

1 **Two new “Incertae sedis” syllids (Annelida: Syllidae) from Brazilian oceanic**
2 **islands**

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20 Running title: **“Incertae sedis” syllids from Brazilian oceanic islands**

21

22 ‘The present paper has not been submitted to another journal, nor will it be in the 6
23 months after initial submission to *EJT*. All co-authors are aware of the present
24 submission.’

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32 **Abstract**

33 Oceanic islands present very interesting environments, known by possessing relatively
34 distinct fauna and flora. However, taxonomic accounts from Brazilian oceanic islands
35 focused on important groups, such as the family Syllidae, began to be published only in
36 recent years. In this paper we provide descriptions and illustrations of two new species,
37 *Brevicirrosyllis trinidadensis* sp. nov. from Trindade Islands and *Westheidesyllis* sp.
38 nov. from Rocas Atoll, two incertae sedis genera previously included in the Eusyllinae
39 subfamily. We also provide updated identification keys for both genera.

40 **Keywords:** “Polychaeta”, Rocas Atoll, Trindade Island, *Brevicirrosyllis*,
41 *Westheidesyllis*.

42 **Introduction**

43 The family Syllidae Grube (1850) is one of the most complex and species-rich groups
44 of annelids, with 79 genera, comprising about 1100 valid species (San Martín &
45 Aguado 2014; Pamungkas *et al.* 2019; Martín *et al.* 2021). Currently, the family is
46 divided into five subfamilies: Anoplosyllinae Aguado & San Martín, 2009, Autolytinae
47 Langerhans 1879, Eusyllinae Malaquin, 1893, Exogoninae Langerhans, 1879, and
48 Syllinae Grube, 1850, in addition to some “*incertae sedis*” genera (Aguado *et al.* 2012;
49 San Martín & Aguado, 2014).

50 Aguado *et al.* (2012) combined morphological and molecular information to
51 elucidate the relationships within Syllidae, and found “Eusyllinae” as paraphyletic,
52 while also finding a monophyletic group within “Eusyllinae”; thus, the authors proposed
53 a reorganization, conserving the name and the rank of subfamily. In this process, some
54 genera were considered as ‘*Incertae sedis*’ – excluded from the new configuration of the
55 Eusyllinae –, many of them for which no molecular information was available at the

56 time; this is the case, among others, of *Brevicirrotyllis* San Martin, López & Aguado,
57 2009 and *Westheidesyllis* San Martin, López & Aguado, 2009 (Aguado *et al.* 2012;
58 2015).

59 Both *Brevicirrotyllis* and *Westheidesyllis* count with only one official record
60 each in Brazilian waters, as *Brevicirrotyllis* cf. *mariae* (San Martin & Hutchings, 2006),
61 recorded from Southeastern Brazil (Fukuda *et al.* 2015), and *Westheidesyllis gesae*
62 (Perkins, 1981) (as *Pionosyllis gesae*), from the Rocas Atoll (Paiva *et al.* 2007) – the
63 former, however, lacking descriptions and information on deposited material. Here we
64 describe two new species, *Brevicirrotyllis trinidadensis* **sp. nov.**, from Trindade island,
65 the sixth known species of the genus, and *Westheidesyllis* **sp. nov.**, the first species of
66 the genus reported with glands, described from the Rocas Atoll.

67

68 **Material and Methods**

69 Specimens were collected in two oceanic islands from Northeastern Brazil.
70 *Westheidesyllis* **sp. nov.** was found in the Rocas Atoll (3°51'S 33°40'W), the only atoll
71 in the South Atlantic Ocean, at 260 km off the coast of Natal, Rio Grande do Norte,
72 Northeastern Brazil; specimens were fixed in formalin 10% and, later, preserved in
73 ethanol 70%. The specimens of *Brevicirrotyllis trinidadensis* **sp. nov.** were found in the
74 Trindade Island (20°30'S 29°20'W), collected through the 'ProTrindade Marine
75 Invertebrate Project' ('*ProTrindade*'), focused on the fauna of the Trindade and Martin
76 Vaz Archipelago, at 1140 km off the coast of Vitória, Espírito Santo, Southeastern
77 Brazil; specimens from this project were both fixed and preserved in ethanol 70%.

78 Morphological traits were analysed and measured under a Zeiss Stemi SV11
79 stereomicroscope and Zeiss Axio Lab A1 microscope. In addition, some specimens

80 were examined using scanning electron microscopy (SEM). For SEM, specimens were
81 first dehydrated in a graded series of increasing concentrations of ethanol (92–100%),
82 critical point-dried, coated with ~35 nm of gold, and examined and photographed at the
83 Laboratório de Imagem e Microscopia Óptica e Eletrônica (LABIM–UFRJ). Line
84 drawings were done from slide-mounted specimens with the aid of a drawing tube. The
85 length of specimens was measured from the tip of palps to the tip of pygidium,
86 excluding anal cirri; width was measured at proventricular level, excluding parapodia.
87 Type material and other examined specimens are deposited at the Museu Nacional,
88 Universidade Federal do Rio de Janeiro (MNRJ), Brazil, and at the Museu de
89 Zoologia, Universidade de São Paulo (MZUSP), Brazil.

90

91 **Results**

92

Family Syllidae Grube, 1850

93

Incertae sedis

94

95

Genus *Brevicirrosyllis* San Martín, López & Aguado, 2009

96

97 Type species: *Pionosyllis weismanni* Langerhans, 1879, designated by San Martín *et al.*
98 (2009).

99

100 **Diagnose.** Small to medium sized syllids, usually slender, without ciliary bands. Palps
101 triangular, distally rounded, fused at bases and diverging towards tips. Prostomium
102 frequently with two pairs of eyes and two anterior eyespots, some species without eyes,
103 and three antennae, median antenna inserted posteriorly on prostomium. Peristomium
104 usually distinct, with 2 pairs of peristomial cirri. Antennae, peristomial and dorsal cirri

105 of chaetiger 1 long and slender; from chaetiger 2 onwards, dorsal cirri short, usually
106 ovate to exogonid-like. Ventral cirri digitiform. Compound chaetae as hemigomph or
107 heterogomph falcigers, with blades bidentate to subbidentate and spinulated, with short
108 spines on margin; dorsoventral gradation in length present. Dorsal simple chaetae
109 present from at least chaetiger 2; ventral simple chaetae present on posterior body,
110 bidentate, sometimes with hood covering subdistal tooth. Proventricle and pharynx
111 about same size; pharyngeal tooth located anteriorly, near anterior margin.
112 Reproduction by epigamy (cf. San Martín *et al.* 2009).

113

114 **Remarks.** *Pionosyllis* Malmgren, 1867 was redefined by San Martín *et al.* (2009), with
115 the proposition of some new genera – *Brevicirrotyllis* among them – based on coherent
116 groups previously encompassed within that genus. In that work, the authors provided
117 an identification key for the species of *Brevicirrotyllis*, but the information about the
118 morphology of the dorsal simple chaetae of *B. mayteae* (San Martín & Hutchings, 2006)
119 and *B. ancori* (San Martín & Hutchings, 2006) were exchanged from one to the other: in
120 the original description and illustrations the former species has the dorsal simple
121 chaetae pin-shaped, while the latter has the dorsal simple chaetae truncate (San Martín
122 & Hutchings 2006). We update this identification key and insert the new species
123 described herein.

