenly rounded; ventral margin slightly convex; RV dorsal margin conspicuously sinuous, LV dorsal margin slightly sinuous. Lateral surface covered by fairly homogeneously distributed, multifurcated spines. Spines form irregular, sub-parallel, slight ridges on ventral area. Spines longest and mostly conical on dorsal margin. Spines laterally flattened on dorsal part of anterior margin. Conspicuous, honeycomb-like secondary reticulation. Inner marginal area fairly broad. Hinge holamphidont; RV with a large anterior tooth, followed by a large lobe, a thin and long groove, one smaller lobe, and one smaller tooth. Four adductor muscle scars in a row; three ventral adductor muscle scars on an inclined row, dorsal adductor scar forming an angle of approximately 45° with the next dorsal scar; frontal scar v-shaped.

**Material.** 7 RV and 5 LV on 8 micropalaeontological slides (see Supplementary Material).

I: **Type material.** Housed in the NHM, London: 6 RV and 5 LV on 8 micropalaeontological slides.

**Lectotype.** (1) 1 coated LV on one micropalaeontological slide labelled ‘173, *Cythere dasyderma* Brady, H. S. Puri 7/67, Lectoholotype, Challenger, No. 296, D. 1825, wash of trawl,
Biogeography and taxonomy of ‘Cythere dasyderma’

1961.12.4.39.A’. This valve was SEM imaged by J.E. Whittaker and published by Mazzini (2005, fig. 28.P–S). This specimen was photographed again and is herein illustrated in Plate 1, fig. b.

**Paratlectotypes.** (2) 1 broken RV, which was on a micropalaeontological slide originally used by Brady (now labelled 80.38.70.A), now on a new white card micropalaeontological slide labelled ‘dasyderma sensu stricto, Challenger #296, depth 1825 fathoms, wash of trawl, (SNB-1 049), 80.38.70.C’. Another 12 valves of Henryhewlla sp. were left on the original micropalaeontological slide NHM 80.38.70.A.

(3) 1 coated LV on one white card micropalaeontological slide used by Puri and labelled ‘173, Cythere dasyderma Brady, H. S. Puri 7/67, [sic] lectotype, 56, Challenger, No. 296, D. 1825, wash of trawl, (SNB-1 050), 1961.12.4.39.C’, (snb-1 057). This valve was S. Whittaker photographed again and is herein illustrated in Plate 1, fig. b. The following valves were transferred from this slide to new slides: (a) 1 coated LV of Henryhowella sp. now on one micropalaeontological slide NHM 1961.12.4.39.F; and (b) 1 coated RV of Legitimocythere now on one micropalaeontological slide NHM 1961.12.4.39.G.

(4) 1 RV was on a micropalaeontological slide originally used by Brady (now labelled 1961.12.4.39.C), but now on a new white card micropalaeontological slide labelled ‘dasyderma sensu stricto, Challenger wash of trawl, (SNB-1 050), 1961.12.4.39.D’. This RV is herein illustrated in Plate 1, fig. a. The following valves were also on the slide NHM 1961.12.4.39.C: (a) four valves of Henryhowella sp. were left on the micropalaeontological slide NHM 1961.12.4.39.C; and (b) 1 broken Legitimocythere RV was transferred to a new micropalaeontological slide numbered NHM 1961.12.4.39.E (SNB-1 057).

(5) 1 RV, 1 LV were on a micropalaeontological slide originally used by Brady (now labelled 1961.12.4.40.A), and are now on a new white card micropalaeontological slide labelled ‘dasyderma s.s., Challenger # 296, depth 1825 fathoms, wash of trawl, (SNB-1 053), 1961.12.4.40.B’. The RV specimen is herein illustrated in Plate 2, fig. c. The following valves were also on the slide NHM 1961.12.4.40.A: (a) 1 broken LV and 1 broken RV of Legitimocythere kept on one micropalaeontological slide NHM 1961.12.4.40.A; (b) 1 V Bradleya transferred to a new slide.

