

1 ***Ceciamaralia*, a new genus of Dorvilleidae (Annelida) from**
2 **deep waters of the Southwest Atlantic Ocean and an**
3 **insight in its relationship within the family**

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21 **Abstract**

22 Dorvilleidae, Chamberlin, 1919 is a family of Annelida grouping some of the smallest
23 ‘polychaetes’ species, poorly studied worldwide, and with many gaps regarding its diversity
24 and occurrence. Samples obtained in oceanographic campaigns performed in the Southwest
25 Atlantic Ocean (Brazilian coast) revealed a high number of specimens of dorvilleids, unveiling
26 the hidden diversity of this family. A detailed morphological analysis of these organisms has
27 revealed a new genus: *Ceciamaralia* gen. nov., supported by four synapomorphies in a cladistic
28 analysis. The new genus differ from the remaining Dorvilleidae genera in: i) the robust and
29 enlarged pharynx which are frequently everted, and ii) unique composition of maxillae – with
30 an elongated pair of serrated basal plates and two pairs of free maxillary plates, the anteriormost
31 plates with an anterior long and thin spine. *Ceciamaralia lanai* gen. et sp. nov. is characterized

Excluído: composed

Excluído: of

Excluído: being

Excluído: ,

Excluído: with two new species,

Excluído: which differs from other

Excluído: , composed of

Excluído: with

Excluído: having

41 by the presence of a broad and large dorsal cirrus on a few anterior parapodia and the furcate
42 chaeta in supra-acicular fascicles. While, *Ceciamaralia nonatoi* gen. et sp. nov. presents a
43 geniculate chaeta instead of a furcate, absence of dorsal cirri and, in some specimens, absence
44 of palps. This study is part of several taxonomic studies aiming to elucidate and increase the
45 knowledge of Dorvilleidae.

46 *Key words:* Annelida, Eunicida, ‘Polychaeta’, morphology, new species, new genus,
47 taxonomy, cladistics

49 Introduction

50 The Order Eunicida (Annelida) comprises ‘polychaetes’ that have a complex jaw apparatus,
51 composed of ventral mandibles and dorsal maxillae (Zanol et al., 2021). Some of the smallest
52 eunicid species belong to Dorvilleidae Chamberlin, 1919, a family with varied life-styles, from
53 free-living worms to some commensal and/or parasitic species, inhabiting unconsolidated and
54 consolidated substrates, from intertidal zones to greater depths, (Martin & Britayev 2018;
55 Zanol et al., 2021).

56 Dorvilleidae differ from the extant families in Eunicida by the presence of the ctenognath-type
57 jaw apparatus: two or four rows of symmetrical or subsymmetrical denticulate maxillary plates,
58 upper comb-like jaws, and an unpaired posterior carrier-like structure (Zanol et al., 2021).
59 Despite the small size of some dorvilleids, a great morphological heterogeneity among species
60 is observed. Body appendages (like prostomial, parapodial and pygidial), important to the
61 identification of species at the first glance, present a diversity of sizes and shapes. Such
62 diversity can also be seen even in the internal structures such as the jaws and maxillary
63 apparatus, important for delimiting genera and species within the family (Paxton, 2009).

64 Currently, Dorvilleidae comprises about 200 species distributed in 32 genera, of which 13 are
65 monotypic, including the most recent described *Ikosipodoides* Westheide, 2000, while, almost
66 1/3 of the family species belongs to the genus *Ophryotrocha* Claparède & Mecznirow, 1869.
67 More than half of the *Ophryotrocha* diversity was described in the last 25 years (Read &
68 Fauchald, 2024), as well as other studies encompassing biology, natural history, genetics and
69 systematics of *Ophryotrocha* (Zhang et al., 2023).

Excluído: On the other hand

Excluído: A cladistic analysis supported the monophyly of *Ceciamaralia* gen. nov. by four synapomorphies related to the unique morphology of its maxillae and pharynx.

Excluído: one

Excluído: recent

Excluído: to come from the family

Excluído: with the objective

Excluído: to

Comentado [RVWR1]: Already in the title, use another keyword

Excluído: within

Excluído: n internal

Excluído: that

Comentado [RVWR2]: I suggest to also include the Citation of M & B from 1998, as the 2018 is not na update, but a follow up. So many records are also presente in that article as well.

Excluído: the

Excluído: to some commensal or parasitic species

Excluído: is characterized mainly by being

Excluído: only

Excluído: group

Excluído: of

Excluído: that has the

Comentado [RVWR3]: Yet it is currently acknowledge, in the literature the description of such structure as unpaired. I still believe that it is a structure that needs further invertigations in the dorvilleid taxa, as it seems that the unpaired statues is a reflex of a fused structure. Some of the dorvilleid genera (e.g. *Anchidorvillea*) Bears a maxillae with only the posterior end fused, toward the families we can see that several taxa present single CLS with a medial scar to what might previously was a unfused structure, while Other genera (such as those small interstitial ones) show no CLS at all.

Excluído: . But a more detailed look reveals the morphological diversity even more, not only in smaller ...

Excluído: h

Excluído: of the

Excluído: of

Excluído: them

Excluído: . In contrast

Excluído: includes almost 1/3 of all described species of ...

Excluído: ,

Excluído: 48 described since 2000

Excluído: ,

Excluído: being a well studied genus including many ...

Excluído: (Read & Fauchald, 2024)

110 Meanwhile the relationship among genera and species of Dorvilleidae are also understudied.
 111 The broadest cladistic study analyzing the relationship within Dorvilleidae was performed by
 112 Eibye-Jacobsen & Kristensen (1994) using genera as terminal taxon. A recent cladistic study
 113 was conducted to test the monophyly of *Eliberidens* Wolf, 1986, and its relationship with some
 114 other genera (de Oliveira Bonaldo et al., 2022). Phylogenetic studies with molecular data of
 115 some Dorvilleidae groups were also done, including analysis of *Ophryotrocha* species and
 116 *Parougia* (Yen & Rouse, 2020; Kvalø Heggøy, Schander & Åkesson, 2007), but the scarcity
 117 of molecular data and viable specimens to extract such data from are an obstacle to advance in
 118 this field.

119 Among the reasons for the scarcity of knowledge on species of this family are: i) the difficulty
 120 to perform deep waters sampling; ii) the rarity of some groups in the samples and iii) the lack
 121 of taxonomists specialized in this group. This knowledge gap on Dorvilleidae is a worldwide
 122 barrier, like on the Brazilian coast, where, currently, there are only sixteen species registered:
 123 *Dorvillea moniloceras* (Moore, 1909), *D. sociabilis* (Webster, 1879), *Eliberidens forceps*
 124 Wolf, 1986, *E. hartmannschroederiae* Hilbig, 1995, *Meiodorvillea hartmanae* Bonaldo, Steiner
 125 & Amaral, 2022, *M. jumarsi* Bonaldo, Steiner & Amaral, 2022, *M. minuta* (Hartman, 1965),
 126 *M. penhae* Bonaldo, Steiner & Amaral, 2022, *Ophryotrocha puerillis* Claparède & Mecznirow,
 127 1869, *Pettiboneia sanmatiensis* Orensanz, 1973, *Protodorvillea biarticulata* Day, 1963, *P.*
 128 *kefersteini* (McIntosh, 1869), *Schistomeringos annulata* (Moore, 1906), *S. anoculatus*
 129 (Hartman, 1965), *S. longicornis* (Ehlers, 1901), and *S. rudolphi* (delle Chiaje, 1828) (Amaral
 130 et al., 2006-2022); six of them recorded in two recent taxonomic studies (de Oliveira Bonaldo,
 131 Steiner & Amaral, 2022; de Oliveira Bonaldo et al., 2022).

132 Oceanographic campaigns performed in the Southwestern Atlantic Ocean (Brazilian coast)
 133 resulted in the sampling of a large number of Dorvilleidae specimens in their samples, allowing
 134 to unveil the family diversity in this region. By applying an integrative approach, with light
 135 and scanning electron microscopy, and a cladistic analysis, we identified and described a new
 136 genus of Dorvilleidae, *Ceciamaralia* **gen. nov.** with two new species, *Ceciamaralia lanai* **gen.**
 137 **et sp. nov.** and *Ceciamaralia nonatoi* **gen. et sp. nov.**, that present unique external and internal
 138 morphological characters.

140 Materials & Methods

Excluído: The

Comentado [RVWR4]: And what did they achieved?

Comentado [RVWR5]: What they achieved?

Comentado [RVWR6]: I do understand what you intended to show, but it is not so clear in the way it was written. I suggest something as follow:

There are some studies regarding Dorvilleidae genera, some analyzing the Family relationship Only superficially using the genus as terminal taxons (references). Others focused on accessing the monophyly of some genera, as example the work by (reference) on *Eliberidens*. However the deeper studies including morphological and molecular data, were performed Only regarding the genus *Ophryotrocha* (references), and its relationship with closer genera. Thus, the relationship between the extant genera, as well as the monophyly of monotypic genera, are still understudied and necessary.

Excluído: This

Excluído: can also be explained by

Excluído: sampling in the

Comentado [RVWR7]: I understand that you are focusing on the deep-sea issue as a link to the fact your species are from deep-sea sampling. However I tend to partially disagree with you, as many of the monotypic genera are from shallow Waters – some are from interstitial environment (see Westheid and Von Nordheim, 1985), so problem in sampling don't apply to them. Rarity of some groups is na issue, indeed, but this is also directly linked to the lack of sampling efforts for such taxa – which is also a problem linked to the lack of taxonomists.