124 *Brevicirrotyllis trinidadensis* sp. nov.

125 Figure 1

126 **Type material**

127 **Holotype.** Trindade Island, Enseada da cachoeira (20°31'22.4"S 29°19'52"W), 18 m
128 depth (MZUSP 2027), coll.04. July. 2012. **Paratype.** Trindade Island, Ilha da Racha

129 (20°30'26.5"S 29°20'48"W), 21 m depth: 1 specimen (MZUSP 2267), coll.16. July.
130 2013.

131

132 **Additional material examined**

133 *Brevicirrosyllis ancori* (San Martín & Hutchings, 2006). Australia, Queensland, Great
134 Barrier Reef, Outer Younge Reef (14°36'S 145°38'E), rock covered with coralline algae
135 and encrusting sponges, 9 m: 1 spec. (holotype, AM W29244), coll. P. Hutchings, 21
136 Jan 1977, det. G. San Martín, 15 Nov 2004; same locality, rock with *Lithothamnion* and
137 *Halimeda*, 30 m: 4 specs (AM W28962), coll. P. Hutchings, 24 Jan 1977, det. G. San
138 Martín, 2003.

139

140 **Etymology**

141 The specific name, trinidadensis, is an adjective, referring to one of the Trindade Island
142 at the Trindade and Martim Vaz Archipelago, from which the specimens were collected.

143 **Diagnosis**

144 *Brevicirrosyllis* without dorsal cirri on second parapodium, parapodial glands absent,
145 palps similar in length to prostomium, median antenna more than four times longer than
146 palps, dorsal peristomial cirri longer than body width.

147 **Description**

148 Medium to long-sized body, slender, longest specimen examined 7 mm long, 0.17 mm
149 wide, with 47 chaetigers; body without pigmentation in specimen preserved in ethanol
150 (Fig. 1A). Palps triangular, distally tapering, fused only at bases, about same length of
151 prostomium; prostomium subpentagonal, with a pair of eyes at anterior $\frac{2}{3}$ of its length,
152 and a pair of eyespots on anterior margin; lateral antennae inserted slightly anteriorly to

153 pair of eyes, about same length of palps; median antenna inserted posteriorly to eyes, on
154 middle of prostomium or slightly posteriorly, almost four times longer than lateral ones
155 (Fig. 1A). Peristomium distinct, shorter than subsequent segments; dorsal peristomial
156 cirri about same length of palps and prostomium together, longer than body width and
157 the lateral antennae, but shorter than dorsal cirri from chaetiger 1; ventral peristomial
158 cirri about $\frac{1}{2}$ length of dorsal ones (Fig. 1A). Dorsal cirri from chaetiger 1 longer than
159 remaining ones, with almost half length of median antenna; dorsal cirri absent from
160 chaetiger 2; remaining dorsal cirri digitiform to distally slightly tapered, without
161 internal glands, longer than parapodial lobes but shorter than width of respective
162 chaetiger (Fig. 1A). Ventral cirri digitiform, shorter than parapodial lobes. Parapodial
163 lobes conical. Anterior body parapodia with 5–4 falcigers each, 4–3 falcigers on
164 midbody and 3 falcigers on each posterior body parapodium; shafts of falcigers smooth,
165 thicker ventralwards; blades bidentate, distal tooth larger than subdistal one throughout;
166 on each parapodium, dorsalmost blade elongate, subdistally faintly sinuous (Fig. 1B);
167 blades with short and thin spines on margin, with smooth connective joining blade and
168 shafts on anterior and midbody parapodia; blades with dorsoventral gradation in length,
169 about 27–10 μm on anterior body (Fig. 1B), 29–8 μm on midbody (Fig. 1C) and 15–7
170 μm on posterior body parapodia (Fig. 1E). Dorsal simple chaetae present from chaetiger
171 10–11, truncated, with few spines laterally, becoming slightly thicker towards posterior
172 body (Fig. 1F, G, H). Ventral simple chaetae not observed. One acicula per parapodium
173 throughout, almost bent at right angle, with irregular, tapering tip (Fig. 1D). Pharynx
174 through 3.5–3 segments; with a conical to rhomboidal pharyngeal tooth located on
175 anterior rim (Fig. 1A). Proventricle through 2.5 segments, with 32–30 muscle cell rows.

176 **Remarks**

177 *Brevicirrotyllis trinidadensis* **sp. nov.** is characterized by having palps with about same
178 length of prostomium; median antenna more than four times longer than palps; dorsal
179 peristomial cirri with about same length of palps and prostomium together, longer than
180 body width; dorsal cirri of chaetiger 1 longer than remaining, about half length of
181 median antenna or twice longer than width of corresponding segment; and dorsal cirri of
182 remaining chaetigers shorter, digitiform to distally slightly tapered, lacking internal
183 glands.

184 *Brevicirrotyllis ancori* described from Queensland, Australia, in the Pacific
185 Ocean, is the most similar species to *B. trinidadensis* **sp. nov.**, sharing the overall body
186 morphology and shape of compound chaetae. Conversely, *B. ancori* differs by having
187 palps about 1½ longer than prostomium, median antenna shorter, with only about twice
188 the length of palps, dorsal peristomial cirri about same size of palps, about same length
189 of body width, and by having parapodial glands. Moreover, San Martín & Hutchings
190 (2006) described some variation in *B. ancori*: on some specimens, two pairs of eyes
191 may be present; dorsal cirri on chaetiger 1 may be longer (cf. San Martín & Hutchings,
192 2006, Fig. 56A–B) and parapodial glands larger than in the holotype. Even compared
193 with these specimens that varied from the type-series of *B. ancori*, *B. trinidadensis* **sp.**
194 **nov.** can be easily differentiated.

195

196 **Type locality**

197 Trindade island, Espírito Santo, Brazil.

198 **Distribution**

199 South Atlantic Ocean, Trindade island.

200 **Identification key to the currently known species of *Brevicirrosyllis*** (adapted from
201 San Martin *et al.* 2009)

202

203 1. Ventral simple chaetae without hood, about same width of falciger shafts, with both
204 teeth similar in size. Compound chaetae heterogomph *Brevicirrosyllis*
205 *gorringensis* Hartmann-Schröder, 1977.

206 – Ventral simple chaetae hooded, wider than falciger shafts, with subdistal tooth longer
207 than distal one. Compound chaetae hemigomph 2

208 2. Dorsal cirri with fibrillar inclusions 3

209 – Dorsal cirri without fibrillar inclusions 4

210 3. Dorsal cirri on chaetiger 2 present ... *Brevicirrosyllis weismanni* (Langerhans, 1879)

211 – Dorsal cirri on chaetiger 2 absent *Brevicirrosyllis mariae* (San Martin &
212 Hutchings, 2006)

213 4. Dorsal simple chaeta pin-shaped *Brevicirrosyllis mayteae* (San Martin &
214 Hutchings, 2006)

215 – Dorsal simple chaeta truncated.....5

216 5. Palps longer than prostomium; median antenna twice length of palps; dorsal
217 peristomial cirri about same length of body width; parapodial glands present

218*Brevicirrosyllis ancori* (San Martin & Hutchings, 2006)

219 – Palps with same length of prostomium; median antenna longer than above, more than
220 four times length of palps; dorsal peristomial cirri longer than body width; parapodial
221 glands absent..... *Brevicirrosyllis trinidadensis* sp. nov.