(6) 1 RV on a micropalaeontological slide originally used by Brady and labelled ‘Cythere dasyderma n. sp., 1961.12.4.41.A, “CHALLENGER”, No. 296, 173, depth 1825 faths., wash of trawl, G. S. Brady, 9/11/75’. This RV is herein illustrated in Plate 2, fig. e. The following valves were originally on one micropalaeontological slide NHM 1961.12.4.41.A: (a) 1 LV, 9 RV of Henryhowella sp., which were transferred to micropalaeontological slide NHM 1961.12.4.41.B.

(7) 2 LV, 2 RV on a micropalaeontological slide originally used by Brady labelled ‘Cythere dasyderma n. sp., 1961.12.4.42.A, “CHALLENGER”, No. 296, 173, depth 1825 faths., wash of trawl, G. S. Brady, 9/11/75’. One RV is herein illustrated in Plate 1, fig. c and Plate 2, fig. d. The following valves were initially in the Challenger original slide NHM 1961.12.4.42.A: (a) 9 LV and 7 RV of Henryhowella sp. now on one micropalaeontological slide NHM 1961.12.4.42.B, SNB-1 047; and (b) 1 broken LV and 1 RV of Legitimocythere now on one micropalaeontological slide NHM 1961.12.4.42.D, SNB-1 059.

II. Non Type, material re-sorted by I. Mazzini (personal communication) from dry sediment of Challenger station 296: 1 right valve.

(8) 1 coated RV on one squared micropalaeontological slide labelled ‘Cythere dasyderma Brady, Challenger, n. 296, D. 1825’, now numbered NHM 2012.1473 (SNB-1 054).

**Dimensions** (in mm). Challenger station 296: Lectotype – (NHM 1961.12.4.39.A) LV L 1.22, H 0.76. Paratlectotypes – (NHM 1961.12.4.39.B) LV L 1.22, H 0.78; (NHM 1961.12.4.39.D) RV L 1.22, H 0.66; (NHM 1961.12.4.40.B) RV L 1.22, H 0.68, LV L 1.03, H 0.62; (NHM 1961.12.4.41.A) RV L 1.08, H 0.60; (NHM 1961.12.4.42.A) RV L 1.16, H 0.67, RV L 1.14, H 0.68, LV L 1.01, H 0.59, LV L 0.99, H 0.59; (SNB-1 054) RV L 1.12, H 0.67 (Fig. 2).

**Stratigraphic and geographical occurrence.** Recent. Excluding the mistaken and dubious records, *A. dasyderma* s.s. is known only from the type locality, Challenger station 296, off Chile, southeastern Pacific, 38°6’S, 88°2’W, 3338 m (Fig. 1).

**Remarks.** As mentioned above, *Cythere dasyderma* (or *Echinocythereis dasyderma*, Henryhowella dasyderma …) has been recorded from the Late Eocene to Recent, from all oceans, and bathymetrically from the intertidal zone to the deep abyss at 5480 m. Overall this extensive biogeographic range encompasses widely

---

Fig. 2. Size of valves of *Ayressoleberis dasyderma* (Brady, 1880), *Ayressoleberis* sp. nov., *Legitimocythere* and *Henryhowella*, all specimens previously identified as ‘Cythere/Henryhowella dasyderma’.
differing environmental and ecological conditions, ranging from the continental shelf in the tropical Indo-Pacific (Brady, 1880) to the very cold shallow environment off Marion Island in the Southern Ocean (Dingle, 2003).

Brady (1880, p. 105) recorded *Cythere dasyderma* from all the world’s oceans (19 *Challenger* stations: 5, 70, 85, 122, 146, 164a, 167, 185, 191a, 218, 246, 296, 300, 302, 305, 311, 317, 335, and 346) (see Supplementary Material). Only material from stations 146 (southwestern Indian Ocean), 185 (southwestern Pacific), 192 (Indo-Pacific), 296 (southeastern Pacific), 302 (southeastern Pacific), 332 (southwestern Atlantic) are archived in the NHM. According to Bate (1963), specimens of ‘*Cythere dasyderma* Brady’ are housed in the Hancock Museum (Newcastle) but have not been available for study.