Comentado [RVWR8]: It is a barrier to what?

Comentado [RVWR9]: The problem in Brazil wasn't the barrier but the lack of a taxonomist dedicated to the group

Comentado [RVWR10]: You missed *Ophryotrocha zitae* Miranda, Raposo & Brasil (2020), and also the ...

Comentado [RVWR11]: According to this reference there are 18 species along the Brazilian coast, not 16. ...

Comentado [RVWR12]:

Excluído: have revealed

Excluído: specimens of

Excluído: dorvilleids

Excluído: . Through a detailed morphological analysis of these materials we unveiled the hidden diversity of this ...

Excluído: Utilizing methodologies such as

Comentado [RVWR13]: We must need to deconstruct the idea that Integrative taxonomy is Only When we ...

Excluído: , here

Excluído: ,

Excluído: both

Excluído: (jaw apparatus),

158 **Sampled area**

159 The specimens analyzed were collected in two broad oceanographic campaigns
160 (Environmental Characterization of the Espírito Santo Basin (AMBES) and Assessment of the
161 Environmental Heterogeneity of the Campos Basin (HABITATS) (Lavrado & Brasil 2010))
162 carried out in Brazilian waters (Southwest Atlantic Ocean). The collections were done between
163 2008-2012 in depths ranging from 12 to 3301 meters; the organisms were previously fixed in
164 4% formalin and then preserved in 70% ethanol.

165 **Morphological analysis**

166 The external morphology of the specimens was analyzed in a compound microscope ZEISS
167 Axioscop 2 Plus and drawings were made with camera lucida attached to the microscope. The
168 images were captured with a ZEISS AxioCam MRc attached to the ZEISS Axio Imager M2
169 and Axio Zoom V.16. All images and figures were edited¹ using Adobe® Photoshop and
170 Inkscape®.

171 To perform the scanning electron microscopy (SEM) specimens were previously immersed in
172 ethanol baths at the following concentrations: 50%, 60%, 70% (five min each), 80%, 90%,
173 95% (15 min each) and in absolute ethanol, in 3 changes (15, 30 and 60 min). Critical point
174 drying (Balzers CPD-30) was performed at 37 °C, at a 70 BAR of CO₂ gas input. Followed by
175 gold coating using Sputter Coater SPD-050 (Steiner & Santos, 2004). Stubs were observed in
176 a JEOL JSM-5800 LV scanning electron microscope and images were taken with the software
177 Semafore (v5.2). Critical point drying, gold-coating and SEM analysis were all performed in
178 the Laboratório de Microscopia Eletrônica, Instituto de Biologia, Universidade Estadual de
179 Campinas (LME-IB/UNICAMP).

180 The jaw apparatus were analyzed using two different methodologies: i) place the entire
181 specimens on a drop of Hoyer solution (trichloroacetaldehyde) or Aquatex® on a slide and
182 coverslip, or ii) place the specimens between slide and coverslip, wait for it to dry and analyze
183 the jaws by tissue transparency (not damaging the specimens, recovering its integrity by putting
184 it back in the ethanol). All observations were done on the ZEISS Axio Imager M2 and Axioscop
185 2 Plus microscopes.

186 **Cladistic analysis**

Comentado [RVWR14]: I suggest a critical reevaluation of the this section. I understand that you are working with specimens deposited in the collection, but I do like such section in a way to understand the environment and geography of the region Where the specimens were sampled – specially When dealing with specimens so scarce and When you are describing a new genus.

Comentado [RVWR15]: Lavrado and Brasil, 2010 don't encompass the AMBES sampling methodology, Only those regarding the HABITATS. Please include also a reference for Ambes methodology as well.

Comentado [RVWR16]: But Ambes sampling efforts began Only in 2014-2015

Comentado [RVWR17]: Not sure if ambes and habitats sampled in 12m depth, as far as I remembre the shallower depths were 25m.

Comentado [RVWR18]: If your specimens were kept in 70% ethanol, why you rehydrate it, prior to dehydrate it?

Excluído: ethanol

Comentado [RVWR19]: I assume that you used the CO₂ as drying agente.

Excluído:

Excluído: and

Excluído: followed

Comentado [RVWR20]: Stub if the name of the piece of metal in which the specimens are attached to. Did you observed the specimens or the piece of metal?

Excluído: the

Excluído: was

Excluído: on the ZEISS Axio Imager M2 and Axioscop 2 Plus microscopes. Two

Excluído: were done

Comentado [RVWR21]:

Comentado [RVWR22]: There is a problem here as you have two diffent techniques in this sentence. Hoyer's solution is based on the use of the Chloral hydrate – which macerates the tissue, cleaning it and removing al the contrast of the musculature and skins. While the Aquatex don't do this, it is a médium to preserve tissue color and contrast. So both techniques should be treated as separate things.

¹ The letter 'i' was skipped from all illustrations to avoid confusion with scale bars of the images.

196 To analyze the relationship of *Ceciamaralia* gen. nov., with the morphological similar genera
197 of Dorvilleidae, we performed a cladistic analysis utilizing the character matrix and data
198 developed in the study of de Oliveira Bonaldo et al., (2022), which analyzed the cladistic
199 relationship of the following genera: *Dorvillea* Parfitt, 1866, *Eliberidens* Wolf, 1986,
200 *Gymnodorvillea* Wainwright & Perkins, 1982 *Marycarmenia* Núñez, 1998, *Meiodorvillea*
201 *Jumars*, 1974, *Pettiboneia* Orensanz, 1973, *Protodorvillea* Pettibone, 1961 and
202 *Schistomerings* Jumars, 1974. We added five new characters to the matrix (characters 44 to
203 47) and inserted a new character state on character 41, to fit *Ceciamaralia* gen. nov. (Table 1).
204 We also followed the methodologies of de Oliveira Bonaldo et al. (2022), keeping the
205 characters coded as binary or multistate, being ‘-’ when the character is non-applicable, and ‘?’
206 when the state of the character is unknown. All characters are unweighted. The final matrix
207 comprised 21 species, including the outgroup (*Ninoe jessicae* Hernández-Alcántara, Pérez-
208 Mendoza & Solís-Weiss, 2006) and 47 morphological characters (Table 2).

209 The character matrix was assembled using the Mesquite® software (Maddison & Maddison,
210 2019) and the parsimony analysis was performed through the software TNT® (Goloboff &
211 Morales, 2023), with the heuristic search by the traditional search function starting with 10000
212 Wagner trees and utilizing the TBR (tree bisection reconnection) algorithm. Finally, to view
213 and edit the resulting tree we used Winclada® software (Nixon, 2002).

214 **Deposition of specimens**

215 The species, SEM stubs and slides, including the type series, were deposited in the Polychaeta
216 Collection (ZUEC-POL) of the Museu de Diversidade Biológica of the Institute of Biology of
217 the Universidade Estadual de Campinas (MDBio - IB/UNICAMP), Campinas, Brazil. Some
218 paratypes were deposited in Brazil: Museu de Zoologia of the Universidade de São Paulo, São
219 Paulo (MZUSP) and Museu Nacional do Rio de Janeiro, Rio de Janeiro, Brazil (MNRJ).

220 The electronic version of this article in Portable Document Format (PDF) will represent a
221 published work according to the International Commission on Zoological Nomenclature
222 (ICZN), and hence the new names contained in the electronic version are effectively published
223 under that Code from the electronic edition alone. This published work and the nomenclatural
224 acts it contains have been registered in ZooBank, the online registration system for the ICZN.
225 The ZooBank LSIDs (Life Science Identifiers) can be resolved and the associated information
226 viewed through any standard web browser by appending the LSID to the prefix
227 <http://zoobank.org/>. The LSID for this publication is: urn:lsid:zoobank.org:pub:A1EF2E10-

Excluído: some

Comentado [RVWR23]: Where are

Comentado [RVWR24]: I understand that you followed de Oliveira Bonaldo et al (2022), but I missed the label to the character in the tables 1 and 2 in this document? Despite presenting a table Only with the new characters (44-47) It is better to include a table with all characters named and stated as supplementary material. Otherwise, other researchers will have to deal with several papers to "assemble" what should be a single table.

Comentado [RVWR25]: I checked de Oliveira Bonaldo's paper and there are some issues regarding character coding on that paper. There it is stated that "some were coded as contingent coding (Forey & Kitching 2000), also called C coding (Pleijel 1995) or conditional coding (Hawkins et al., 1997)". However, characters 4, 7, 11, 17, 18, 21, clearly don't follow neither of the character coding treatments described there (de Oliveira Bonaldo (2022) or here.

Comentado [RVWR26]: Why Only one outgroup?

Comentado [RVWR27]: Please review character 25, as I don't understand how subsymmetrical and asymmetrical can be treated as different states of the length of the prong. In both conditions the prongs length will be unequal.

Excluído: To edit the character matrix,

Excluído: we used

Código de campo alterado

231 4863-49C1-A2E7-CF80BD6249. The online version of this work is archived and available
232 from the following digital repositories: PeerJ, PubMed Central SCIE and CLOCKSS.

