

Observations on Cumacea (Malacostraca: Peracarida) from Antarctic and subantarctic waters. I. *Ekleptostylis debroyeri* (Diastylidae), a new species from waters off the Antarctic Peninsula

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Abstract.—Eighteen species of diastylid cumaceans have been described from Antarctic and subantarctic waters. A nineteenth species, *Ekleptostylis debroyeri*, n. sp., was collected in depths of 83 to 530 m off the Antarctic Peninsula. The new species appears to be closely allied to *Ekleptostylis heardi* McLelland & Meyer, 1998; *E. inornata* (Hale, 1937), n. comb.; *E. pseudoinornata* (Ledoyer, 1977); and *E. vemae* (Băcescu-Mester, 1967), all of which are known from subantarctic and Antarctic waters. *Ekleptostylis debroyeri* is distinguished from these species by a combination of characters including the size of the anterior-most pair of lateral spiniform setae of the telson and the proximal article of the uropodal endopod subequal to the combined length of the two distal most articles. The genera *Diastylis* Say, 1818, *Ekleptostylis* Stebbing, 1912, and *Leptostylis* G. O. Sars, 1869 have morphological features that appear to be transitional, especially among the subadults and females. The generic status of many species within these genera can only be determined with certainty by the morphology (length of antenna, structure of the second pereopod, ornamentation of telson) of the terminal male stage. Although the mature male of *E. debroyeri* is unknown, it is tentatively placed in *Ekleptostylis* based on the similarity of the female to other known species of the genus.

This report represents the first in a series on the distribution, taxonomy, and systematics of Cumacea from the Antarctic and subantarctic waters in depths ranging from 3 to over 5000 m. Members of the cosmopolitan family Diastylidae are found throughout the world's oceans and seas; however, most of the described species come from depths of greater than 1000 m (Day 1980, Jones 1969). In Antarctic and subantarctic waters (south of 50°S) diastylids are presently represented by 18 nominal species and subspecies belonging to four genera. Table 1 lists these currently known diastylids.

An examination of Antarctic and subant-

arctic Cumacea from the collections in the Smithsonian Institution and Antarctic Biology Program of the University of Łódź revealed an undescribed species tentatively referable to the genus *Ekleptostylis* Stebbing, 1912. The description of the new species, which comes from waters in the vicinity of the Antarctic Peninsula, is the subject of this report.

Type material has been deposited in the collections of the National Museum of Natural History (USNM) and University of Łódź. Measurements are in mm unless otherwise stated and total body length (TL) is measured from the tip of pseudorostrum to tip of telson.

Table 1.—Type locality and depth of species and subspecies of the family Diastylidae presently known from Antarctic and subantarctic waters south of 50°E.

Species	Type Locality	Depth (m)
<i>Diastylis anderssoni anderssoni</i> Zimmer, 1907	South Georgia	64–385
<i>Diastylis anderssoni aramata</i> Ledoyer, 1993	Weddell Sea (Halley Bay?)*	270–810
<i>Diastylis corniculata</i> Hale, 1937	66°45'S, 62°03'E	218
<i>Diastylis enigmatica</i> Ledoyer, 1993	75°14.2'S, 26°59.4'E	270–280
<i>Diastylis galeronae</i> Ledoyer, 1993	74°32.2'S, 29°18.7'E	1165–1223
<i>Diastylis horrida</i> Sars, 1887	Kerguelen Islands	20–540
<i>Ekleptostylis inornata</i> (Hale, 1937), n. comb.	66°45'S, 62°03'E	150
<i>Diastylis mawsoni</i> Calman, 1918	66°55'S, 145°06'E	200–582
<i>Diastylis zimneri</i> Ledoyer, 1977	Kerguelen Islands	18–90
<i>Diastylis annulata</i> (Zimmer, 1902)	South Georgia	4–355
<i>Diastylis diaphanes</i> Zimmer, 1907	66°02'S, 89°03'E	385
<i>Diastylis goekei</i> Roccatagliata & Heard, 1992	King George Island	2–399
<i>Ekleptostylis debroyeri</i> , n. sp.	South Shetlands, King George Is.	90–400
<i>Ekleptostylis heardi</i> McLelland & Meyer, 1998	Argentina (54°04'S, 58°46'W)***	119
<i>Ekleptostylis pseudinornata</i> (Ledoyer, 1977)	Kerguelen Islands	90
<i>Ekleptostylis vemae</i> (Băcescu-Meşter, 1967)**	Argentina (41°16'S, 60°03'W)	70–665
<i>Holostylis helleri</i> (Zimmer, 1907)	South Georgia	12–640
<i>Leptostylis antipa</i> Zimmer, 1907	South Georgia	12–310
<i>Leptostylis crassidauda</i> Zimmer, 1907	66°02'S, 89°03'E	123–385
<i>Makrokyllindrus baceskei</i> Lomakina, 1968	64°03'W, 161°59.2'E	2938
<i>Makrokyllindrus inscriptus</i> Jones, 1971	75°15'S, 166°15'E	808

* No specific type locality designated.
** See Roccatagliata & Mühlenhardt-Siegel (2000) for records from <50°S.
*** See remarks in this report concerning a probable error for the original type-locality designation.