On the available slides, *Ayressoleberis dasyderma* (Brady, 1880) comb. nov. was found only in the material from the type locality (station 296 in the southeastern Pacific). Examination of all the published illustrations (mostly SEM photos) previously identified as *Cythere dasyderma* (or *Echinocythereis dasyderma*, or *Henryhowella dasyderma*) has shown that none is conspecific with *Ayressoleberis dasyderma* (Brady, 1880) comb. nov. Only one author has previously provided SEM images of *Ayressoleberis dasyderma* (Brady, 1880) comb. nov. Mazzini (2005) illustrated two LV under the name ‘*Cythere dasyderma* (Brady, 1880)’: (a) the lectotype (her figs 26.P–26.R) (current collection number NHM 1961.12.4.39.A); and (b) a putative paratype of her ‘*Cythere dasyderma*’ (current collection number NHM 1961.12.4.39.G), but which actually belongs to the genus *Henryhowella* (her figs 26.M–26.O). Here we provide further illustrations of the lectotype and paratypes of *A. dasyderma* comb. nov. (Pl. 2, figs c–e). This last species is most similar to *A. bathymarina* (Ayress, 1993) comb. nov., but *A. bathymarina* has a more elongated shape, tapering posterior, and has less developed spines on the lateral surface especially around the anteromarginal sulcus. *Ayressoleberis dasyderma* has more strongly developed, more nodose and multifurcate spines on its lateral surface. *Ayressoleberis bathymarina* is widely distributed in South Pacific and Southern oceans (Ayress, 1993; Ayress et al., 2004; Yasuhara et al., 2009). In contrast, the present evidence indicates that *Ayressoleberis dasyderma* is probably restricted to the southeastern Pacific.

**Paratypes of *Ayressoleberis dasyderma*** herein re-identified as *Henryhowella*. *Legitimocythere acanthodera*, *Legitimocythere* (see Supplementary Material for details): 42 valves. (1) 12 V of *Henryhowella* now on one micropalaeontological slide NHM 80.38.70.A; (2) 1 broken LV of *Henryhowella* and 1 broken LV of *Legitimocythere* now on one micropalaeontological slide NHM 80.38.70.B.74.A; (3) 1 RV of *Henryhowella* now on one micropalaeontological slide NHM 80.38.71.A.48A.75 (SNB-1 021); (4) 1 LV of *Pennyella* now on one micropalaeontological slide NHM 80.38.71.A.48.A.75 (SNB-1 051); (5) 1 RV of *Legitimocythere* now on one micropalaeontological slide NHM 2012.1472 (SNB-1 022); (6) 1 coated RV of *Legitimocythere acanthodera* now on one micropalaeontological slide NHM 1961.12.4.39.F (SNB-1 056a); (7) 1 coated LV of *Henryhowella* now on one micropalaeontological slide NHM 1961.12.4.39.F (SNB-1 056a); (8) 2 LV, 2 RV of *Henryhowella* now on one micropalaeontological slide NHM 1961.12.4.39.C; (9) 1 broken LV, 1 broken RV of *Legitimocythere* now on one micropalaeontological slide NHM 1961.12.4.40.A; (10) 1 RV of *Henryhowella* now on one micropalaeontological slide NHM 1961.12.4.41.B (SNB-1 055); (11) 1 RV of *Henryhowella* now on one micropalaeontological slide NHM 1961.12.4.42.B (SNB-1 047); (12) 1 LV, 1 RV of *Legitimocythere* now on one micropalaeontological slide NHM 1961.12.4.43.A; (14) 1 LV of *Trachyleberididae* now on one micropalaeontological slide NHM 1961.12.4.43.B (SNB-1 052); (15) 1 coated RV of *Bythocytheridae* now on one micropalaeontological slide NHM 1974.275.