233

234 **Results**

235 **Taxonomy**

236 **Phylum** Annelida, Lamarck 1802

237 **Order** Eunicida, Fauchald 1977

238 **Family** Dorvilleidae Chamberlin, 1919

239

240 **Genus** *Ceciamaralia* gen. nov.

241 urn:lsid:zoobank.org:act:22B5ED41-CF25-4A97-8B75-DF336BE1CBE7

242 **Type species:** *Ceciamaralia lanai* gen. et sp. nov. described herein.

243 **Etymology:** Feminine. The genus name “*Ceciamaralia*” refers to the name Cecília and the
244 surname Amaral from Dr. Antônia Cecília Zacagnini Amaral, a Brazilian researcher who
245 immensely contributed, and still contributes to the enhancement of Annelida knowledge and to
246 the formation of zoologists, taxonomists and ecologists, including the three authors of this
247 paper.

248 **Diagnosis:** Prostomium triangular-shaped with anterior margin rounded. A pair of simple
249 antennae, distally clavate, with a long and slender basal portion. A pair of simple, short, small
250 clavate ventrolateral palps, sometimes absent. Two peristomial rings. First two chaetigers
251 usually enlarged to accommodate the large pharynx. Pharynx enlarged, normally protracted out
252 of the mouth in preserved specimens. First two parapodia slightly shorter and without
253 appendages. Notopodia represented by a large, and long dorsal cirri (supported by a thin
254 notoacacula) present in few anterior parapodia or entirely absent. Ventral cirri short and
255 papilliform present only in few anterior parapodia. Supra-acicular chaetae: capillaries, and
256 furcate or geniculate accompanying chaeta. Sub-acicular chaeta: compound heterogomph
257 falcigers with serrated, unidentate blades. Two pairs of clavate pygidial cirri. Jaw apparatus
258 with paired mandibles, medially connected, without fused or free teeth on the anterior margin.
259 Maxillae composed of a posterior ligament fused to a pair of long and serrated basal plates,

Comentado [RVWR28]: Regarding the description, I suggest to redo them and use a more telegraphic language. In the three descriptions (genus and both species) the constant use and repetition of adverbs (such as moderate, slightly) turn the text more confuse and difficult to read. A description should be as more precise as it can be. And adverbs such as those used don't bring precision with them, what is slightly for the authors might not be noticed or relevant to the reader. This is even more problematic, when dealing with this group of small dorvilleids, in which the morphology seems to vary much even among genera. In a quick look, the new genus, *Eliberidens* and *Meiodorvillea* are all too similar, so each detail in the morphology counts to help in the differentiation between them, and also as a support to differentiate in future descriptions.

Excluído: One

Comentado [RVWR29]: Short and small are synonymous, choose one of them.

Excluído: One

Excluído: and

Comentado [RVWR30]: In both species you described the palps are present, and here you state that “sometimes absent” what do you mean by absent? Could it be a sexual character? Perhaps a reflect on specimens size (I'll return to this below, in *C. nonatoi* variations). I see that you described the issue in the variations observed after describing *C. nonatoi*, but have in mind that absence of evidence, is not evidence of absence. If you truly believe that the species *C. nonatoi* has palps, then absence of palps is an unanswered question and genera and species shouldn't suffer from a lack of evidence and be described as having a dubious character. In my opinion, the problem goes beyond: in table 2 (character matrix) you stated as present in *C. lanai*, but as unknown in *C. nonatoi*, however you describe palps as present in this species, while there are some specimens in which such appendages are missing.

Retractable palps occur, as example, in *Ophryotrocha*. Could this be the case of the specimens of those specimens without palps? Did you made any SEM ...

Comentado [RVWR31]: Shorter, longer, smaller, bigger, are comparative adjectives shorter than, longer than, bigger than, and so on. In a manner that they Always must be presented in a comparative way: first ...

Comentado [RVWR32]: Which appendages?

Excluído: with

Comentado [RVWR33]: When you state a few anterior parapodia, what this mean? Not going beyond 1/3 of body lenght? ¼, ½? ...

Excluído: capillary

Excluído: and

Excluído: and

Excluído: by

268 followed by a pair of short and serrated free maxillary plates, and a pair of short anteriormost
269 free maxillary plate with a long, thin, spine in the anterior margin. Carrier-like structure absent.

270 **Remarks:** *Ceciamaralia* **gen. nov.** is distinguished from the other Dorvilleidae genera in: i)
271 maxillae composed by a pair of elongated and serrated basal plates and two pairs of free
272 maxillary plates, the anteriormost with an anterior long and thin spine, ii) its enlarged pharynx
273 which makes the anterior region of the specimens also enlarged when it is retracted; preserved
274 specimens are found usually with pharynx protracted, iii) antennae with a long and slender
275 basal portion and clavate distal end, iv) first two parapodia slightly shorter and without
276 appendages.

277 The differences of *Ceciamaralia* **gen. nov.** compared to other genera of Dorvilleidae are
278 analyzed in the Discussion section.

279

280 ***Ceciamaralia lanai* gen. et sp. nov. (Figs. 1-4)**

281 urn:lsid:zoobank.org:act:3E16785F-8EDD-47E7-8CF4-34D5BD1F4062

282 **Diagnosis:** One pair of antennae and one pair of palps. Pharynx enlarged making the anterior
283 region enlarged when it is retracted. First two parapodia without appendages. Long and large
284 dorsal cirri with a thin notoacacula present in parapodia 3 to 6-9. Small, ventral, papilliform
285 cirri present in parapodia 3 to 6-9, eventually extending over 1 or 2 more parapodia. Supra-
286 acicular chaeta: slender capillary and furcate, the latter with small asymmetrical prongs and
287 serrated shaft in anterior region, smooth with longer straight prongs in posterior region. Sub-
288 acicular chaetae: three compound heterogomph falcigers with short and robust serrated
289 unidentate blades, slightly crescent in size. Maxillae composed by a posterior ligament fused
290 to a pair of long and serrated basal plates, followed by one pair of short and serrated free
291 maxillary plates, and one pair of short anteriormost free maxillary plates with a long, thin spine
292 on the anterior margin.

293 **Type locality:** Continental slope, off Espírito Santo State, Brazil, 39°10'17.35"W,
294 19°36'26.24"S, muddy.

295 **Type specimens:** Holotype: ZUEC-POL XXX (39°10'17.35"W, 19°36'26.24"S, 392 m,
296 muddy, 14 Dez 2011); Paratypes: ZUEC-POL XXX (39°10'17.35"W, 19°36'26.24"S, 392 m,
297 muddy, 14 Dez 2011); ZUEC-POL XXX (38°1'8.43"W, 19°34'20.42"S, 450 m, sandy mud, 9

Excluído: one

Excluído: one

Excluído: well

Excluído: by

Comentado [RVWR34]: If you are going to address this in the discussion section, then becomes repetitive to list the characters as you did before. In my opinion the key characters that differentiate the new genus are described in the diagnosis. I suggest to shorten the previous paragraphs in a more telegraphic form. Something as " *Ceciamaralia* gen. nov. differ from remaining Dorvilleidae genera in: maxillary morphology and organization, pharynx morphology and size, antennae morphology, and first two parapodia structure and appendages."

And, as there are some differences in the morphology in both species, I suggest to increase this remarks by explaining the differences observed in some structures, e.g. the accompanying chaeta in the supraacicular fascicle, or the distribution of longer dorsal cirri. They also can increase the remarks by explaining what did they observed as regionalization of certain structures, in other words, furcate chaetae with subequal prongs do occur in a certain region of the body or it happens through the whole body. I suggest as an example to take one of Pettibone's paper, describing new genera of Scaleworms (Polynoidae or Sigalionidae), as examples of good remarks section in describing new genera.

Comentado [RVWR35]: The diagnosis of the species is repetitive with the genus diagnosis, and also with the diagnose of the other new species. Restrict the text in only presenting the key characters that differentiate the *C. lanai*, from *C. nonatoi*. Another issue is that you present some characters, with large variation as a diagnostic character. I'm referring to the small ventral cirri. If I have two worms and in both the ventral papilliform cirri occur up to the sixth parapodia. How can this character can be useful in differentiate them?

Excluído: 0

Comentado [RVWR36]: In this case you have specimens from 143m down to 450m in depth. This is a highly variable depth. So I disagree in using the bathymetry as type locality, as the specimens can be found in several other depths. In this case, the term continental slope I believe it is more informative than the depth itself.

Excluído: 392 m,

Comentado [RVWR37]: In the red tagged entries, the number of observed specimens is missing. If was only 1 specimens, then please insert 1 spm.