222

223 **Genus *Westheidesyllis* San Martin, López & Aguado, 2009**

224 **Type species**

225 *Eusyllis heterocirrata* Hartmann-Schröder, 1959, designated by San Martín *et al.*
226 (2009).

227

228 **Diagnosis (Emended).** Small-sized, fragile bodies, easily losing antennae and cirri. A
229 transversal band of cilia may be present on prostomium, peristomium and segments.
230 Palps subtriangular, free from each other for most of their length, fused only at bases;
231 prostomium oval to subpentagonal, with lateral antennae inserted near anterior rim,
232 median antenna inserted posteriorly to lateral ones; eyes present or absent, sometimes
233 only a pair; some species with pair of anterior eyespots. Nuchal organs as transversal
234 ciliated grooves between prostomium and peristomium. Peristomium distinct, with two
235 pairs of peristomial cirri. Dorsal cirri alternating long cirri, more than twice longer than
236 body width at corresponding segment, and short cirri, with length up to half width of
237 corresponding segment. Ventral cirri digitiform, inserted distally on parapodial lobes.
238 Parapodial glands occasionally present at the bases of parapodial lobes. Falcigers with
239 homogomph articulation; blades short, bidentate, spinulated, with short spines. Dorsal
240 simple chaetae from anterior to midbody posteriorwards. Ventral simple chaetae not
241 known. Aciculae distally inflated, laterally expanded or knobbed. Pharynx longer or
242 about same size as proventricle, with anterior tooth (cf. San Martín *et al.* 2009).

243

244 **Remarks**

245 Since its proposal, the genus *Westheidesyllis* counted with only three species: *W.*
246 *corallicola* (Ding & Westheide, 1997), *W. gesae* (Perkins, 1981) and *W. heterocirrata*
247 (Hartmann-Schröder, 1959). *Westheidesyllis gesae* was recorded for Brazilian waters
248 (as *Pionosyllis gesae*), specifically for the Rocas Atoll (Paiva *et al.* 2007), however, this
249 record lacks a description and details on deposited material. Here we describe

250 *Westheidesyllis* **sp. nov.** also from the Rocas Atoll, the first species of the genus
251 reported as presenting glands, which lead us to amend the genus to conform this
252 character.

253

254 **Key to the current known species of *Westheidesyllis* (adapted from San Martin et**
255 **al. 2009)**

256 1. Eyes absent, but anterior eyespots may be present.....2

257 – Eyes and eyespots present3

258 2. Without eyespots; parapodial glands present; aciculae distally hollow, with tips
259 protruding from parapodial lobes*Westheidesyllis* **sp. nov.**

260 – With eyespots; parapodial glands absent; aciculae distally knobbed, not protruding
261 from parapodial lobes*W. coralicolla*

262 3. Transversal ciliated bands on prostomium, peristomium and segments; blades of
263 falcigers with long and thin spines.....*W. gesae*

264 – Transversal ciliated bands absent, or not as above; blades of falcigers with spines
265 coarser than above.....*W. heterocirata*

266

267 ***Westheidesyllis* sp. nov.**

268 Figures 2–7.

269 **Type material**

270 **Holotype.** Rocas Atoll (3°51'68"S 33°50' 0"W), 1 m depth, on coralline sand (MNRJP
271 XXXX), coll. 16 Oct 2000. **Paratypes.** Rocas Atoll (3°51'68"S 33°50' 0"W), 1 m depth,
272 on coralline sand 4 specimens (MNRJP XXXX), coll. 16 Oct 2000.

273

274 **Material examined**

275 Rocas Atoll (3°51'68"S 33°50'0"W), 1 m depth, on coralline sand: 135 specimens, coll.
276 16 Oct 2000; Piscina das Âncoras (3°50'30"S 33°48'30"W), 1 m depth, on coralline
277 sand: 57 specimens (four mounted for SEM), coll. 16 Oct 2000; “along of the Rais”,
278 1m depth, on coralline sand: 6 specimens, coll. 23 Oct 2000.

279

280 **Additional material examined**

281 *Westheidesyllis gesae* (Perkins, 1981). United States, Florida, St. Lucie County,
282 Hutchinson Island (27.3567, -80.2217), 10.9 m: 1 spec. (holotype, USNM 60456), coll.
283 Gallagher, Boyle & Whiting, 12 Mar 1976, det. T.H. Perkins; same locality (27.3689, -
284 80.2294), 9.7 m: 1 spec. (paratype, USNM 60458), coll. Gallagher, Futch & Jaap, 29 Jul
285 1973, det. T.H. Perkins (1 spec.); same locality (27.3564, -80.2233), 11.5 m: 2 specs
286 (paratypes, USNM 60459), coll. Gallagher & Hollinger, 14 Mar 1972, det. T.H. Perkins.
287 *Westheidesyllis heterocirrata* (Hartmann-Schröder, 1959). El Salvador, Estero
288 Jaltepeque, La Herradura, sand, infralittoral: 1 spec. (holotype, HMZ P-14579), 1955.

289

290 **Description**

291 Small-sized, slender bodies, longest specimen 2.6 mm long, 0.25 mm wide, with 32
292 chaetigers; specimens preserved in ethanol without pigmentation. Palps subtriangular,
293 basally juxtaposed for ~1/4 their length, distally rounded, slightly shorter than
294 prostomium (Figs. 2A; 3A; 4A; 5A, C, D). Prostomium ovate to subpentagonal; eyes
295 absent; lateral antennae inserted close to anterior margin of prostomium about half
296 length of median one; median antenna inserted on midline of prostomium, almost four
297 times longer than palps and prostomium (Figs. 3; 5A–D). Two large ciliated nuchal
298 organs between prostomium and peristomium (Fig. 5A, B). Peristomium distinct,