The following 66 valves identified as *Cythere dasyderma* by Norman are in the ostracod collection of the Zoology Department, NHM, London, but are not *Ayressoleberis dasyderma*: (16) 3 LV, 5 RV of *Henryhowella* on one micropalaeontological slide NHM 1900-3-6-235; (17) 16 LV, 18 RV, 1 RV of *Henryhowella* and indet. *Trachyleberididae* on one micropalaeontological slide NHM 2012.1474 (SNB-1 041); (18) 7 LV, 5 RV of *Henryhowella* on one micropalaeontological slide NHM 1900-3-6-236; (19) 7 LV, 2 RV of *Henryhowella* and 1 LV of *Legitimocythere* on one micropalaeontological slide NHM 1911.11.8, M. 3306.

*Ayressoleberis* sp. nov.

(Pl. 2, figs a–b)


**Material examined.** 2 LV (paratypes of *Cythere acanthodera* Brady, 1880) on one micropalaeontological slide (see Supplementary Material for details). 2 (possibly juvenile) LV on one micropalaeontological slide originally used by Brady and labelled ‘*Cythere dasy* acanthodera Brady, 80.38.49. Type, “CHALLENGER”, No. 146, depth 1375 fathoms, from trawl, G. S. Brady, 173’.

These valves are herein illustrated in Plate 2, figs a–b.

**Description.** Valves lateral outline ovate to sub-trapezoidal; anterior margin more broadly rounded than posterior margin; anterior margin evenly rounded; posterior margin slightly angulate; ventral margin fairly straight; dorsal margin slightly sinuous. Lateral surface covered by spirally arranged, mostly conical spines; a few spines multifurcated. Spines form irregular, sub-parallel, slight ridges on ventral area. Spines longest and mostly conical on dorsal margin. Spines laterally flattened on dorsal part of anterior

---

**Explanation of Plate 2. figs a, a’, a””, a”“. b. Type of *Ayressoleberis* sp. nov. from *Challenger* station 146, southwestern Indian Ocean, 46°46’S, 45°31’E, 2515 m, 29.12.1873, (NHM 80.38.49.A) juvenile! LV, external view – (a, b) entire valves, (a’) anteroventral area, (a””) posteroventral area, (a””) detail of external ornamentation. figs c-e. Types of *Ayressoleberis dasyderma* (Brady, 1880) from *Challenger* station 296, off Chile, southeastern Pacific, 38°6’S, 88°2’W, 3338 m, 09.11.1875, (c) (NHM 1961.12.4.40.B), male RV, detail of external ornamentation; (d) (NHM 1961.12.4.42.A), male RV, adductor muscle scar pattern; (e) (NHM 1961.12.4.41.A), (A-1) RV, adductor muscle scar pattern. Photos: SNB, © Natural History Museum, London.
margin, spines on ventral margin mostly flattened. One conspicuous, large, conical spine on posteroventral area of lateral surface. Conspicuous, honeycomb-like secondary reticulation.

**Dimensions** (in mm). *Challenger* station 146: (NHM 80.38.49) LV L 1.02, H 0.64, LV L 0.92, H 0.58 (Fig. 2).

**Stratigraphical and geographical occurrence.** Known only from *Challenger* station 146, Recent, southwestern Indian Ocean, 46°46′S, 45°31′E, 1375 m, sampled on 29 December, 1873.

**Remarks.** *Ayressoleberis* sp. nov. is close to but differs from *A. dasyderma* on the characters below; however, as both studied valves of *A*. sp. nov. are possibly juveniles we have not formally named this new species. *Ayressoleberis* sp. nov. shows: (1) relatively long, robust and pointed spines on the lateral surface, while *A. dasyderma* shows short, verrucose spines; (2) the spines on the lateral surface form a spiral pattern around the adductor muscle scars whereas in *A. dasyderma* the spines are irregularly arranged. The unnamed species shows (3) a conspicuously longer and pointed postero-ventral spine on the lateral surface, while *A. dasyderma* lacks this spine; however, the lack of such a spine in *A. dasyderma* may be a preservation artefact; (4) the new species shows numerous flattened spines on the ventral surface of the valve and on the antero-ventral, ventral and postero-ventral margins, while *A. dasyderma* shows fewer and mostly pointed or verrucose spines on the lateral surface and on the margins; and (5) the secondary ornamentation on the new species shows more numerous and smaller pits than *A. dasyderma*.