Ekleptostylis debroyeri, new species
Figs. 1–3

Material examined.—Holotype, adult ♀ with developed oostegites, body length 10 mm; USNM 1000896, Admiralty Bay (King George Island, South Shetland Islands, Antarctic), depth 290 m, transect Thomas Point–Urbanek Crag (sample no. OC-321), 17 Mar 1981, dredge, R/V *Profesor Siedlecki*, BIOMASS-FIBEX Expedition (leg. Jazdzewski and Kittel).—Paratypes (1♂, 2♀), same collection data as holotype, Laboratory of Polar Biology and Oceanobiology, University of Łódź, Poland.

Other material examined.—Admiralty Bay (King George Island, South Shetlands): 1♀, OC-324, 19 Mar 1981, depth 430 m; 1 manca, OC-477, 11 May 1985, depth 211 m, 1 manca, OC-487, 4 Sep 1985, depth 162 m, 3♀, OC-733, 7 Dec 1988, depth 400–530 m, 2 manca OC-354, 13 Apr

1983, depth 70 m; 1♀, 5 manca, OC-517, 30 Oct 1985, depth 212 m; 1 manca, OC-353, 13 Apr 1983, depth 286 m; 2♂♂ OC-341, 23 Mar 1981, depth 400–530 m; 1♀, OC-726, 10 Oct 1988, depth 240–280 m; 2♀, OC-341, 23 Mar 1981, depth 400–530 m; 1♀, OC-348, 61°44.2'S–58°16.7'W; 1♀, OC-347, 58°56.6'S–61°45.5'W, depth 260–285 m, 26 Mar 1981.—R/V *Polarstern*: 50+ specimens, Cruise 42, ANT XIV/2/175, 63°18.90'S–58°41.70'W 23 Dec 1996, depth 491 m.—R/V *Hero*: 1♀, Cr. 731/1847, 67°52.00'S–68°56.00'W, 26 Feb 1973, depth 185 m; 1 subadult ♂ Cr. 731/1823, 64°47.23'S–64°07.20'W; 20 Feb 1973, depth 90–110 m.—R/V *Eltanin*: 5♀ Cruise 6, Sta. 439, 63°50.10'S–62°35.90'W, 9 Jan 1963, depth 128–165 m.

Diagnosis.—Carapace approximately 0.25 total body length, lacking spines, sparsely covered in fine hair-setae. Pseu-