299 shorter than subsequent segments; dorsal peristomial cirri about same length or slightly
300 shorter than median antenna (Fig. 3); ventral peristomial cirri almost half length of
301 dorsal ones. Ciliated pits transversally arranged on midline of peristomium and
302 segments, to at least chaetiger 15 (Fig. 5B, G). Dorsal cirri alternating in length, on
303 chaetiger 1 about four times longer than width of segment (Fig. 3); on chaetiger 2
304 absent; on chaetigers 3, 5 and 7 shorter than width of corresponding segment; on
305 chaetigers 4, 6, 8 and 9 three to four times longer than width of corresponding segment
306 (Fig. 3); from chaetiger 10 onwards, dorsal cirri with regular alternation in length, short
307 cirri shorter than corresponding segment, long cirri three to five times longer than
308 corresponding segment, (Fig. 4D). Antennae, peristomial and dorsal cirri with
309 cirrophores (Figs. 3A; 4B, D). Ventral cirri digitiform, shorter than parapodial lobes,
310 inserted distally, extending beyond parapodial lobes, shorter towards posterior body
311 (Figs. 4A, B; 5H). Parapodial lobes elongated, rectangular, slightly bilobed (Fig. 4B);
312 parapodial glands presents after proventricle, on the bases of parapodial lobes, with
313 rounded to subpentagonal granules (Figs. 2A–C; 4B–D). Parapodia with three falcigers
314 throughout; shafts of falcigers smooth, homogomph, with irregular, usually quadrilobate
315 acute tips (Fig. 7F); blades bidentate, with teeth about same size or distal tooth slightly
316 larger throughout; blades spinulated, with short and thin spines (Figs. 6A–C; 7A, B, F,
317 J); blades varying in length on dorsalmost, intermediate and ventralmost chaetae, with 6
318 μm , 12 μm and 8 μm on anterior parapodia (Figs. 6A; 7A,B); 7 μm , 13 μm and 10 μm
319 long on midbody (Figs. 6B; 7E, F); and 5 μm , 12 μm and 9 μm on posterior body (Figs.
320 6C; 7H–J). Dorsal simple chaetae present from chaetiger 3–4, tapering distally, with
321 rounded tip, subdistally spinulated on anterior body (Figs. 6D; 7C, D), becoming
322 slightly sigmoid towards posterior body (Figs. 6E, F; 7G, K). One acicula per
323 parapodium throughout, distally inflated, hollow (Fig. 6G), with tip protruding from

324 parapodial lobe (Fig. 4B). Pharynx through about 4 segments (Figs. 2A; 3), with conical
325 to rhomboidal pharyngeal tooth located on anterior rim, surrounded by 10 soft papillae;
326 proventricle through 2.5 segments, with 14–15 muscle cell rows (Fig. 3). Pygidium
327 rounded (Figs 4C; 5H), with pair of cirri about same length of long posterior body
328 dorsal cirri.

329

330 **Remarks**

331 None of the specimens of *Westheidesyllis* **sp. nov.** examined herein showed cilia at the
332 bases of the dorsal cirri or the transversal ciliary bands on the segments throughout, as
333 mentioned in other species of the genus. Nonetheless, under SEM, it was possible to
334 observe a set of pits, of which, generally, these cilia are projected: at the bases of the
335 dorsal cirri, almost above the parapodial glands and arranged transversely, more or less
336 in line, on each anterior segment and peristomium.

337 *Westheidesyllis* **sp. nov.** resembles *W. corallicola* (Ding & Westheide, 1997),
338 described from Hainan Island, South China, and later found in Australia (New South
339 Wales and Lizard Island), all records in the Pacific Ocean. Members of both species
340 lack eyes, also sharing the overall body morphology and similar compound chaeta.
341 *Westheidesyllis* **sp. nov.** lacks eyespots, have median antenna inserted medially on
342 prostomium, aciculae distally hollow, with tips protruding from parapodial lobes, and
343 proventricle extending for 2.5 segments, besides the internal glands on the bases of
344 parapodia. Conversely *W. corallicola* has eyespots, median antenna inserted posteriorly
345 on prostomium, aciculae distally knobbed but not hollow nor protruding from
346 parapodial lobes (Ding & Westheide, 1997, Fig. 6D, E, I), and proventricle extending
347 for about 1.5 segment (Ding & Westheide, 1997, Fig. 6A), and also lacking internal

348 glands (Ding & Westheide 1997; San Martín & Hutchings 2006). Furthermore,
349 specimens of *Westheidesyllis* **sp. nov.** showed no signs of cilia nor the ciliary pits
350 indicating a similar ciliation pattern to that found in *W. corallicola*, regarding the tufts
351 dorsally and ventrally located close to the bases of parapodia and on the pygidium
352 (Ding & Westheide, 1997).

353 As mentioned above, *Westheidesyllis* **sp. nov.** is the only known species of the
354 genus where glands have been observed. The presence of glands, specially associated to
355 the parapodia, on interstitial species in unconsolidated substrates is commonly reported
356 (Worsaae *et al.*, 2021). The parapodial glands in *Westheidesyllis* **sp. nov.** are best
357 observed after Methyl green staining (Fig. 2A, B), but they can be relatively easily
358 visualized without the aid of this technique (Fig. 2C).

359 The other two species of the genus, *W. gesae*, described from Florida and with
360 reports from the Atlantic coast of the United States, Gulf of Mexico and the Caribbean,
361 in the Atlantic Ocean (Read & Fauchald, 2021), and *W. heterocirrata*, described from
362 and only known to occur in El Salvador, in the Pacific Ocean (Read & Fauchald, 2021),
363 are very morphologically similar to each other. *Westheidesyllis* *gease* has anterior and
364 midbody falciger blades with long and thin spines, ciliation on the prostomium and as
365 transversal ciliary bands in each segment, and proventricle extending for about three
366 segments, with ca. 23 muscle-cell rows. On the other hand, *W. heterocirrata* presents
367 falciger blades with spines relatively thicker, proventricle extending for about 2
368 segments, with 14 muscle-cell rows, and does not have transversal ciliary bands in the
369 segments.

370 The clear identification of ciliation patterns can be very tricky without proper
371 fixation methods and examination under SEM (San Martín & Aguado, 2012), which
372 difficult identifications in genera for which this character is important, as is the case of

373 *Westheidesyllis*. Illustrating the issue, ciliation in some paratypes of *W. gease* could not
374 be visualized under optical microscopy (MVF, pers. obs.); accordingly, Salcedo *et al.*
375 (2016) found that the transverse ciliary bands may not be present in some specimens of
376 *W. gesae* from the Mexican Pacific. On the other hand, clear tufts of cilia could be
377 observed on the base of cirrophores in the holotype of *W. heterocirrata* (MVF, pers.
378 obs.), although this character was not mentioned in the original description (Hartmann-
379 Schröder 1959). Therefore, we recommend that revisions of the species within this
380 genus, ideally with SEM, should be performed, in order to clarify the status of these
381 taxa.

382 **Type locality:** Rocas Atoll.