Formatado: Cor da fonte: Vermelho

Dec 2011); ZUEC-POL XXX (39°36'8.52"W, 19°49'7.27"S, 158 m, sandy muddy, 14 Jan 2012); ZUEC-POL XXX (3 specimens - 39°30'25.23"W, 19°45'54.56"S, 144 m, muddy, 15 Jan 2012); ZUEC-POL XXX (2 specimens - 39°53'47.1"W, 20°35'16.23"S, 410 m, muddy, 8 Jan 2012); ZUEC-POL (slide, 38°41'18.43"W, 19°34'20.42"S, 450 m, sandy mud, 09 Dec 2011); ZUEC-POL XXX (slide, 39°36'9.34"W, 19°49'6.26"S, 181 m, mud, 29 Jun 2013); ZUEC-POL XXX (slide, 39°30'25.97"W, 19°45'53.43"S, 143 m, muddy, 27 Jun 2013); MZUSP (2 specimens, 39°53'47.1"W, 20°35'16.23"S, 410 m, muddy, 8 Jan 2012); MNRJ (2 specimens, 39°53'47.1"W, 20°35'16.23"S, 410 m, muddy, 08 Jan 2012). SEM Material: (1 stub with 3 specimens - 39°53'47.1"W, 20°35'16.23"S, 410 m, muddy, 8 Jan 2012; 40°14'14.08"W, 21°4'4.56" S, 141 m, sandy, 11 Jul 2013).

Etymology: Masculine. The specific epithet "*lanai*" is a reference and tribute to Dr. Paulo da Cunha Lana (*in memorian*), a Brazilian polychaetologist who immensely contributed to the increase of knowledge of Annelida in Brazil and worldwide, and was the supervisor of the senior author of this paper.

Description of holotype: Cylindrical body (Fig. 1A). Complete specimen, 46 chaetigers, 4.18 mm long and maximum width of 0.22 mm in the anterior region, excluding parapodia. Anterior region more robust and wider than the rest of the body to accommodate the enlarged pharynx (Fig. 1A). Prostomium triangular, anterior margin broadly rounded. Ocelli absent. One pair of simple antennae, distally clavate, with a long and slender basal portion, inserted dorsally in the middle of prostomium, with approximately same length of the prostomium (Figs. 1B, 3A and 4A). One pair of simple, short, and small clavate palps inserted ventrolaterally on the base of prostomium, slightly shorter than 1/2 the length of prostomium (Figs. 1B, 3A,B and 4A). Two peristomial rings without appendages, posterior ring longer and wider than the anterior. (Figs. 1B, 3A,B and 4A,B).

Parapodia cylindrical, small, and barrel shaped. First two parapodia smaller than the following, without appendages (Figs. 1B and 4A,B). Anterior region with notopodia represented by a large and long dorsal cirri (with a thin notoacacula) present from the third to the seventh chaetiger, inserted on the base of parapodia; dorsal cirrus reaching approximately 2.5 times the length of parapodium (Figs. 1D, 3B,D and 4D). Ventral cirri short and papilliform inserted in the middle of parapodium and present from the third to the seventh parapodium (Figs. 1D, 3B,D and 4B,D). Following parapodia slightly larger, longer, and without appendages (Fig 1E, 3E and 4E).

Formatado: Cor da fonte: Vermelho

Formatado: Cor da fonte: Vermelho

Excluído: refers to the sumame

Excluído: of

Excluído: with

Comentado [RVWR38]: If we have in mind that the genus diagnose is the enlargement in the anterior region, describe maximum width only of anterior region is somewhat uninformative. I suggest to also include the width measurement in a median segment, in order to achieve the ratio between both widths. I also suggest to include in the methodology where the measurement were taken. This maximum width was in the first segment? Second segments?... The length was made having what as landmarks?

Comentado [RVWR39]: How wide?

Comentado [RVWR40]: Ok, but this is restricted up to the fourth segment. When you describe anterior region enlarged, seems too dubious as anterior can be the anterior half, the anteriormost third portion, and so on. If the enlargement is a character to delimitate the species, then describe it in number: how many segments are enlarged? What are the observed variation in the number of enlarged segments in the specimens of your sample?

Comentado [RVWR41]: This could be an effect from the sampling procedures?

Excluído: -shaped with

Comentado [RVWR42]:

Comentado [RVWR43]: I wonder, how the sampling treatment can influence the length of this structure. In other words, were the worms anesthetized or placed directly in the fixative?

Comentado [RVWR44]: How much smaller?

Excluído: 3°

Excluído: 7°

Excluído: parapodium

Comentado [RVWR45]: I disagree. In the photos of figure 1 the length seems to be half the length of the parapodial lobe. How this can be short for a ventral cirri? If you intend to continue to use the short designation, than use it in a comparative way: shorter than parapodial lobe. I also disagree with the papilliform, as in the photos seems much more like a digitiform than papilliform.

Excluído: 3°

Excluído: 7°

345 Supra-acicular chaetae: one long, thin and serrated capillary (Fig. 2A,C) and one furcate with
346 subsymmetrical prongs, one slightly shorter and more robust than the other; tip of both prongs
347 blunt (Figs. 2C, 3G and 4G); furcate of first chaetigers with smaller prongs and with prominent
348 serrated shaft below the shorter prong (Figs. 2A,B and 3F). Sub-acicular chaetae: three
349 compound heterogomph facilgers with slightly crescent size, the ventralmost short and
350 dorsalmost long; shafts bifid with a moderately serration in the distal end; blades short, robust,
351 serrated, and unidentate (Figs. 2A-D, 3J and 4F,G). One serrated cultriform chaeta occasionally
352 replacing the ventralmost compound in the posteriormost chaetigers (Figs. 3H and 4F).

353 Posterior region moniliform. Pygidium truncate and shorter than the previous chaetigers. Two
354 pairs of clavate pygidial cirri, dorsal pair rather longer than the length of pygidium, ventral pair
355 half the length of the dorsal (Figs. 1A,C, 3C and 4C).

356 Paired mandibles medially connected in a region strongly sclerotized; anterior region slightly
357 broader and less sclerotized than the slender posterior region (Figs. 2E,F and 3K). Maxillae
358 composed by one pair of elongated and serrated basal plates with small, uniform, sharp teeth,
359 in the inner margin, posteriorly fused to a weakly sclerotized, posterior, elongated ligament.
360 Basal plates followed by two pairs of free maxillary plates anteriorly; first pair with internal
361 margin, serrated uniformly, second and anteriormost pair with a long, thin, and prominent spine
362 on its anterior margin (Figs. 2E,F and 3L).

363 **Variation:** Complete specimens ranging from 2.9 mm to 7.6 mm in length and 33 to 61
364 chaetigers. All specimens ranging from 0.135 µm to 0.26 µm wide. Dorsal cirri present from
365 chaetiger 3 to the 6-9. The presence of ventral cirri usually follows the parapodia in which the
366 dorsal cirrus is present, but in some specimens the ventral cirri can be present in one or two
367 subsequent parapodia. The presence of the cultriform chaeta is occasional and in some
368 specimens it is absent. The enlarged pharynx is characteristic of the genus and it appears
369 protracted out of the mouth in most preserved specimens (Figs. 3B and 4B) but when it is
370 retracted the specimen presents an enlarged anterior region to accommodate the pharynx (Fig.
371 1A and 3A).

372 **Location and bathymetrics:** Off States of Espírito Santo and Rio de Janeiro, Brazil, 141 - 450
373 m, substrates: mud, sandy mud, muddy or sandy.

374 **Remarks:** *Ceciamaralia lanai* gen. et sp. nov. presents a unique morphology making it easily
375 differentiated from other dorvilleids, as well as from its congener, *Ceciamaralia nonatoi* gen.

Comentado [RVWR46]: What do you mean by subsemmetrical prongs? Observing the photos, the prongs are unequal in length and in width. One prong is short and wide, while the other is longer and slender. When you describe them as subsymmetrical, one can imagine that they are almost equal – and here there is another issue: about symmetry there are only two conditions: symmetrical (when they are equal) or asymmetrical (when they are not equal), subsymmetry is nothing less than an asymmetric state.

Comentado [RVWR47]: This is a good diagnostic character for this species, having this different furcate chaetae in the first chaetiger.

Comentado [RVWR48]: Did you mean: increasing in length from the ventral to the dorsal region?

Excluído: shortest

Comentado [RVWR49]: What do you mean by moderate?

Excluído: longest

Excluído: blades

Comentado [RVWR50]: This simple chaetae begins at which segment? This character can be also informative to differentiate species.

Another issue, the holotype has 46 segments. If this chaeta only occur from segment 41, then if I don't have the last six segments, I'll not observe this character. In time, it is important to know/understand, the range of occurrence of some characters such as this.

Excluído: last posterior

Excluído: and

Comentado [RVWR51]: Observing the figures you used to illustrate this species, the pygidium is equal or 1/3 longer than the previous chaetigers.

Comentado [RVWR52]: The anterior region it is not slightly! Comparing the measurements in the photos you used, the anterior region is equal in length and ...

Excluído: and

Excluído: ,

Excluído: anteriorly

Excluído: uniformly

Excluído: and

Comentado [RVWR53]: At which segment?

Comentado [RVWR54]: Is there any relation between ...

Excluído: chaetiger

Excluído: the following

Comentado [RVWR55]: Again, any relation between ...

Comentado [RVWR56]: Are you referring to the ...

Comentado [RVWR57]: It seems to me that *C. lanai* ...

Comentado [RVWR58]: A remarks is a discussion ...

Comentado [RVWR59]: Forget this. Here you are ...

et sp. nov., by its large and long dorsal cirri in few anterior chaetigers. Another difference between them is the presence of furcate chaeta in *C. lanai* gen. et sp. nov.. The posterior region of specimens is usually moniliform.