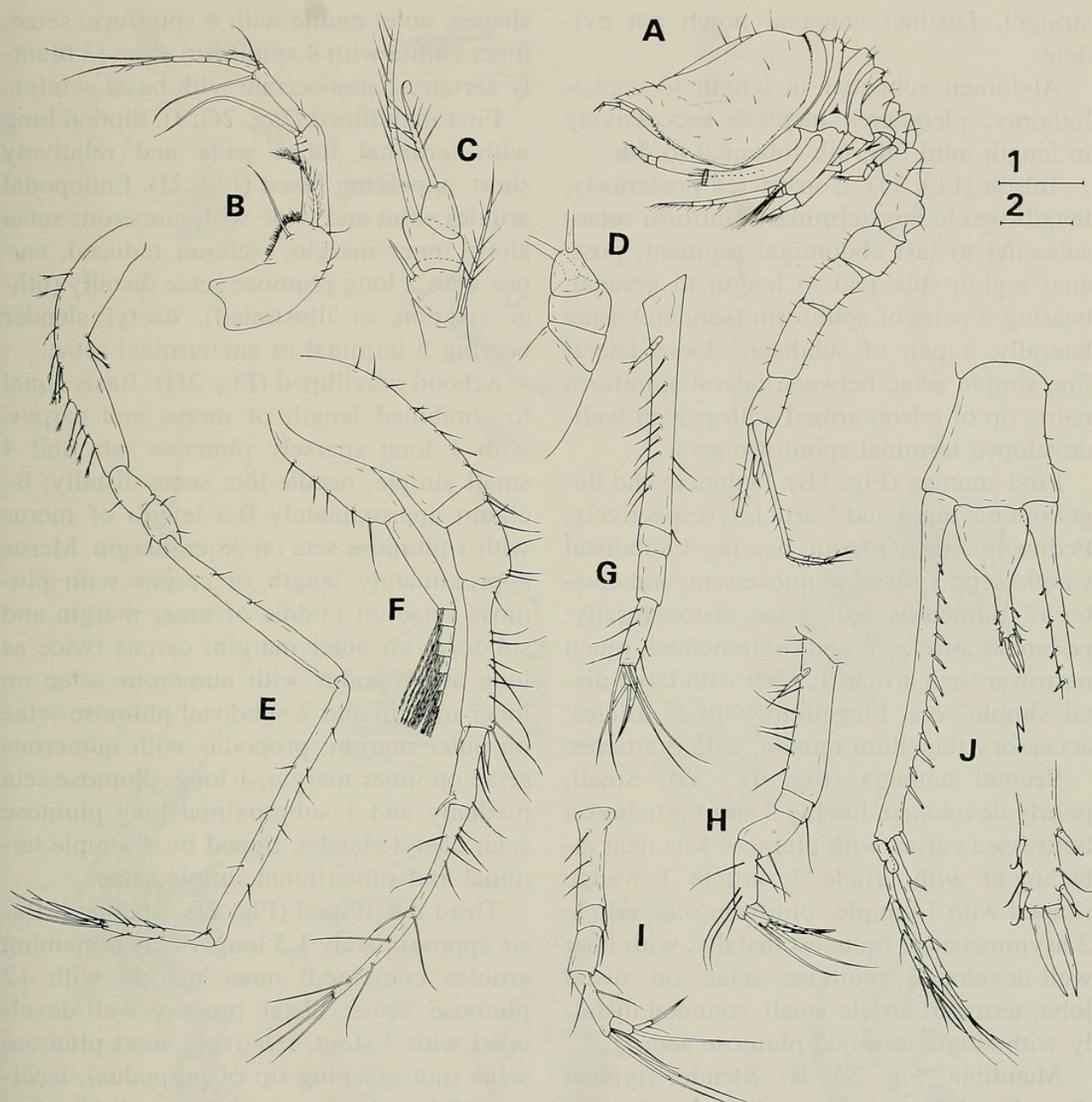


Fig. 1. *Diastylis debroyeri*, n. sp. (female) A, lateral view of adult; B, antenna 1; C, antenna 2; D, antenna 2, another aspect (setae on 2 proximal article not shown); E–I, pereopods 1–5 (exopod not illustrated for pereopod 1); J, left uropod, telson last abdominal somite. Scales: 1 = 1.0 mm for A; 2 = 0.2 mm for B–D; 0.3 mm for E–J.

dorostral lobes slightly downturned with dorsal margins straight. Antennal notch absent in both sexes. Telson slightly longer than last abdominal segment, constricted posteriorly, bearing 2 pairs of lateral, setulate spiniform setae with pair of simple, fine, dorsal-lateral setae between them; posterior tip with terminal pair of spiniform setae strongly developed. Carpus and propodus of pereopod 1 and 2 with short stout

distal setae. Uropods slender, more than twice as long as telson.

Description.—Female (based on adults unless stated otherwise). Body length 9–11 mm, sparsely covered with fine simple setae (Fig. 1A). Carapace approximately 1.5 as long as deep, twice as long as combined length of pereonites and approximately $\frac{1}{4}$ total body length. Pseudorostral lobes deflected slightly downward, dorsal margins

straight. Distinct antennal notch not evident.

Abdomen subequal in length to cephalothorax; pleomeres increase successively in length until 5th; 6th subequal to 4th.

Telson (Fig. 1J). Constricted posteriorly, length (excluding terminal spiniform setae) subequal to last abdominal segment; post-anal region subequal in length to preanal, bearing 2 pairs of spiniform (setulate) setae laterally, 1 pair of subdistal, dorsal-lateral fine simple setae between lateral spiniform pairs; tip of telson armed with pair of well-developed terminal spiniform setae.

First antenna (Fig. 1B). Peduncle and flagellum having 3 and 5 articles, respectively. Peduncle article 1 stout, bearing 1 subdistal simple seta, 1 distal plumose seta, and cluster of numerous hair setae distoventrally; peduncle articles 2 and 3 attenuated, much narrower than article 1, each with large distal simple seta. Flagellum with 5 articles; accessory flagellum minute, with 3 articles.

Second antenna (Fig. 1C, D). Small, poorly developed, having 3 short articles on buttressed carina with plumose seta near attachment with article 1; article 1 wedge shaped with 1 simple spiniform seta; article 2 asymmetrical, broadest distally, with long well-developed plumose setae on distal lobe; terminal article small, rounded distally with single terminal plumose seta.