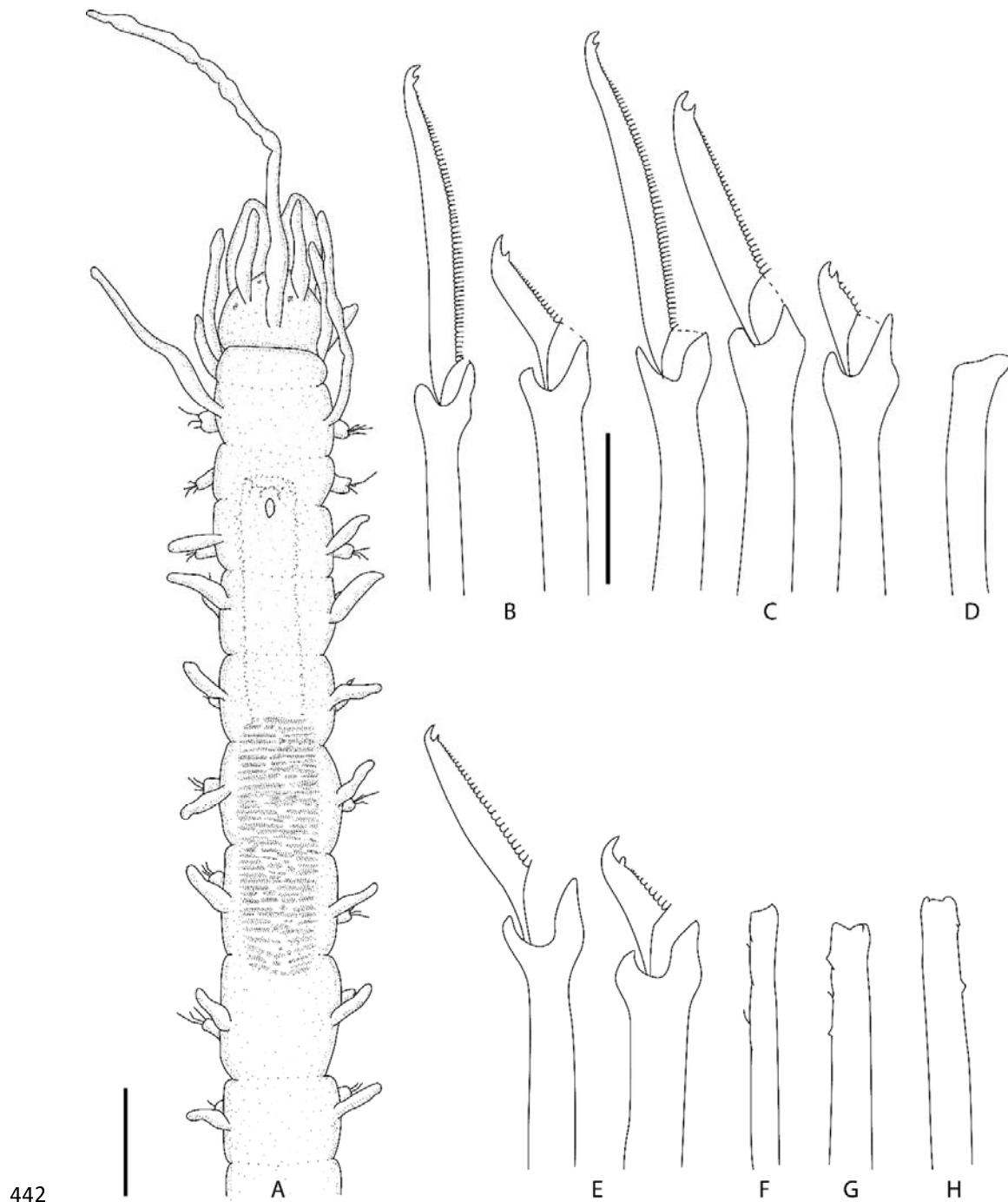
383 **Distribution.** Atlantic Ocean: Rocas Atoll, Brazil.

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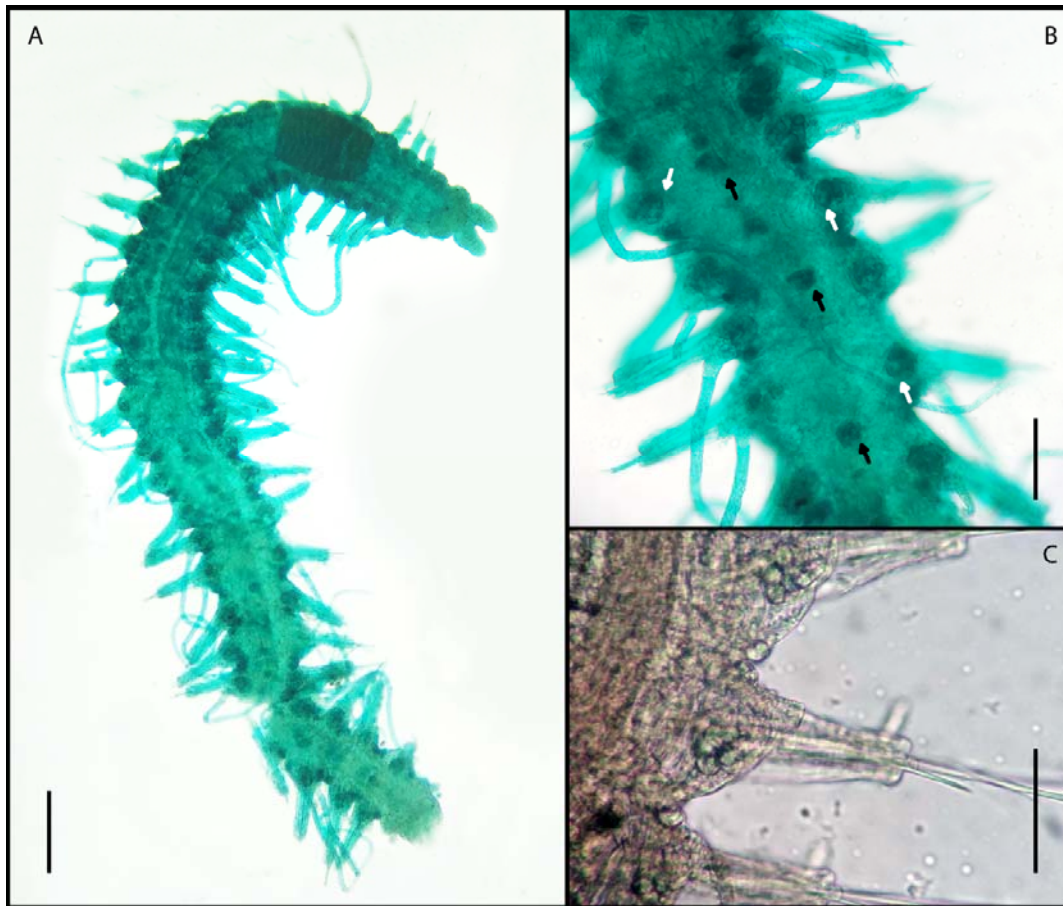
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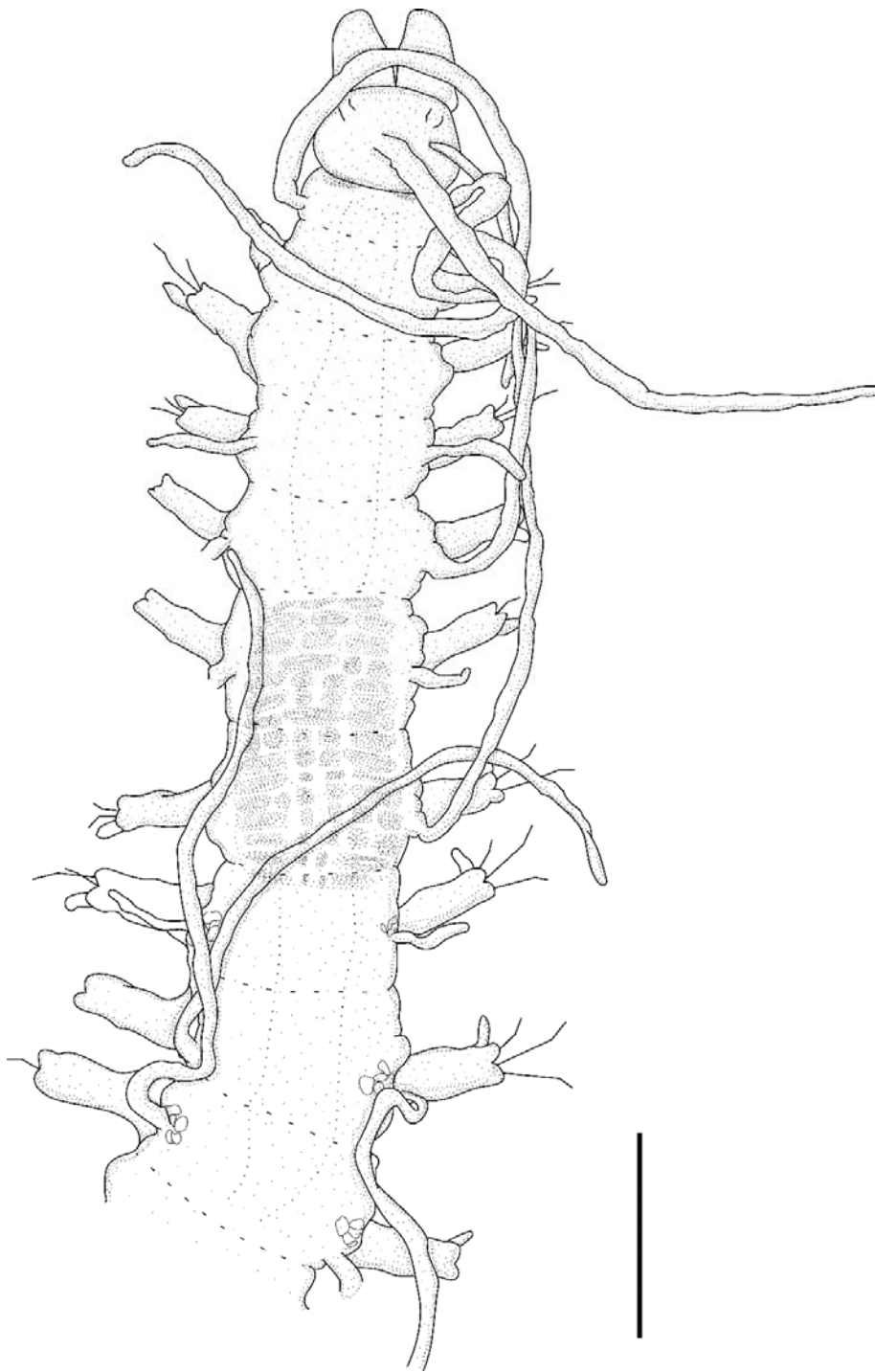
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443 **Fig. 1.** *Brevicirrosyllis trinidadense* sp. nov. **A.** Anterior body. **B, C, E.** Falcigers,
444 anterior, mid- and posterior body, respectively. **D.** Acicula. **F–H.** Dorsal simple chaetae,
445 anterior, mid- and posterior body, respectively. Scale bars: **A,** 0.17 mm; **B–H,** 10 μ m.