**Taxa of specimens previously included in the syntype series of ‘*Cythere dasyderma*’**

*Henryhowella* spp.  
(Pl. 3, figs a–e)


**Material examined.** 57 LV, 61 RC, 1 subfossil carapace on 11 micropalaeontological slides.

1. **Paralecotypes of *Ayressoleberis dasyderma*.** 27 LV and 28 RV on 7 slides:

(1) 5 RV, 7 LV on one original micropalaeontological slide used by Brady and labelled ‘*Cythere dasyderma* n. sp., 80.38.70.A’ [A added by SNB], ‘*CHALLENGER*’, No. 296, depth 1825 fathoms, wash of trawl, 173, G. S. Brady 9/11/75’. Previously, another broken RV was on this slide (now it is on the slide NHM 80.38.70.C (SNB-1 049).  

(2) 1 broken *Henryhowella* LV on one original micropalaeontological slide used by Brady and labelled ‘1. *Cythere dictyon* n. sp., 2. *Cythere dasyderma*, 80.38.70.74, “*CHALLENGER*” No. 323, depth 2200 faths., tow-net at trawl, 173, G. S. Brady 10/3/76’, now this slide is numbered NHM 80.38.70.B.74.A. Previously, one posteriorly broken RV and one antero-dorsally broken LV of *Pseidoamicus* were on this slide. They were transferred to a new slide labelled ‘SNB-1 008’ – NHM 80.38.70.B.74.A.

(3) 2 LV, 2 RV on one original micropalaeontological slide used by Brady and labelled ‘173, *Henryhowella* [added by SNB], *Cythere dasyderma* Brady, 1961.12.4.39.C [C added by SNB], “*CHALLENGER*”, No. 296, depth 1825 fathoms, wash of trawl, G. S. Brady, 173’. Previously, 2 other valves were on this slide: 1 RV of *Ayressoleberis dasyderma* (transferred to the slide NHM 1961.12.4.39.D), and 1 broken RV of *Legitimocythere* transferred to the slide labelled NHM 1961.12.4.39.E.

(4) 1 coated LV on a new white card micropalaeontological slide labelled ‘*Henryhowella* sp., Challenger #296, depth 1825 fathoms, wash of trawl, (SNB-1 058), 1961.12.4.39.G’. This valve was illustrated as the [sic] paralecotype of ‘*Cythere dasyderma*’ by Mazzini (2005, figs 23.N–23.O). Previously, this LV was on a white card micropalaeontological slide used by Puri (now labelled as NHM 1961.12.4.39.B) together with 1 coated LV of *Ayressoleberis dasyderma* (left on original slide) and 1 coated *Legitimocythere* RV (transferred to a new slide labelled NHM 1961.12.4.39.F).

(5) 1 LV, 9 RV on one micropalaeontological slide labelled ‘*Henryhowella* sp, Challenger #296, depth 1825 fathoms, wash of trawl, (SNB-1 055), 1961.12.4.41.B’. Previously, these ten valves were on the slide NHM 1961.12.4.41.A, together with 1 RV of *Ayressoleberis dasyderma*. One LV and one RV herein illustrated in Plate 3, figs a–b.

(6) 9 LV and 7 RV on one micropalaeontological slide labelled ‘*Henryhowella* sp, Challenger #296, 1825 fathoms, wash of trawl, (SNB-1 047), 1961.12.4.42.B’. One female LV is herein illustrated in Plate 3, fig. d. Previously, these 16 valves were on the slide NHM 1961.12.4.42.A, together with 2 LV, 2 RV of *Ayressoleberis dasyderma* (left on the original slide), and 1 broken LV and 1 RV of *Legitimocythere* (transferred to the new slide NHM 1961.12.4.42.D, SNB-1 059).