Mandible (Fig. 2A, B). Slender (typical diastylid shape); left mandible bearing lacinia mobilis and 9 spiniform setae, 4 dentate and 5 finely serrate, between molar and incisor process; right mandible with 1 distal palmate comb seta and 9 finely serrate setae.

Labium (Fig. 2C). As illustrated.

Epignath (Fig. 2D). As illustrated.

First maxilla (Fig. 2E). Outer endite with 14 relatively slim setae of various shapes; inner endite with 5 setae (4 of different shapes and 1 accessory); palp with 2 distal setae of different lengths armed distally with microspinules.

Second maxilla (Fig. 2F). Protopodite wide with numerous setae of different

shapes, outer endite with 6 spiniform setae; inner endite with 4 spiniform setae (3 bluntly serrate, 1 non-serrate with basal setule).

First maxilliped (Fig. 2G, J). Siphon long with terminal lobes wide and relatively short, appearing fused (Fig. 2J). Endopodal articles stout and wide with numerous setae along inner margin, ischium reduced, carpus with 2 long plumose setae distally (other setation as illustrated), dactyl slender bearing 5 terminal or subterminal setae.

Second maxilliped (Fig. 2H). Basis equal to combined length of merus and carpus, with 1 long sparsely plumose seta and 4 small simple, needle-like setae distally; ischium approximately 0.5 length of merus with 1 plumose seta on inner margin. Merus approximately length of carpus with plumose setae on middle of inner margin and subdistal on outer margin; carpus twice as long as propodus with numerous setae on inner margin and 2 subdistal plumose setae on outer margin; propodus with numerous setae on inner margin, 1 long, plumose seta medially and 1 subproximal long plumose seta; dactyl slender, tipped by 4 simple terminal and subterminal simple setae.

Third maxilliped (Fig. 2I). Endopod: Basis approximately 1.5 longer than remaining articles combined; inner margin with 12 plumose setae; distal process well-developed with 3 stout, relatively short plumose setae (not reaching tip of propodus); ischium 0.5 length of merus with small plumose seta on inner margin; merus twice as long as ischium, inner margin with 3 small plumose setae, outer with 1 distal plumose seta; carpus, propodus and dactyl subequal; carpus with plumose setae along inner margin, 1 distal seta on outer margin; propodus slender with simple setae distally on inner margin and 1 plumose on outer; dactyl with simple terminal and subterminal setae. Exopod: well-developed, excluding setae, nearly reaching to distal end of basis of endopod.

First pereopod (Fig. 1E). [based on sub-adult ♀] Attenuate, long with ischium, merus, carpus, propodus, and dactyl with few