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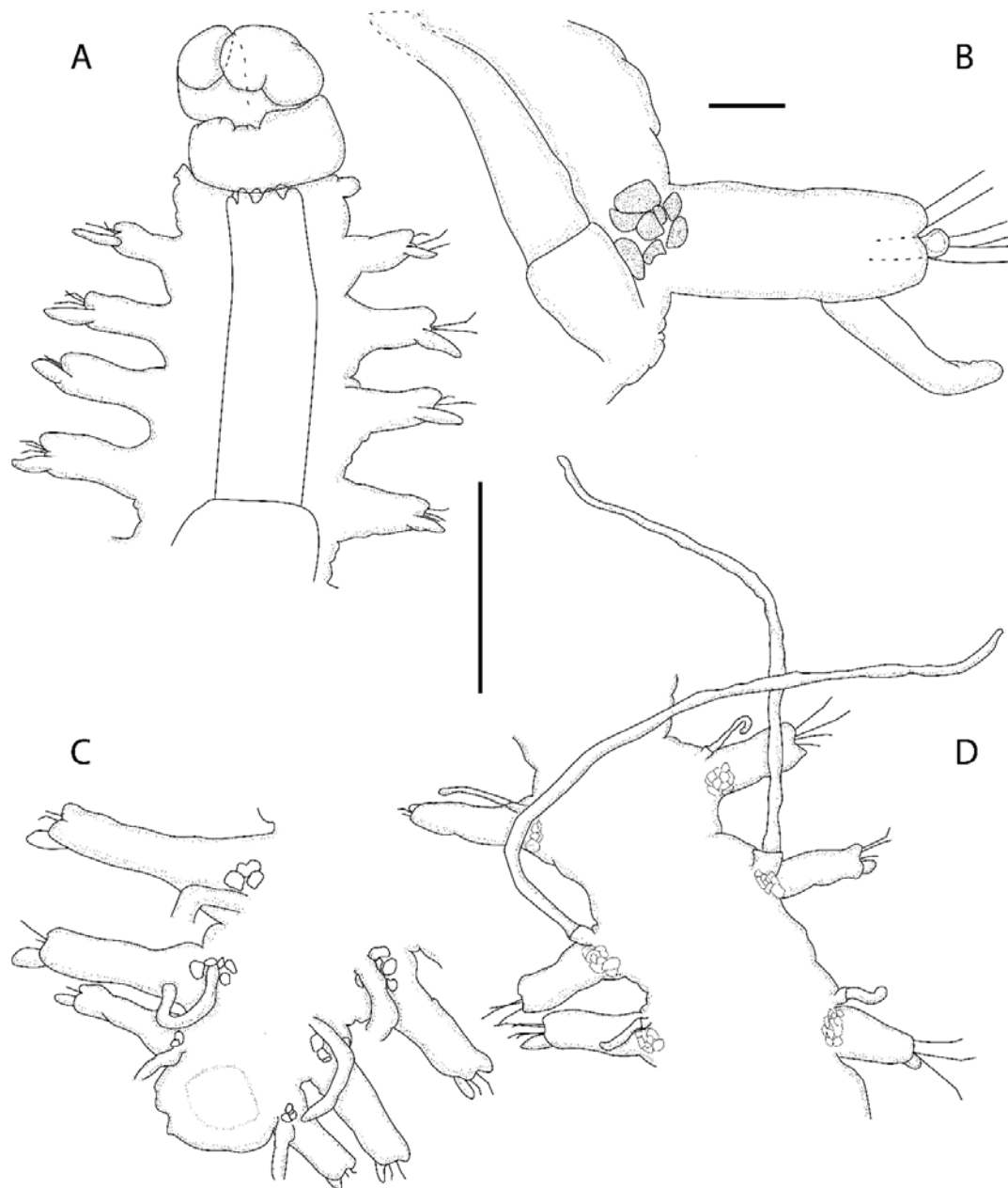
447 **Fig. 2.** *Westheidesyllis* sp. nov. A, B showing methyl green stained specimen. A. Whole
448 body, dorsal view. B. Midbody, dorsal view, white arrows showing parapodial glands,
449 black arrows showing artifacts of the digestive tube. C. Midbody parapodia, dorsal
450 view. Scale bars: A, 0.22 mm; B, 0.15 mm; C, 0.15 mm.