Ceciamaralia nonatoi gen. et sp. nov. (Figs. 5-7)

urn:lsid:zoobank.org:act:EFF6CD0C-2071-48A2-915D-6F2F8530A343

Diagnosis: One pair of antennae. One pair of palps, sometimes absent. Pharynx enlarged making the anterior region enlarged when it is retracted. First two parapodia without appendages. Dorsal cirri absent. Small ventral papilliform cirrus present in parapodia 3 to 5-7. Supra-acicular chaetae: slender capillary and geniculate. chaetae: three compound heterogomph falcigers with short and robust serrated unidentate blades, all almost of the same length. Maxillae composed by a posterior ligament fused to a pair of long and serrated basal plates, followed by one pair of short and serrated free maxillary plates, and one pair of short anteriormost free maxillary plates with a long, thin spine on the anterior margin.

Type locality: Off Espírito Santo State, Brazil, 40°12'52.126"W, 21°11'12.073"S, 680 m.

Type specimens: Holotype: ZUEC-POL XXX (40°12'52.126"W, 21°11'12.073"S, 680 m 04 Feb 2009). Paratypes: ZUEC-POL XXX (40°12'52.126"W, 21°11'12.073"S, 680 m 04 Feb 2009); ZUEC-POL XXX (2 specimens, 40°1'55.373"W, 21°47'26.771"S, 780 m, 06 Feb 2009), ZUEC-POL XXX (3 specimens, 41°18'33.045"W, 23°39'21.880"S, 692.7 m, 28 Jan 2009); ZUEC-POL XXX (2 specimens 40°26'37.449"W, 22°33'35.143"S, 401 m, 31 Jan 2009); ZUEC-POL XXX (40°26'40.289"W, 22°33'33.805"S, 393.4 m, 11 Jul 2008); ZUEC-POL XXX (40°17'33.343"W, 22°25'59.389"S, 387.1 m, 31 Jan 2009); ZUEC-POL XXX (40°5'18.066"W, 21°44'21.493"S, 401.6 m, 07 Jul 2008); ZUEC-POL XXX (3 specimens - 39°30'4.65"W, 19°46'34.99"S, 428 m, muddy, 14 Jan 2012); ZUEC-POL (slide - 40°2'13.825"W, 21°47'26.324"S, 730.5 m, 28 Jun 2008); MZUSP XXX (41°18'33.045"W, 23°39'21.880"S, 692.7 m, 28 Jan 2009); MZUSP XXX (40°12'52.126"W, 21°11'12.073"S 680 m, 04 Feb 2009); MNRJ XXX (38°41'19.8"W, 19°34'20.47"S, 449 m, mud, 30 Jun 2013); MNRJ XXX (40°1'45.543"W, 22°19'45.730"S, 701.7 m, 30 Jan 2009); MNRJ XXX (40°26'37.585"W, 22°33'35.276"S, 400 m, 31 Jan 2009); ZUEC-POL XXX (3 specimens, 40° 2' 13,825" W, 21° 47' 26,324" S, 730.5 m, 28 Jun 2008). SEM Material: ZUEC-POL XXX (one stub with three specimens 40°2'13.825"W, 21°47'26.324"S, 730.5 m, 28 Jun 2008 / 40°12'52.126"W,

Comentado [RVWR60]: Large dorsal cirri also occur, as an example, in *Schistomeringos*. How having long dorsal cirri is used to easily differentiate both species?

Comentado [RVWR61]: In contrast to what? What is observed in *C. nonatoi* in the region where furcate chaetae occur?

Comentado [RVWR62]: In contrast to?

Comentado [RVWR63]: Same comment I made for this section in the previous species.

Comentado [RVWR64]: If the majority of your species are from Campos Basin – in the state of Rio de Janeiro – and so, it is more common there. Why did you choose Espírito Santo (there are, at least, 10 species from RJ against 3 from ES)? In my opinion, RJ clearly is more representative as type locality to this species, than ES.

Comentado [RVWR65]: In the red tagged entries, the number of observed specimens is missing. If was only 1 specimens, then please insert 1 spm.

Formatado: Cor da fonte: Vermelho

Comentado [RVWR66]:

Formatado: Cor da fonte: Vermelho

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Comentado [RVWR67]: This specimen is strange. According to this coordinates the sampling location is in a place with a depth circa 50m. And also this would be the single record of the species for the continental shelf. All others would be in the continental slope.

Formatado: Realce

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21°11'12.073"S 680 m, 04 Feb 2009 / 39°30'4.65"W, 19°46'34.99"S, 428 m, muddy, 14 Jan 2012).

Etymology: Masculine. The specific epithet “*nonatoi*” is a reference and tribute to Dr. Edmundo Ferraz Nonato (*in memorian*), one of the greatest Brazilian naturalists and oceanographer who was the pioneer of Brazilian polychaetology, responsible for the formation and inspiration of generations of zoologists.

Description of holotype: Cylindrical body (Fig. 5A). Complete specimen with 55 chaetigers, 6.27 mm long and maximum width of 0.41 mm in the anterior region (0.25 µm in the posterior region), excluding parapodia. Anterior region more robust and wider than the rest of the body to accommodate the enlarged pharynx (Fig. 5A). Prostomium triangular, with anterior margin broadly rounded. Ocelli absent. One pair of simple antennae, distally clavate, with a long and slender basal portion, inserted dorsally in the middle of prostomium, with approximately same length of the prostomium (Figs. 5B,C, 6A,B, 7A,B). One pair of simple, short, and clavate palps, inserted ventrolaterally on the base of prostomium, slightly shorter than 1/2 the length of prostomium (Fig. 1B). Two peristomial rings without appendages, posterior ring wider and longer than the anterior (Figs. 5B,C, 6A,B and 7A,B).

Parapodia cylindrical, small, and barrel shaped. First two parapodia smaller than the following, without appendages (Figs. 5B, 6A and 7B). Dorsal cirri absent in all parapodia. Ventral cirri short and papilliform inserted in the middle of the parapodium and present from the third to the sixth chaetiger (Figs. 5E, 6D and 7B,C). Following parapodia larger, longer, without appendages (Figs. 6E and 7D).

Supra-acicular chaetae: one long, thin and serrated capillary (Figs. 5F and 7F,G) and one geniculate chaeta with distal region robust and slightly serrated (Figs. 5F,G 6F and 7C,F). Sub-acicular chaetae: three compound heterogomph falcigers with almost equal length, being the ventralmost slightly shorter; shafts bifid with a subtle serration in the distal end; blades short, robust, serrated and unidentate (Figs. 5F,G, 6G,H and 7E,G). One serrated cultriform chaeta occasionally replacing the ventralmost compound in the last posterior chaetigers (Figs. 5G, 6J and 7C).

Posterior region moniliform. Pygidium truncate and shorter than the previous chaetigers. Two pairs of clavate pygidial cirri; dorsal pair rather longer than the length of pygidium and ventral pair half the length of the dorsal (Figs. 5D, 6C).

Excluido: refers to the surname of

Comentado [RVWR68]: Same issue I commented in the previous species.

Comentado [RVWR69]: As I wrote before, the description sometimes is too generalistic. What anterior means? Half of the body? one third of the body?

And I call attention because by observing the photos 1A and 5A, it seems to have a difference in the number of enlarged segments, or at least in how this enlargement occur. In *C. lanai*, the body width seems to narrow gradually, while in *C. nonatoi* the width abruptly narrows.

Excluido: -shaped

Excluido: and small

Excluido:

Excluido: small

Comentado [RVWR70]: I disagree with this description. A papillae usually is something small, in this case the VC is 1/3 the length of the parapodial lobes (and here I agree to say that is short, but not papiliform) and has a cylindric shape.

Excluido: 3°

Comentado [RVWR71]: Larger and longer than what?

Excluido: 6°

Excluido: parapodium

Excluido: slightly

Excluido: and

Excluido: blades

Comentado [RVWR72]: And this happen in all chaetigers? Or might start from a given region of the body?

Comentado [RVWR73]: Observing the photo 5A the moniliform condition starts at chaetiger 5, so, anterior, middle, and posterior region are all monilliforms.

Excluido:

462 Paired mandibles medially connected in a region strongly sclerotized; anterior region slightly
463 broader and less sclerotized than the slender posterior region (Figs. 5J and 6K). Maxillae
464 composed by one pair of elongated and serrated basal plates, with small uniform and sharp
465 teeth in the inner margin, posteriorly fused to a weakly sclerotized, elongated ligament. Basal
466 plates anteriorly followed by two pairs of free maxillary plates; first pair with internal margin
467 uniformly serrated and second and anteriormost pair with a long, thin and prominent spine on
468 its anterior margin (Figs. 5H, J and 6L).

Excluido: posterior

469 **Variation:** Complete specimens ranging from 3.23 to 6.27 mm in length and 46 to 62
470 chaetigers. A variation within this species, which was observed through the analysis of some
471 specimens, is the presence or absence of palps. *Ceciamaralia nonatoi* **sp. nov.** has small and
472 fragile palps, but many specimens do not present it (Figs. 5C and 7A, B). The small size of
473 palps and the enlarged pharynx protracted out of the mouth are obstacles to better observe the
474 scar of a possible broken palp. Therefore, it is debatable if it is a variation or a methodological
475 problem, so we decided to diagnose the species with presence/absence of palps. The ventral
476 cirri are always present, from the parapodia 3 to 5-7. The presence of the cultriform chaeta is
477 occasional and in some specimens it is absent.