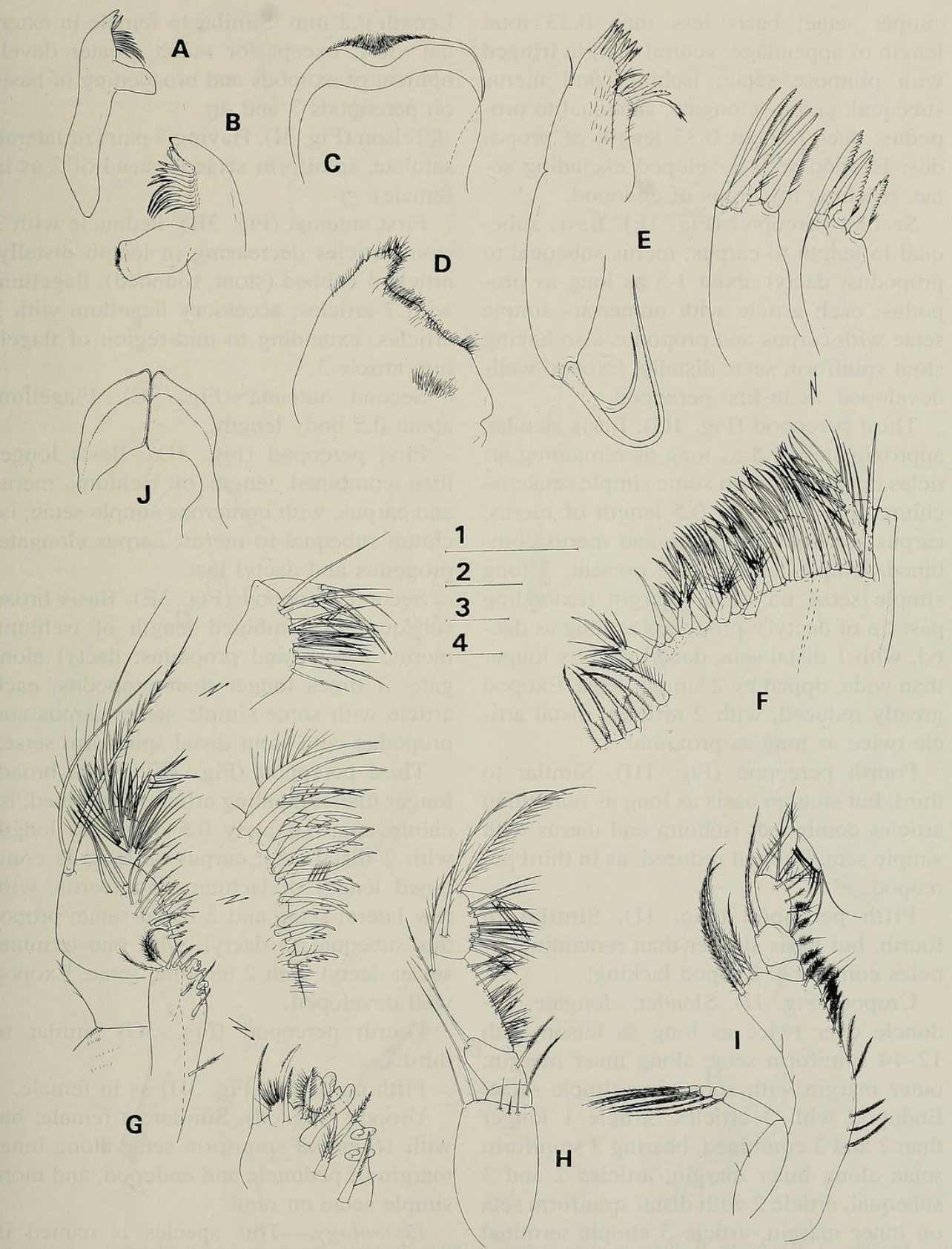


Fig. 2. *Diastylis debroyeri*, n. sp. A–B, mandible; C, labium; D, epignath; E, maxilla 1; F, maxilla 2, with detail (above) of outer and inner endite viewed from outer face; G, maxilliped 1, inner face (with detail of setation); H, maxilliped 2; I, maxilliped 3; J, terminal lobes of siphon (ex. maxilliped 1). Scales: 1 = 0.1 mm for A; 0.2 mm for B; 2 = 0.2 mm for C–E; 0.1 mm for F; 3 = 0.2 mm for G, J; 4 = 0.4 mm for H, I.

simple setae; basis less than 0.33 total length of appendage, ventral margin fringed with plumose setae; ischium and merus subequal; carpus elongate, subequal to propodus; dactyl about 0.33 length of propodus. Exopod well-developed excluding setae, reaching to carpus of endopod.

Second pereopod (Fig. 1F). Basis subequal in length to carpus; merus subequal to propodus; dactyl about 1.5 as long as propodus; each article with numerous simple setae with carpus and propodus also having stout spiniform setae distally. Exopod well-developed, as in first pereopod.

Third pereopod (Fig. 1G). Basis slender, approximately 1.5 as long as remaining articles combined, with some simple setae; ischium approximately 0.5 length of merus; carpus as long as ischium and merus combined, simple lateral setae present, 3 long simple setae on distal margin (extending past tip of dactyl); propodus as long as dactyl, with 1 distal seta; dactyl slightly longer than wide, tipped by 2 simple setae. Exopod greatly reduced, with 2 articles, distal article twice as long as proximal.

Fourth pereopod (Fig. 1H). Similar to third, but stouter, basis as long as remaining articles combined; ischium and merus with simple seta. Exopod reduced, as in third pereopod.

Fifth pereopod (Fig. 1I). Similar to fourth, but basis shorter than remaining articles combined. Exopod lacking.

Uropod (Fig. 1J). Slender, elongate. Peduncle over twice as long as telson with 12–14 spiniform setae along inner margin; outer margin with some fine simple setae. Endopod with 3 articles; article 1 longer than 2 and 3 combined, bearing 3 spiniform setae along inner margin; articles 2 and 3 subequal, article 2 with distal spiniform seta on inner margin, article 3 simple terminal and subterminal setae. Exopod with simple setae only, reaching just beyond article 2 of endopod; proximal article reduced, distal article with marginal setae along distal 0.75 and 3 terminal setae.

Subadult male, paratype (Fig. 3A).

Length 9.2 mm. Similar to female in external view, except for much greater development of exopods and broadening of basis on pereopods 3 and 4.

Telson (Fig. 3I). Having 3 pairs of lateral, setulate, spiniform setae (instead of 2 as in female).

First antenna (Fig. 3B). Peduncle with 3 stout articles decreasing in length distally, article 3 cubbed (stout, rounded); flagellum with 7 articles; accessory flagellum with 3 articles, extending to mid-region of flagellum article 3.