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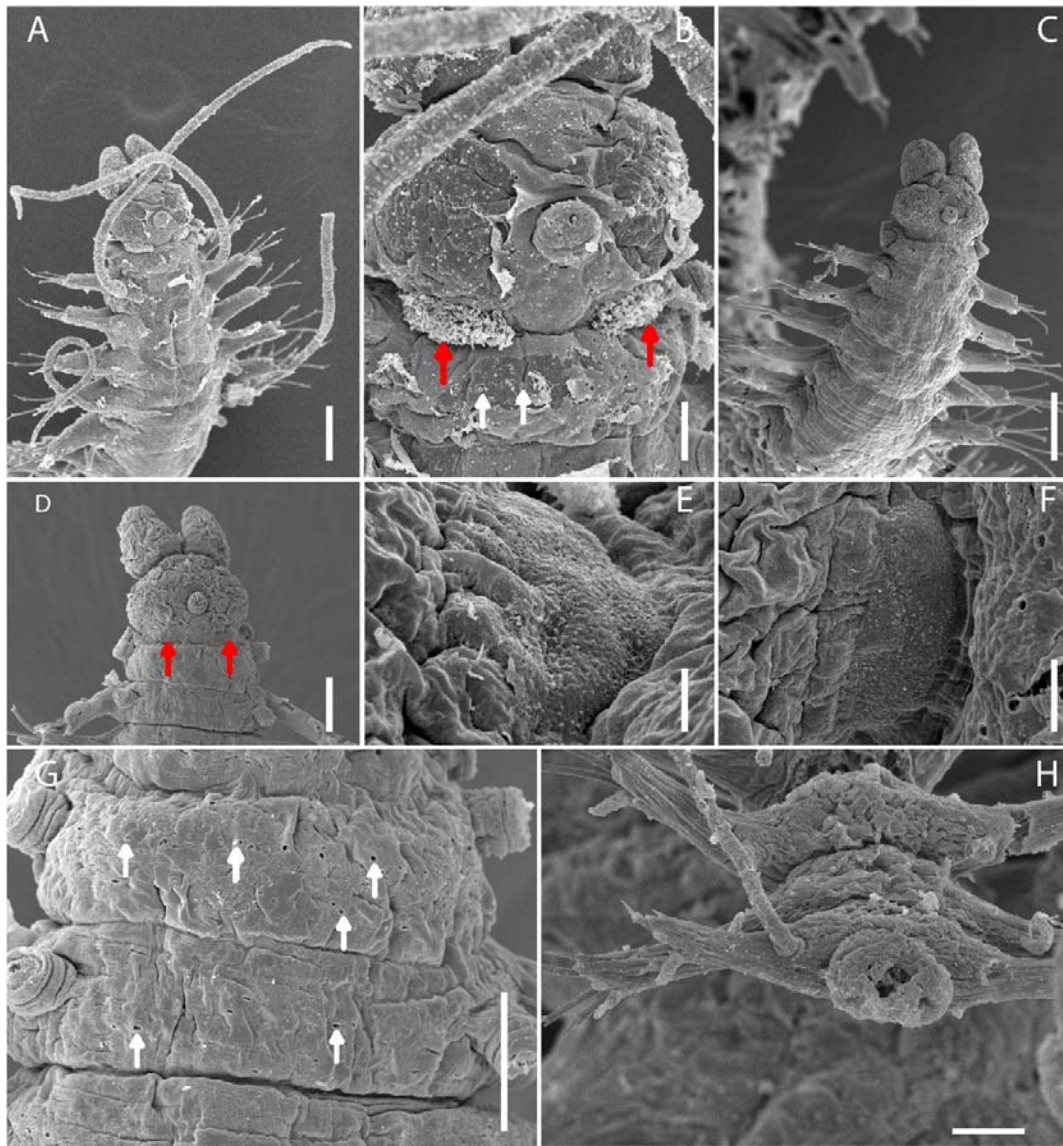
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453 **Fig. 3.** *Westheidesyllis* sp. nov. **A.** Anterior body, dorsal view. Scale bar: 0.22 mm.



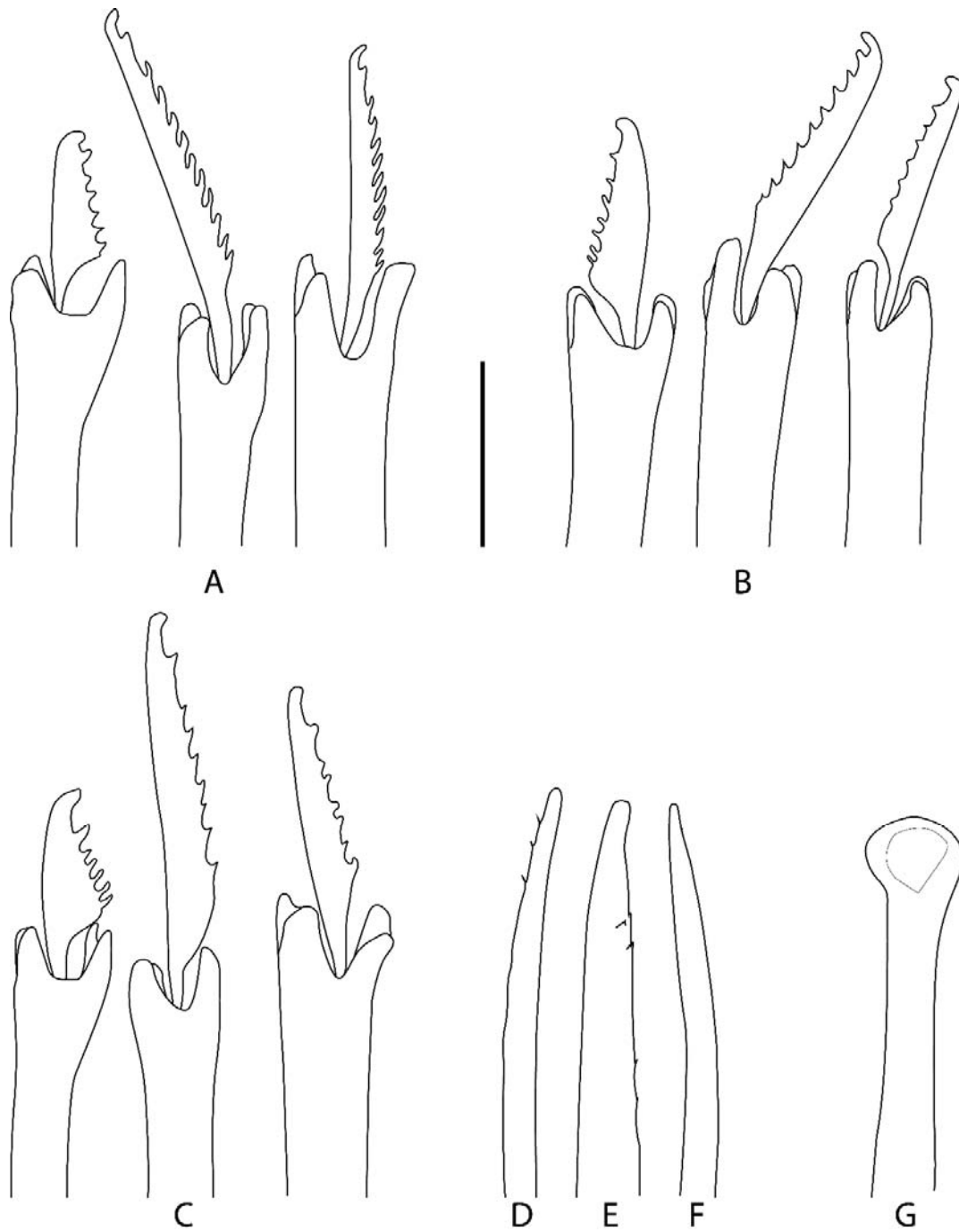
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455 **Fig. 4.** *Westheidesyllis* sp. nov. **A.** Anterior body, ventral view. **B.** Midbody parapodia,
456 with dorsal cirrus and parapodial glands, dorso-lateral view. **C–D.** Posterior and
457 Midbody end, showing segments, parapodial lobes and glands, dorsal cirri, dorsal view.
458 Scale bars: **A, C, D,** 0.2 mm; **B,** 15 μ m.