(7) 6 LV, 5 RV on one original micropalaeontological slide used by Brady and labelled ‘*Cythere acanthodera*’ n. sp., 1961.12.4.43.A [A added by SNB], “*CHALLENGER*”, No. 302, 173, depth 1450 fathoms., 173, G. S. Brady, 28/12/75’. One female RV is herein illustrated in Plate 3, fig. e. Previously, 1 LV of
II. Material from the Norman collection. 30 LV, 33 RV, 1 closed carapace on 4 slides:

(8) 3 LV, 5 RV on one micropalaeontological slide labelled ‘Cythere dasyderma’ G. S. Brady, 1900-3-6-235, “Porcupine” 1869, Stat. 19, Lat 54°53’ N, Long 10°56 W, 1366 fath.’.

(9) 16 LV, 18 RV, 1 carapace on one micropalaeontological slide labelled ‘Cythere dasyderma’ G. S. Brady, “Porcupine” 1869, Stat. 20, Lat 55°11’ N, Long 11°31 W, 1443 fath.’. This slide is now labelled ‘SNB-1 041’ – NHM 2012.1474.

(10) 7 LV, 2 RV valves (plus 1 LV of ?Legitimocythere sp., see below) on one micropalaeontological slide labelled ‘Cythere dasyderma’ G. S. Brady, NORMAN COLLECTION, 1911.11.8, M. 3306, Valorous 1875, Stat 12, Lat 36°11’ N, Long 37°41 W, 1450 fath.’.

(11) 7 LV, 5 RV valves on one micropalaeontological slide labelled ‘Cythere dasyderma’ G. O. Sars, 1900-3-6-236, Valorous 1875, Stat 13, Lat 56°1’ N, Long 34°42 W, 690 fath.’.

III. Material from the Norman collection. 1 LV on one slide, 1 LV (plus 10 V of Henryhowella spp., see above) on one micropalaeontological slide labelled ‘Cythere dasyderma’ G. S. Brady, NORMAN COLLECTION, 1911.11.8, M. 3306, Valorous 1875, Stat 12, Lat 36°11’ N, Long 37°41 W, 1450 fath.’.

Pennyella sp.

(Pl. 3, fig. f) 1880 in part Cythere dasyderma n. sp. Brady: 105–106.

I. Paralectotypes of Ayressoleberis dasyderma. 2 LV and 4 RV on 4 micropalaeontological slides:

(1) 1 coated RV on a new white card micropalaeontological slide labelled ‘Legitimocythere sp., Challenger #296, depth 1825 fathoms, wash of trawl, (SNB-1 056), 1961.12.4.39.F’. This RV is herein illustrated in Plate 3, fig. i. Previously, this coated RV was on a white paper micropalaeontological slide used by Puri (now labelled as NHM 1961.12.4.39.B) together with 1 coated LV of Ayressoleberis dasyderma (left on original slide) and 1 coated Henryhowella LV (transferred to a new slide labelled NHM 1961.12.4.39.G, SNB-1 058).

(2) 1 broken RV on a new white card micropalaeontological slide labelled ‘Legitimocythere sp., Challenger #296, depth 1825 fathoms, wash of trawl, (SNB-1 057), 1961.12.4.39.E’. Previously, this RV was on the original slide used by Brady (now labelled as NHM 1961.12.4.39.C), together with 2 LV, 2 RV of Henryhowella (left on the original slide) and 1 RV of Ayressoleberis dasyderma (transferred to new slide NHM 1961.12.4.39.D).

(3) 1 broken LV and 1 broken RV on an original micropalaeontological slide used by Brady and labelled ‘Cythere n. sp. dasyderma, 1961.12.4.40.A [A added by SNB], “CHALLENGER”, 173, No. 296, depth 1825 fathoms, wash of trawl, G. S. Brady’. Previously, another RV and one LV of Ayressoleberis dasyderma were on this slide (NHM 1961.12.4.40.A), now transferred to slide NHM 1961.12.4.40.B.

(4) 1 broken LV and 1 RV on a micropalaeontological slide labelled ‘Legitimocythere sp, Challenger #296, depth 1825 fathoms, wash of trawl, (SNB-1 059), 1961.12.4.42.D’. The LV is herein illustrated in Plate 3, fig. i. These valves were previously on slide NHM 1961.12.4.42.A, together with 2 LV, 2 RV of Ayressoleberis dasyderma (left on the original slide) and 9 LV and 7 RV of Henryhowella (transferred to slide NHM 1961.12.4.42.B, SNB-1 047).