Comentado [RVWR74]: Did you try to do a SEM of a worm "without" palps?

How many specimens didn't show palps?

Comentado [RVWR75]: Ok but where this cultriform occur? From which segment? Is there any relation between the presence of this chaetae and the number of chaetigers?

478 **Location and bathymetrics:** Off States of Espírito Santo and Rio de Janeiro, Brazil, 387.1 -
479 780 meters deep, substrates: mud or muddy.

480 **Remarks:** *Ceciamaralia nonatoi* **sp. nov.** differs from its congener by the absence of dorsal
481 cirri and by the presence of a geniculate chaeta instead a furcate in the supra-acicular fascicle.
482 The variation on the length of the blades of compound chaeta is very subtle in *Ceciamaralia*
483 *nonatoi* **gen. et sp. nov.**, while in *Ceciamaralia lanai* **gen. et sp. nov.** it is more distinguished.
484 The bathymetric distribution is also a difference between the two species, *Ceciamaralia*
485 *nonatoi* **gen. et sp. nov.** is registered in deeper waters (387.1 - 780 m) than *Ceciamaralia lanai*
486 **gen. et sp. nov.** (141 - 450 m).

Excluido: than *Ceciamaralia*

Comentado [RVWR76]: Uhhmm not sure if you can use the term difference to describe both species bathymetry. If one goes down to 450, and the other starts at 380. This region between 380 and 450 is a common place for both species.

Comentado [RVWR77]: Why didn't you used the morphology of the buccal apparatus as differentiate character, the mandibles are obviously different between both species.

Comentado [RVWR78]: Why didn't you used other support index for tree and nodes?

488 **Cladistic results**

489 The cladistic analysis resulted in one most parsimonious cladogram from 50,149
490 rearrangements, with best score (length) of 83 steps, consistency index (ci) of 73, retention
491 index (ri) of 86 (Fig. 7). The cladogram shows the monophyly of *Ceciamaralia* **gen. nov.**,
492 supported by the following synapomorphies: character 41: only two free maxillary plates;

495 character 45: enlarged pharynx/enlarged anterior region; character 46: ventral cirrus present
496 only in few anterior parapodia and character 47: presence of a long and thin spine on the
497 anteriormost maxillary plate.

498 The inclusion of *Ceciamaralia lanai* **gen. et sp. nov.** and *Ceciamaralia nonatoi* **gen. et sp.**
499 **nov.** as well as the addition of four new characters on the matrix of characters in the study of
500 de Oliveira Bonaldo et al., (2022) did not substantially affect the results obtained in the
501 previous study. *Ceciamaralia* **gen. nov.** was placed as a sister group of all other genera
502 analyzed, except *Eliberidens* and *Gymnodorvillea*, in presenting the synapomorphy of the
503 character 22: the chaeta which accompany the capillary in the supra-acicular fascicle does not
504 change along the body.

505
506 **Discussion**
507 At a first glance, *Ceciamaralia* **gen. nov.** specimens are hard to differentiate from other small
508 sized dorvilleids, but a closer look reveals their specific morphology, which will be discussed
509 below.

510 *Prostomium appendages*
511 *Ceciamaralia* **gen. nov.** presents a triangular prostomium, like in the close related genera
512 *Protodorvillea*, *Meiodorvillea*, *Eliberidens*, and *Pettiboneia* (Eibye-Jacobsen & Kristensen,
513 1994; de Oliveira Bonaldo et al., 2022). *Protodorvillea* has long and biarticulated palps, while
514 *Ceciamaralia* **gen. nov.** has simple, small, clavate palps, when present. The palps of
515 *Pettiboneia* are shorter than *Protodorvillea* but are still biarticulated and also longer and larger
516 than the palps of *Ceciamaralia* **gen. nov.** The small clavate palps in *Ceciamaralia* **gen. nov.**
517 are similar to those observed in *Meiodorvillea* and *Eliberidens*. The antennae are described
518 here as simple and clavate, as in some Dorvilleidae genera, but, in *Ceciamaralia* **gen. nov.** are
519 unique by having a longer and slender basal portion than the antennae from other genera.

520 *Parapodial appendages*
521 *Ceciamaralia* **gen. nov.** presents small papilliform ventral cirri only in few anterior parapodia,
522 while *Meiodorvillea* and *Eliberidens forceps* Wolf, 1986 present it in all parapodia, except on
523 the first. Meanwhile, *Eliberidens hartmannschroederiae* Hilbig, 1995 does not have ventral cirri
524 at all.

Comentado [RVWR79]: Was placed or was recovered?

Excluído: by

Comentado [RVWR80]: Here we have a problem. Figures 2B and C, clearly shows two different accompanying chaetae, so there is a change! There are two different types of furcate chaetae. As in de Oliveira Bonaldo et al., (2022) there are no description and discussion of the characters, I cannot say/understand how flexible you were with such type of variation.

Comentado [RVWR81R80]:

Comentado [RVWR82]: This entire discussion about characters needs to be reformulated, as at times the discussion becomes shallow and only two genera are compared - even though the character discussed is present in many other genera in the family. While in other characters the discussion becomes comprehensive, but there is no closure to summarize what is discussed. Another problem with this discussion is that Dorvilleidae has more than 31 genera and the discussion is only based on 7 different genera. What was the reason for focusing on these genera only?

Excluído: the

Excluído:

Comentado [RVWR83]: If you are using subheads to organize the text, then follow them. Don't say "prostomium appendages" and start describing the body. Describe the prostomial appendages.

Excluído: cylindrical and small size body, with small body appendages and p

Excluído: triangularly shaped

Excluído: . Those genera also appear closely related in cladistics studies

Comentado [RVWR84]: Papilliform and small are the same thing.

Excluído: and papilliform

Excluído: , on the other hand

535 *Pettiboneia* and *Ceciamaralia* **gen. nov.** also share the presence of dorsal cirri in anterior
536 parapodia inserted at the base of parapodia, but they have two evident differences: i)
537 *Ceciamaralia* **gen. nov.** presents the dorsal cirri from parapodium three reaching the 9th, while
538 in *Pettiboneia* it is present from parapodium 2 reaching at least the 7th, but in some species it
539 can reach as far as the 25th, as in *Pettiboneia sanmartini* Aguirrezabalaga & Ceberio, 2003; ii)
540 *Ceciamaralia lanai* **gen. et sp. nov.** has a very long and large dorsal cirri, reaching more than
541 three times the length of parapodia, while in *Pettiboneia* it is distinctively slender and shorter.
542 In contrast, *Ceciamaralia nonatoi* **gen. et sp. nov.** does not have dorsal cirri. *Dorvillea* also
543 presents cylindrical dorsal cirri, but they are biarticulated and absent only in the first
544 parapodium.

Excluido: 3

545 *Dorsal cirrus* ~~*x notopodial lobe x branchiae*~~

546 The presence of the dorsal cirri in *Ceciamaralia lanai* **gen. et sp. nov.** generated a debate
547 regarding the origin of this appendage. It resembles the same structure observed in species of
548 *Pettiboneia*, *Diaphorosoma* Wolf, 1986 and *Westheideia* Wolf, 1986, but they are named
549 differently. All species of these genera present this cylindrical appendage inserted at the base
550 of parapodia. In *Diaphorosoma magnavena* Wolf, 1986 and *Westheideia minutimala* Wolf,
551 1986, it is described as a notopodium bearing an internal acicula, and the former having an
552 internal vascular loop, similar to a branchia. It is important to note that both species also present
553 an appendage described as branchia inserted distally in neuropodium, also having a vascular
554 loop in *D. magnavena*. The notopodium in *Pettiboneia* species is described as a dorsal cirrus,
555 also having internal acicula; some species, like *P. dibranchiata* (Armstrong & Jumars, 1978),
556 also has a distal appendage in the neuropodium described as branchia, exactly like in *D.*
557 *magnavena* and *W. minutimala*. Analyzing the notopodium in specimens of *Ceciamaralia lanai*
558 **gen. et sp. nov.**, it shows a vascularized tissue and an acicula barely visible, so we decided to
559 describe it as a dorsal cirrus because of its position and by what it is described as in the
560 literature. But it is important to evidence the similarities with a branchia mainly because of the
561 presence of vascular tissue and size of the structure.

562 *Chaetae*

563 The presence and format of furcate and geniculate chaeta shows a great diversity in
564 Dorvilleidae. Of the two species of *Ceciamaralia* **gen. nov.**, *C. lanai* **gen. et sp. nov.** has
565 furcate chaeta, while *C. nonatoi* **gen. et sp. nov.** has geniculate chaeta. This variation can also

Comentado [RVWR85]: What about Schistomerings?

Comentado [RVWR86]: You assigned a subhead for parapodium appendages and treat dorsal cirri as separate. I have no problem if you want to give a greater focus in DC, but then remove the content related to DC in the previous section and treat all the subject in this section.