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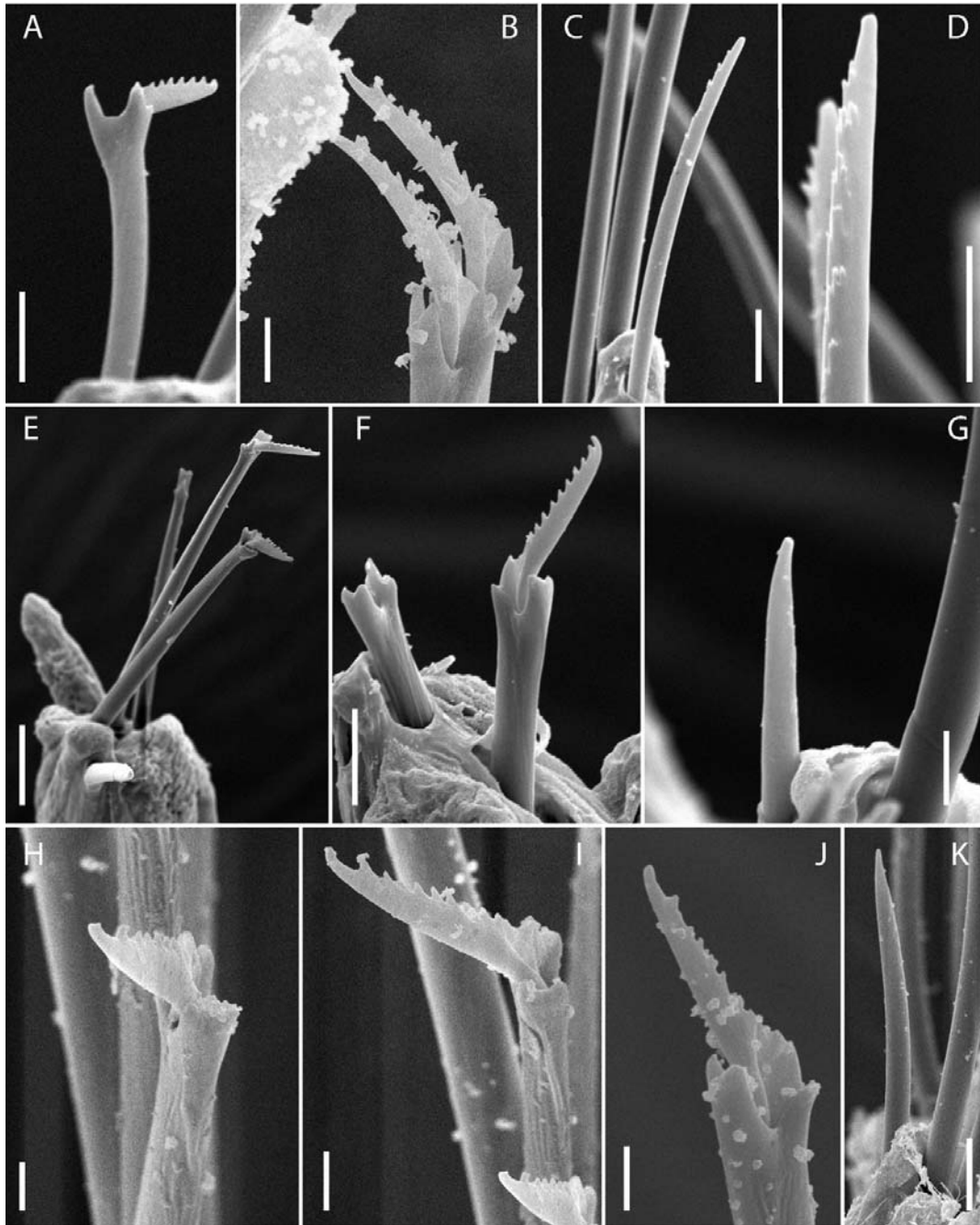
460 **Fig. 5.** *Westheidesyllis* sp. nov. SEM. **A.** Anterior body, dorsal view. **B.** Details of
461 prostomium and peristomium, dorsal view. **C.** Anterior body of specimen with retracted
462 nuchal organs, dorsal view. **D.** Anterior end, dorsal view. **E–F.** Details of retracted
463 ciliated nuchal organs; **G.** Anterior segments showing details of ciliary pits, dorsal view.
464 **H.** Posterior end, dorsal view. Red arrows pointing to ciliated nuchal organs, white
465 arrows pointing to ciliary pits. Scale bars: **A, C,** 50 μm ; **B, G,** 10 μm ; **D, H,** 20 μm ; **E,**
466 μm ; **F,** 5 μm .



467

468 **Fig. 6.** *Westheidesyllis* sp. nov. **A–C.** Falcigers, anterior, mid- and posterior body; **D–F.**

469 Dorsal simple chaetae, anterior, mid- and posterior body. **G.** Acicula. Scale bar: 6 μ m.



470

471 **Fig. 7.** *Westheidesyllis* sp. nov. SEM. **A–B.** Falcigers, anterior body. **C–D.** Dorsal
472 simple chaetae, anterior body. **E–F.** Falcigers, midbody. **G.** Dorsal simple chaeta,
473 midbody. **H–J.** Falcigers, posterior body. **K.** Dorsal simple chaeta, posterior body.
474 Scale bars: **A, C, F,** 5 μm ; **B, D, G, I, J, K,** 2 μm ; **E, H,** 10 μm .

475