Second antenna (Fig. 3C). Flagellum about 0.5 body length.

First pereopod (Fig. 3D). Basis longer than combined length of ischium, merus and carpus, with numerous simple setae; ischium subequal to merus; carpus elongate; propodus and dactyl lost.

Second pereopod (Fig. 3E). Basis broad subequal to combined length of ischium, merus, carpus and propodus; dactyl elongate, 3 times longer than propodus; each article with some simple setae; carpus and propodus with stout distal spiniform setae.

Third pereopod (Fig. 3F). Basis broad, longer than remaining articles combined; ischium approximately 0.5 of merus length with 2 distal setae; carpus as long as combined length of ischium and merus, with few lateral setae and 2 distal setae; propodus subequal to dactyl, with one terminal seta; dactyl with 2 terminal setae. Exopod well developed.

Fourth pereopod (Fig. 3G) similar to third.

Fifth pereopod (Fig. 3H) as in female.

Uropod (Fig. 3I). Similar to female, but with 16 lateral spiniform setae along inner margin of peduncle and endopod, and more simple setae on rami.

Etymology.—This species is named in honor of Claude DeBroyer, Institut Royal Sciences Naturelles de Belgique, in recognition of his many significant contributions to carcinological research in the Antarctic.

Remarks.—*Ekleptostylis debroyeri* is similar to *Ekleptostylis heardi* McLelland &