Comentado [RVWR87]: This is the mess you are dealing with. The first question to be erect is, are these structures homologues, and why they are/aren't? Within Dorvilleidae, the parapodia is highly reduced to a single lobe (the neuropodia). In other families (such as Hesionidae, some Syllids, and some genera of Polynoidae), this type of parapodia is called sesquiramous: where the notopodia is reduced to the notoacicula (this is also seem in other Eunicida as well). In a first glance, you look the acicula supporting an appendage and it is plausible to think that it is the notopodia 'modified'. But what defines a parapodial lobe? After increasing the number of specimens – of different species – observed and studied, it turns out that the fist idea, of that lobe being a notopodia might be incorrect, and one can argue that the acicula is supporting only a dorsal cirri. But them, what defines a dorsal cirri? The same path can be done to think about that structure being or not a branchia.

It turns that you must better investigate this issue, and do histology would be greatly appreciate. But for instance I believe you can only propose your idea of homologues between these structures and explain why you consider your idea proper. So synthetize the text, perhaps present a small table with the different names and literatures for this same structure, would be better as a accompanying your explanation about what you consider that structure to be and why.

Comentado [RVWR88]: This sentence is quite confuse. Please re-write it.

567 be observed in species of *Meiodorvillea*, *M. minuta* posses furcate and *M. apalpata* posses
568 geniculate, while *M. penhae* and *M. jumarsi* present both types.

569 The blades of compound chaeta of *Ceciamaralia* **gen. nov.** are smaller, straighter and more
570 robust than species of other genera in which the dorsalmost compound chaeta can be very long
571 and spiniger.

Comentado [RVWR89]: This type of chaetae are not restricted to this two genera only.

572 *Jaw apparatus*

573 The jaw apparatus of *Ceciamaralia* **gen. nov.** presents a distinct and specific morphology
574 differing from all other species of the family. *Protodorvillea* and *Dorvillea* present a broad and
575 robust jaw apparatus with a maxillae composed by strong basal plates, carrier-like structure
576 and four rows of many robust maxillary plates. The maxillae of *Pettiboneia* and *Meiodorvillea*
577 is smaller presenting only two rows of similar maxillary plates (species of *Pettiboneia* has some
578 poorly sclerotized additional plates and they lack basal plates). On the other hand, the maxillae
579 of *Eliberidens* does not have maxillary plates at all, it is composed only of superior and inferior
580 long basal plates. The jaw apparatus of *Ceciamaralia* **gen. nov.** presents the posterior ligament
581 fused to only one pair of long and serrated basal plates followed anteriorly by two maxillary
582 plates, and the anteriormost presenting a long and thin distinct spine.

583 *Cladistic*

584 The scarcity of knowledge of Dorvilleidae impacts its phylogenetic analysis. But some studies
585 were performed to elucidate relationships within the family; the most comprehensive were a
586 cladistic one carried out by Eibye-Jacobsen & Kristensen (1994) where they utilized all known
587 genera of Dorvilleidae at that time as terminal taxa. Even with slow progress, molecular data
588 is already aiding in the clarification of phylogenetic relationships of dorvilleids, mainly
589 *Ophryotrocha* (Heggøy, Schander & Åkesson, 2007), which is the genus with more sequence
590 data. The gap in molecular data of other genera of the family opens space to specific cladistic
591 studies with morphological data like Pleijel & Eide (2007), de Oliveira Bonaldo et al., (2022)
592 and this present one. Those studies aid not only the current knowledge of the relationship of
593 some taxa but also keep subsidizing data and results to future studies and discussion about the
594 Dorvilleidae.

595 *Ceciamaralia* **gen. nov.** morphologically resembles other small sized dorvilleids presented in
596 the cladistics analysis by de Oliveira Bonaldo et al., 2022 hence we included both new species
597 described here in that study. The new genus appeared as monophyletic by the specific

Comentado [RVWR90]: Not in that study, but in the matrix resulted from that study.

598 synapomorphies discussed previously, which ranked it as a new genus, mainly the unique
599 maxillae with only two maxillary plates, being the anteriormost presenting a specific long and
600 thin spine and the enlarged pharynx making the anterior region enlarged when it is retracted,
601 which is not observed in others species of the family. The results of de Oliveira Bonaldo et al.,
602 2022 placed *Meiodorvillea* as a sister group of all other genera presented in the analysis except
603 *Eliberidens* and *Gymnodorvillea*. The inclusion of the *Ceciamaralia* **gen. nov** species and the
604 new characters in the analysis did not affect the previous relationship results among the genera
605 and the monophyly of them.

Excluído: here

606 *Present and future*

607 The incentive towards taxonomic studies and projects resulted in the first description of a new
608 genus of Dorvilleidae in almost 25 years, presented here. Dorvilleids present a great
609 morphological diversity, but its taxonomic knowledge is still limited by the reasons mentioned
610 before and the lack of incentive for taxonomist studies. This incentive is very important to aid
611 researchers to better comprehend and classify those organisms, because their identification and
612 description is not an easy task.

Comentado [RVWR91]: Ok, but why you restricted your analysis only with 8 other genera of Dorvilleidae, and didn't include all 31 genera?

613 The study of small annelids has some obstacles like the difficulty to collect and identify them,
614 but with the continuous increase of scientific advancements and the development of new
615 techniques and tools, researchers can perform new and more detailed analyses of those
616 unidentified species. These studies increase not only the systematic knowledge of the species
617 but also reveal the great hidden biodiversity of the group.

Comentado [RVWR92]: I see where you intend to reach, but this paragraph is quite confuse and repetitive. Rethink it and rewrite.

618 In Brazil only sixteen species were registered before the present study, but this number does
619 not reflect the true diversity of this family along the coast. The lack of knowledge and difficulty
620 of collecting them highlight the importance of museum collections since they preserve the
621 organisms previously described and also keeps unidentified organisms, which can hold many
622 biological and ecological information aiding in several fields of study, mainly taxonomy and
623 ecology. The specific identification of the organisms reveals records and occurrences of them
624 aiding in biogeographical studies and ecological patterns subsidizing data of potential
625 distribution (Budaeva et al., 2024).

Comentado [RVWR93]: Such as...?

Comentado [RVWR94]: Check again

Excluído: on

Excluído: Brazilian

626 Morphological analysis can reveal new or different characters and structures supporting a
627 refined description, reveal new species and aid the understanding of the phylogenetic
628 relationship of the species of the group, as was demonstrated in the present study. That is why

632 the formation of taxonomists is important as well as encouraging them to identify, describe and
633 study those neglected groups, enhancing the discovery of their biodiversity and knowledge.

634 This study is a partial result obtained through the current Ph.D thesis of the first author, which
635 is focused on the taxonomic study of Dorvilleidae; preliminary morphological analysis of
636 museum materials indicates several new registers of the family for the Brazilian coast and also
637 potential new species to the family. In addition, we highlight the importance of the effort to
638 collect new and fresh organisms *since* they can provide current biodiversity data and can also
639 provide more accurate genetic information through molecular studies, since some groups like
640 the Dorvilleidae family present a huge gap in those data.

Excluído: in view of the fact that

Comentado [RVWR95]: Ok, but your subheading is present and future, I see a lot of present, but I don't see anything for the future. What are your expectations for the future?

641

642 **Key to species of *Ceciamaralia* gen. nov.**

643 1a) Presence of a long and large dorsal cirri in parapodia 3 to 7-9 and furcate chaeta in supra-
644 acicular fascicle..... *Ceciamaralia lanai* **gen. et sp. nov.**

645 1b) Absence of dorsal cirri and presence of geniculate chaeta in the supra-acicular
646 fascicle..... *Ceciamaralia nonatoi* **gen. et sp. nov.**

647

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661

662 **References**

663 Aguirrezabalaga F, Ceberio A. 2003. Dorvilleidae (Polychaeta) from the Capbreton Canyon
664 (Bay of Biscay, NE Atlantic) with the description of *Pettiboneia sanmartini* sp. nov. *Cahiers*
665 *de Biologie Marine* 44(1), 41-48.

666 AMARAL ACZ, NALLIN SAH, STEINER TM, FORRONI TO, GOMES-FILHO D,
667 ARAÚJO GR, FREITAS R, COSTA CAO, RUTA C, GOMES KRE, BONALDO RO. 2006-
668 2022. Catálogo das espécies de Annelida “Polychaeta” do Brasil. (available from:
669 [http://www.ib.unicamp.br/museu_zoologia/files/lab_museu_zoologia/Catalogo_Polychaeta_](http://www.ib.unicamp.br/museu_zoologia/files/lab_museu_zoologia/Catalogo_Polychaeta_Amaral_et_al_2022.pdf)
670 [Amaral_et_al_2022.pdf](http://www.ib.unicamp.br/museu_zoologia/files/lab_museu_zoologia/Catalogo_Polychaeta_Amaral_et_al_2022.pdf) (accessed in 28 July 2023).

671 Armstrong JW, Jumars PA. 1978. Branchiate Dorvilleidae (Polychaeta) from the North Pacific.
672 *Bulletin, Southern California Academy of Sciences*, 77(3), 133-138.

673 Martin D, Britayev TA. 1998. Symbiotic polychaetes: review of known species. In: Ansell A,
674 Gibson R, Barnes M, Press U. eds. *Oceanography and Marine Biology: an annual review*.
675 35(36), 217-340.

676 Budaeva N, Agne S, Ribeiro PA. et al. 2024. Wide-spread dispersal in a deep-sea brooding
677 polychaete: the role of natural history collections in assessing the distribution in quill worms
678 (Onuphidae, Annelida). *Front Zool* 21, 1. <https://doi.org/10.1186/s12983-023-00520-0>.