(5) 1 RV of Legitimocythere now on one micropalaeontological slide labelled ‘Henryhowella cf. acanthoderma, Challenger #192, Depth 129 fathoms, off Ki Islands, G. S. Brady 269/74’. This valve was on slide with original Nr. = 80.38.71A.48A.75 (which is now labelled SNB-1 021, SNB-1 022). This slide has the new number NHM 2012.1472 (SNB-1 022).

II. Material from the Norman collection. 1 LV on one slide, 1 LV (plus 10 V of Henryhowella spp., see above) on one micropalaeontological slide labelled ‘Cythere dasyderma’ G. S. Brady, NORMAN COLLECTION, 1911.11.8, M. 3306, Valorous 1875, Stat 12, Lat 36°11’ N, Long 37°41 W, 1450 fath.’.


I. Paralectotypes of Ayressoleberis dasyderma. 1 left valve on one micropalaeontological slide: 1 LV on a new black, plastic micropalaeontological slide labelled NHM 80.38.71.A.48.A.75 (SNB-1 051) ‘Challenger #192, Depth 129 fathoms, off Ki Islands, (SNB-1 051)’. Previously this LV plus three other valves were on Brady’s original slide NHM 80.38.71.A.48.A.75 (SNB-1 021). These three additional valves belong to: [sic] Cythere dicyon, Henryhowella, cf. Legitimocythere.

Trachyleberididae indet.


I. Paralectotypes of Ayressoleberis dasyderma. 1 LV on one slide: 1 LV on one micropalaeontological slide labelled ‘Challenger #302, depth 1450 fathoms, (SNB-1 052), 1961.12.4.43.B’. This valve was previously on slide NHM 1961.12.4.43.A, together with 6 LV, 5 RV of Henryhowella.

Bythocysteridae indet.


I. Paralectotypes of Ayressoleberis dasyderma. 1 LV on one slide: 1 gold coated RV on 1 white plastic micropalaeontological slide labelled ‘Cythere dasyderma, 1974.275, Topotype, Sediment sample M–237 (Stat. 185, 155 fms., Torres Straits)’. Mazzini (2005, p. 52) also recorded this misplaced or misidentified specimen.

ACKNOWLEDGEMENTS

Miranda Lowe (NHM, London) carefully assisted the first author during five visits to the NHM and also kindly provided access to the Challenger and other ostracod specimens housed in the NHM. William Briggs, Elisabeth Brouwers, Richard Dingle, Stephen Eagar, Ilaria Mazzini and Eugen Kempf provided valuable
Biogeography and taxonomy of ‘Cythere dasyderma’

information and papers. Martin Angel suggested revisions to the English. We are grateful for the constructive criticism of both reviewers, Kerry Swanson and Tom Cronin, and the editors Elisabeth Brouwers and Alan Lord. This research received support from the SYNTHESYS Project http://www.syntheses.info/which is financed by the European Community Research Infrastructure Action under the FP7 Integrating Activities Programme. S.N.B. thanks the Alexander von Humboldt Foundation for a Post-Doctoral Fellowship. This study was also financially supported by the Encyclopaedia of Life and the Hansische Universitäts-Stiftung. M.Y. was supported by Seed Funding from the Programme for Basic Research of the University of Hong Kong (project code: 201105159002), Smithsonian Postdoctoral Fellowship, and Smithsonian Marine Science Network Postdoctoral Fellowship.

Manuscript received 13 April 2012
Manuscript accepted 2 July 2012
Scientific editing by Elisabeth Brouwers

REFERENCES
Bate, R.H. 1963. The Ostracoda collected during the Voyage of H.M.S. Challenger. Micropaleontology, 9: 79–84.
Brandão, S.N. 2008a. New species of Bairdiioidea (Crustacea, Ostracoda) from the Southern Ocean and discussions on Bairdiopilata simplex (Brady, 1880), Bairdiopilata habiata (Müller, 1908) and Bythopussella asculata (Müller, 1908). Zootaxa, 1866: 373–452.