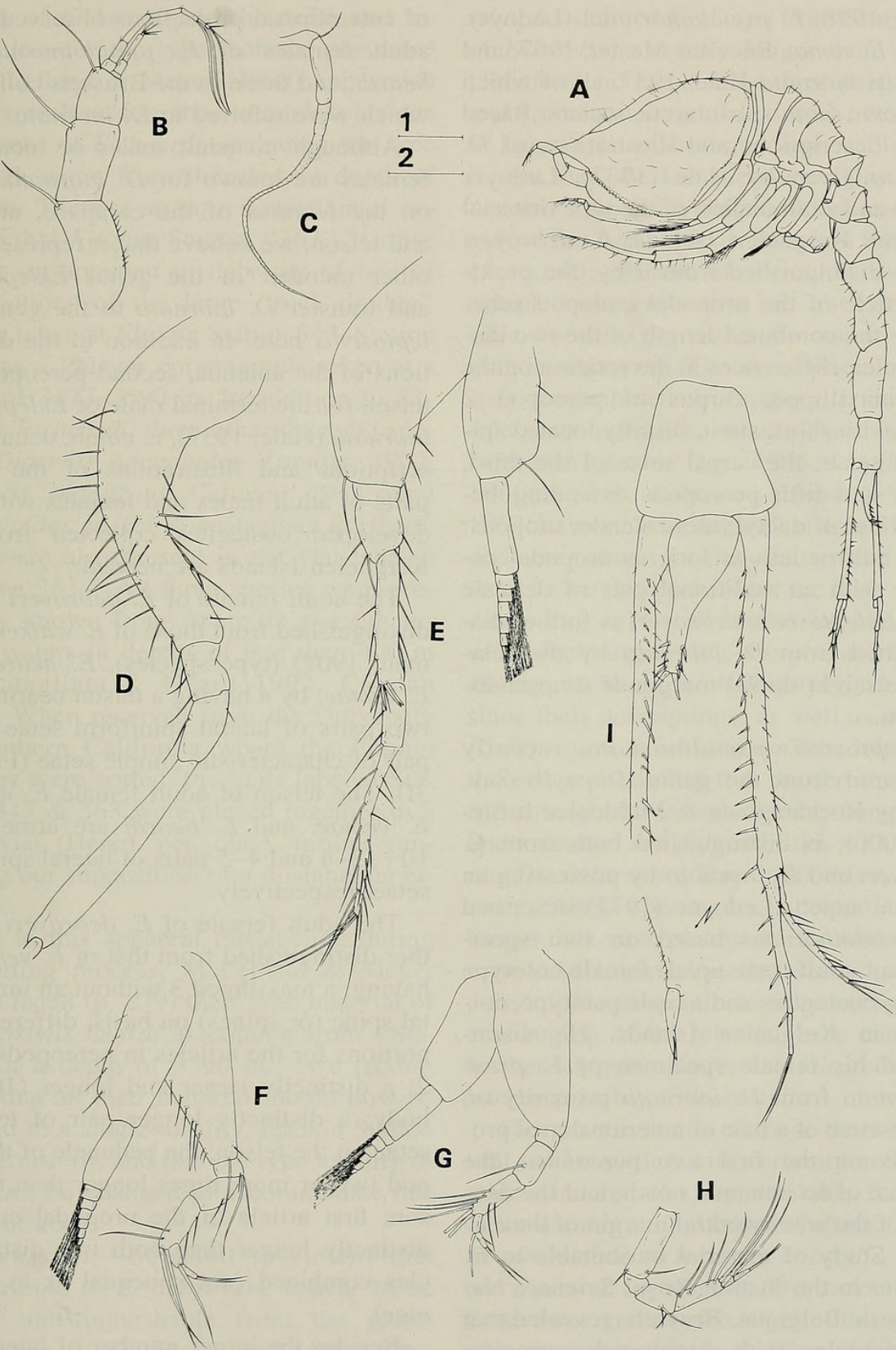


Fig. 3. *Diastylis debroyeri*, n. sp. (subadult male) A, lateral view of adult; B, antenna 1; C, antenna 2 of subadult; D–H, pereopods 1–5 (propodus and dactyl missing on pereopod 1, exopod illustrated only for pereopod 2); I, uropods, telson, and last abdominal somite. Scales: 1 = 1.0 mm for A, C; 2 = 0.2 mm for B–H; 0.3 mm for I.

Meyer, 1998; *E. pseudoinornata*, (Ledoyer, 1977); *E. vema* Băcescu-Mester, 1967; and *Diastylis inornata* Hale, 1937, all of which are known from subantarctic waters. Based on the descriptions and illustrations of *D. inornata* given by Hale (1937), Ledoyer (1977) and examination of the type material from the Kerguelen Islands, *E. debroyeri* can be distinguished from it by: the proximal article of the uropodal endopod subequal to the combined length of the two distal articles; differences in the setation on the third maxilliped; carpus of pereopod 2 armed with short, stout, distally located spiniform setae; the carpal setae of the third, fourth, and fifth pereopods extending beyond those of dactyl; more slender uropods; telson half or less as long as uropodal peduncle with an additional pair of delicate setae. *Ekleptostylis debroyeri* is further distinguished from *D. inornata* by the relatively straight dorsal margin of its pseudo-rostrum.

Ekleptostylis pseudinornata, recently transferred from the genus *Diastylis* Say, 1818 by Roccatagliata & Mühlenhardt-Siegel (2000), is distinguished both from *E. debroyeri* and *D. inornata* by possessing an antennal notch. Ledoyer (1977) described *D. pseudoinornata* based on two specimens, an adult (marsupial) female holotype bearing oostegites and a male paratype, collected in Kerguelen Islands. He distinguished his female specimen of *E. pseudoinornata* from *D. inornata* primarily on the presence of a pair of anterior-dorsal projections on the first two pereonites, the presence of an antennal notch, and the dentition of the anteroventral margin of the carapace. Study of material attributable to *D. inornata* in the Institut Royal Sciences Naturelles de Belgique, Brussels, revealed that adult females with developed oostegites also have these same dorsal projections on the first two pereonites, but those of smaller subadult, preincubatory females lack these tubercles. We reexamined the holotype and paratype of *D. inornata*, which are both subadult females, and found no indication

of anterodorsal projections observed in the adult females of *E. pseudoinornata*, *E. heardi*, and those in the Brussels collection, which were referred to *D. inornata*.

Although no adult males or incubatory females are known for *D. inornata*, based on the features of the carapace, uropods, and telson, we believe that it represents another member of the genus *Ekleptostylis* and transfer *D. inornata* to the genus *Ekleptostylis* here. In addition to the descriptions of the antenna, second pereopod, and telson for the terminal male of *Ekleptostylis inornata* (Hale, 1937), n. comb, detailed descriptions and illustrations of the mouth parts of adult males and females with fully developed oostegites collected from the Kerguelen Islands are needed.

The adult female of *E. debroyeri* can be distinguished from those of *E. walkeri* (Calman, 1907) (type species), *E. heardi*, and *E. vema*, by a having a telson bearing only two pairs of lateral spiniform setae plus a pair of characteristic simple setae (Figs. 1J, 3I). The telson of adult female *E. walkeri*, *E. vema*, and *E. heardi* are armed with 10+, 3–4 and 4–5 pairs of lateral spiniform setae, respectively.

The adult female of *E. debroyeri* is further distinguished from that of *E. vema* by having: a maxilliped 3 without an inner distal spine (or spines) on basis; different proportions for the articles in pereopods 1 and 2; a distinctly larger and longer (10 mm) body; a distinctly longer pair of terminal setae on the telson; the peduncle of the uropod two or more times longer than the telson; first article of the uropodal endopod distinctly longer than both two distal articles combined (not subequal as in *E. vema*).