679 Chamberlin RV. 1919. The Annelida Polychaeta. *Memoirs of the Museum of Comparative*
680 *Zoology at Harvard College*. 48: 1–514. <https://doi.org/10.5962/bhl.title.49195>

681 Claparède E, Mecznirow E. 1869. Beiträge zur Kenntnis der Entwicklungsgeschichte der
682 Chaetopoden. *Zeitschrift für wissenschaftliche Zoologie*. 19, 163–205.

683 Day JH. 1963. The polychaete fauna of South Africa. Part 8: New species and records from
684 grab samples and dredging. *Bulletin of the British Museum (Natural History), Series Zoology*.
685 10(7): 381–445.

686 de Oliveira Bonaldo R, Menchini Steiner T, Zacagnini Amaral AC. 2022. Revision of
687 *Meiodorvillea* Jumars, 1974 (Annelida: Dorvilleidae) including descriptions of three new
688 species from the Southwestern Atlantic Ocean. *Plos one*, 17(3), e0264081.

689 de Oliveira Bonaldo R, Steiner TM, Garraffoni ARS, Amaral ACZ. 2022. First record of the
690 genus *Eliberidens* (Annelida: Dorvilleidae) from the Southwestern Atlantic Ocean and cladistic
691 analysis of the genus. *Zoologischer Anzeiger*. 301, 115-126.

692 delle Chiaje S. 1828. Memorie sulla storia e notomia degli animali senza vertebre del Regno di
693 Napoli. *Stamperia della Società Tipografica Napoli*. 3: 1–232.

694 Ehlers E. 1901. Die Polychaeten des magellanischen und chilenischen Strandes. Ein
695 faunistischer Versuch. Festschrift zur Feier des Hundertfünfzigjährigen Bestehens des

Código de campo alterado

696 Ko'niglichen Gesellschaft der Wis-senschaften zu Go'ttingen, Abhandlungen der
697 Mathematisch-Physikalischen Klasse. 1–232, 25 plates.

698 Eibye-Jacobsen D, Kristensen RM. 1994. A new genus and species of Dorvilleidae (Annelida,
699 Polychaeta) from Bermuda, with a phylogenetic analysis of Dorvilleidae, Iphitimidae and
700 Dinophilidae. *Zool Scr.* 23(2): 107–131.

701 Fauchald K. 1977. The polychaete worms. Definitions and keys to the orders, families and
702 genera. *Natural History Museum of Los Angeles County, Science Series*.

703 Goloboff PA, Morales ME. 2023. TNT version 1.6, with a graphical interface for MacOS and
704 Linux, including new routines in parallel. *Cladistics*, 39(2), 144-153. DOI 10.1111/cla.12524.

705 Hartman O. 1965. Deep-water benthic polychaetous annelids off New England to Bermuda and
706 other North Atlantic areas. *Occasional Papers of the Allan Hancock Foundation*. 28: 1–384.

707 Hernández-Alcántara P, Pérez-Mendoza AY, Solís-Weiss V. 2006. Description of three new
708 species of *Ninoe* and *Cenogenus* (Polychaeta: Lumbrineridae) from the Mexican Pacific.
709 *Scientia Marina*, 70(S3), 81-90.

710 Hilbig B. 1995. A new polychaete *Eliberidens hartmannschroederæ* sp. n. Polychaeta
711 Dorvilleidae from the US Atlantic continental slope. *Mitt. Hambg. Zool. Mus. Inst.* 92 (April),
712 85–88.

713 Jumars PA. 1974. A generic revision of the Dorvilleidae (Polychaeta), with six new species
714 from the deep North Pacific. *Zool. J. Linn. Soc.* 54(2): 101–135. [https://doi.org/10.1111/j.1096-](https://doi.org/10.1111/j.1096-3642.1974.tb00794.x)
715 [3642.1974.tb00794.x](https://doi.org/10.1111/j.1096-3642.1974.tb00794.x).

716 Kvalø Heggøy K, Schander C, Åkesson B. 2007. The phylogeny of the annelid genus
717 *Ophryotrocha* (Dorvilleidae). *Marine Biology Research*, 3(6), 412-420.
718 <https://doi.org/10.1080/17451000701695361>.

719 Lamarck JBD. 1802. Discours d'Ouverture, Prononcé le 27 floréal An 10, au Muséum
720 d'Histoire naturelle. Recherches sur l'organisation des corps vivans. *Bulletin Scientifique de la*
721 *France et de la Belgique*, 483-517.

722 Lavrado HP, Brasil ACS. 2010. In: Lavrado, H.P., Brasil, A.C.S. (Eds.), Biodiversidade da
723 região oceânica da Bacia de Campos: Macrofauna, p. 232. Rio de Janeiro, SAG Serv.

724 Maddison WP, Maddison DR. 2019. Mesquite: a Modular System for Evolutionary Analysis.
725 Version 3.61, 2019.

726 McIntosh WC. 1869. On the structure of the British nemerteans, and some new British annelids.
727 *Trans. R. Soc. Edinb.* 25 (2), 305–433.

728 Moore JP. 1906. Additional new species of Polychaeta from the North pacific. In: *Proceedings*
729 *of the Academy of Natural Sciences of Philadelphia*, vol. 58, pp. 217–260.

Código de campo alterado

730 Moore JP. 1909. Polychaetous annelids from Monterey Bay and San Diego, California. *Proc*
 731 *Acad Nat Sci Phila.* 61: 235–295. <https://doi.org/10.5852/ejt.2021.736.1251>.
 732 Nixon KC. 2002. WinClada Ver. 1.00. 08. Published by the Author, Ithaca, NY.
 733 Núñez J. 1998. *Marycarmenia lysandrae*, a new genus and interstitial species (Polychaeta:
 734 Dorvilleidae) from Madeira. *Bull. Mar. Sci.* 62 (1), 115–119.
 735 Orensanz JM. 1973. Los anelidos poliquetos de la provincia biogeografica Argentina. III.
 736 Dorvilleidae. *Physis Seccion A Los oceanos y sus organismos.* 32(85): 325–342.
 737 Parfitt E. 1866. Description of a *Nereis* new to science. *Zoologist.* 21: 113–114.
 738 Paxton H. 2009. Phylogeny of Eunicida (Annelida) based on morphology of jaws.
 739 *Zoosymposia.* 2 (1), 241–264. <https://doi.org/10.11646/zoosymposia.2.1.18>.
 740 Pettibone MH. 1961. New species of polychaete worms from the Atlantic Ocean, with a
 741 revision of the Dorvilleidae. *Proceedings of the Biological Society of Washington*, 74(19), 167-
 742 186.
 743 Pleijel F, Eide R. 1996. The phylogeny of *Ophryotrocha* (Dorvilleidae: Eunicida: Polychaeta).
 744 *Journal of Natural History.* 30(5), 647-659. <https://doi.org/10.1080/00222939600770361>.
 745 Read G, Fauchald K. 2024. World Polychaeta database. Dorvilleidae Chamberlin, 1919.
 746 Accessed through: World Register of Marine Species. Available at
 747 <https://www.marinespecies.org/aphia.php?p=taxdetails&id=971> (accessed 31 Jan 2024).
 748 Steiner TM, Santos CSG. 2004. A new species of *Neanthes* (Annelida, Polychaeta, Nereididae)
 749 from Brazil, and some remarks on *Neanthes bruaca* Lana & Sovierzoski, 1987. *Beaufortia.* 54
 750 (2), 39–57.
 751 Wainwright SC, Perkins TH. 1982. *Gymnodorvillea floridana*, a new genus and species of
 752 Dorvilleidae (Polychaeta) from Southeastern Florida. *Proc. Biol. Soc. Wash.* 95 (4), 694–701.
 753 Webster HE. 1879. The Annelida Chaetopoda of the Virginian coast. *Transactions of the*
 754 *Albany Institute.* 9: 202–269.
 755 Westheide W. 2000. *Ikosipodoides seychellensis*, a new genus and species of interstitial
 756 polychaetes (Dorvilleidae) from the island of Mahé, Indian Ocean. *Cahiers de biologie marine,*
 757 41(1), 19-24.
 758 Wolf PS. 1986. Four new genera of Dorvilleidae (Annelida: Polychaeta) from the Gulf of
 759 Mexico. *Proc Biol Soc Wash.* 99(4): 616–626.
 760 Yen NK, Rouse GW. 2020. Phylogeny, biogeography and systematics of Pacific vent, methane
 761 seep, and whale-fall *Parougia* (Dorvilleidae: Annelida), with eight new species. *Invertebrate*
 762 *Systematics,* 34(2), 200-233.

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Código de campo alterado

Código de campo alterado

763 Zanol J, Carrera-Parra LF, Steiner TM, Amaral ACZ, Wiklund H, Ravara A, et al. 2021 The
764 Current State of Eunicida (Annelida) Systematics and Biodiversity. *Diversity* 13(2): 74.
765 <https://doi.org/https://doi.org/10.3390/d13020074>.

766 Zhang D, Zhou Y, Yen N, Hiley AS, Rouse GW. 2023. *Ophryotrocha* (Dorvilleidae,
767 Polychaeta, Annelida) from deep-sea hydrothermal vents, with the description of five new
768 species. *European Journal of Taxonomy*, 864, 167-194.