Besides the larger number of lateral spiniform setae, *Ekleptostylis debroyeri* can be separated from *E. heardi* by its relatively shorter telson. In *E. heardi* the telson is over 2/3 the length of the uropodal peduncle.

There is confusion concerning the type

locality of *E. heardi* and the depth and locality data for the type material presented by McLelland & Meyer (1998) appears to be in error. Based on the written label, some specimens of *E. heardi*, including the type material, came from the abyssal depth of 3590 m. There is strong circumstantial evidence that *Eltanin* Station "363" (Cruise 6) was an apparent mislabeling of one of the fractions of the large "rock dredge" sample taken at *Eltanin* Station 343. Station 363 was a Phleger corer sample taken at a depth of 3477–3590 m. In addition to *Ekleptostylis heardi*, three other diastylid species, *Diastylis hammoniae* Zimmer, 1902, *Diastylis planifrons* Calman, 1912, and *Diastylodes goekei* Roccatagliata & Heard, 1992 were also present in the vial labeled "Station 363." All three species were previously known from Antarctic and subantarctic waters in depths of less than 400 m (Roccatagliata & Heard 1992, Calman 1912). When received from the University of Southern California where the *Eltanin* samples were sorted, the vials labeled Stations 343 & 363 were placed together in a large vial (Heard, per. obs.), further supporting our supposition of a mislabeling error.

Due to this apparent mislabeling during the sorting process, McLelland & Meyer (1998) listed (p. 279) their type material of *Ekleptostylis heardi* as coming from "Sta. 363" at a depth of 3590 m." We recommend that all their material should now be referred to a single locality, *Eltanin* Station 343 (Cruise 6), and that the type locality of *E. heardi* be changed to accommodate this apparent error.

Discussion.—Subadult specimens that we attribute to *E. debroyeri*, appear to be nearly indistinguishable from the genus *Leptostylis* G. O. Sars, 1869, sensu lato. Day (1980) noted that the distinction between *Diastylis* and *Leptostylis* cannot be determined without the adult males, since other generic characters appear to be too plastic. This situation also appears to apply to the females and subadults of *Ekleptos-*

tylis. As defined by Day (1980), the telson of *Diastylis* is usually longer than the last pleomere and has at least three pairs of lateral spiniform setae. In contrast, the telson of *Leptostylis* is short and supposedly never longer than the last pleomere (Day 1980). Another important diagnostic character attributed to *Leptostylis* is based on the length of second antenna of the adult male, so complete determination has not been possible because the males for some species remain unknown. The descriptions of four species attributed to *Leptostylis* are based solely on subadult males. These species, *Leptostylis faurei* Day, 1980, *L. gilli* Day, 1980, and *L. menziesi* Băcescu-Mester, 1967, have a "cub-shaped" article 3 on second antenna and the flagellum of the second antenna barely reaches half the body length. According to the definition of *Leptostylis* sensu Stebbing (1912), this character would distinguish them from *Diastylis*. However, since their descriptions, as well as ours for *E. debroyeri*, are based on subadult males, there is a possibility that the terminal male forms might have considerably longer second antennae and thus affinities with the genus *Diastylis* sensu Day 1980. Also, the telsons of these species are subequal, or even longer than sixth pleomere, and with the exception of *L. menziesi*, they have 3 or more pairs of lateral spiniform setae on the postanal region of the telson. These characters further suggest affinities to *Diastylis* sensu lato or possibly *Ekleptostylis*.

The generic status of these three species will not be settled with certainty until adult males and females are available for study or until a more reliable set of characters can be established to separate *Diastylis*, *Ekleptostylis*, and *Leptostylis*. The taxonomy of these three genera also requires designation of a type species for both *Diastylis* and *Leptostylis*.

The taxonomic status of *D. arenaria* Say, 1818, the type species and genotype for the family Diastylidae may be nearly resolved (see Gerken 1999). The type material for *D. arenaria* is poorly defined and no longer

extant (Holthuis 1969). The brief and vague species description was based on specimens collected from the east coast of the United States ["Coast of Georgia and Florida" (Say 1818:315)]. *Diastylis arenaria* may be conspecific with *Oxyurostylis smithi* Calman, 1912, the well-described type species of the genus *Oxyurostylis* Calman, 1912, which also was described from the shallow waters of the U. S. East Coast (Holthuis 1969, Roccatagliata & Heard 1995). As suggested by Day (1980), Gerken (1999) petitioned the International Commission on Zoological Nomenclature to suppress *D. arenaria* as the type species in favor of the well established *Diastylis rathkei* (Kröyer 1841). At this time her case (3078) is still pending. With regard to genus *Leptostylis*, apparently Sars (1869) did not designate a type species for one of the four initial species assigned to the genus (see Day 1980: 276).

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