



Does *Nolella pusilla* (Bryozoa: Ctenostomatida) actually exist?

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Abstract: Specimens of ctenostome bryozoan collected from the NW coast of the Iberian Peninsula, previously cited as *Nolella pusilla sensu* Ryland, 1958, is now ascribed to *Panolicella nutans* Jebram, 1985. The material cited by other authors as *Nolella pusilla*, originating from different parts of Europe, is also ascribed to this species, as it is considered that *Cylindroecium pusillum* Hincks, 1880 is unrecognisable.

Résumé : *Nolella pusilla* (Bryozoa : Ctenostomatida) existe-t-elle réellement ? Le matériel récolté sur la côte Nord-ouest de la Péninsule Ibérique, cité préalablement comme *Nolella pusilla sensu* Ryland, 1958, est attribué à l'espèce *Panolicella nutans* Jebram, 1985. Le matériel provenant de différentes localités des côtes européennes, mentionné comme *Nolella pusilla* par d'autres auteurs, est également assigné à cette espèce, car *Cylindroecium pusillum* Hincks, 1880 n'est finalement pas considérée comme une espèce valable.

Keywords: Bryozoa • Ctenostomatida • *Nolella* • *Panolicella* • NE Atlantic • Spain

Introduction

During systematic sampling surveys carried out in the Ría de Ferrol (NW Spain) between 1989 and 1993, specimens of a small ctenostome bryozoan were collected, which we assigned - with reservations - to the species *Nolella pusilla* (Hincks, 1880); in the published studies of the material, the species was denominated as *Nolella pusilla sensu* Ryland, 1958 (Reverter-Gil, 1995; Fernández-Pulpeiro & Reverter-Gil, 1995). During a later survey (1995-1996) some colonies of the same species were collected from the coast of Lugo, very close to the Ría de Ferrol (César-Aldariz et

al., 1997). Finally, all of this material was included under the same name in the "Check-list of the Galician Bryozoa" (Reverter-Gil & Fernández-Pulpeiro, 2001).

At the time we decided to use this provisional denomination because we could not be sure that the material corresponded to the original description of *Cylindroecium pusillum* made by Hincks (1880). Unfortunately, we were then unaware of the existence of the study of Jebram (1985), in which the validity of the description made by Hincks (1880) is discussed, while at the same time, a new species denominated *Panolicella nutans* is described. Study of the material and of the relevant literature allows us to conclude that the species *Cylindroecium pusillum* Hincks, 1880 is unrecognisable, and that our material, as well as that cited by various other authors, should be ascribed to the species described by Jebram (1985).

Results

Panolicella nutans Jebram, 1985

(Figs 1 & 2)

Panolicella nutans Jebram, 1985: 12, figs. 1-5.

Nolella pusilla (Hincks): Ryland, 1958: 317, fig. 1; Kayser, 1984: 35-46, figs. 1-6; Hayward, 1985: 87, not fig. 28.

Nolella pusilla (Hincks) *sensu* Ryland, 1958: Reverter Gil, 1995: 53, fig. 2; Fernández-Pulpeiro & Reverter-Gil, 1995: 50, fig. 3; César-Aldariz *et al.*, 1997: 210; Reverter-Gil & Fernández-Pulpeiro, 2001: 48.

Not *Cylindroecium pusillum* Hincks, 1880: 537, text fig. 29, pl. 80, fig. 8.

Material examined

Panolicella nutans: Numerous colonies from the northern coast of Galicia (NW Spain), from the Ría de Ribadeo to the Ría de Ferrol.

ZMUH-B.1881: *Panolicella nutans* Jebram 1985. Isotype.

NHM-1994.8.5.1: *Nolella pusilla*. Holyhead, 1/58.

NHM-1994.9.5.2: *Nolella pusilla*. Swansea Dock, 11/57.

NHM-1911.10.1.244: *Cylindroecium pusillum* Hincks? Guernsey.

Description

Adherent colony formed by chains of zooids all facing the same direction, linked by filiform extensions 0.01-0.03 mm wide and of variable length, of between 0.06 mm and 2 mm.

Zooids show a dilated basal portion 0.26 mm long (0.20-0.31 mm) and 0.14 mm wide (0.13-0.16 mm), which occupies between 1/4 and 1/3 of the total length of the zooid. The basal dilatation is hyaline and presents a proximal filiform pseudostolon linked to the preceding zooid. Branching is frequent and formed by the appearance of pseudostolons that arise laterally from the basal portions of the zooids. The pseudostolons have a septum at the proximal end.

Peristome cylindrical and with an earthy appearance, 0.65 mm long (0.35-0.85 mm) and 0.10 mm wide, shorter and transparent in the youngest zooids.

Polypide with 10-11 tentacles, not totally enclosed in the peristome when retracted. Neither a collar nor a gizzard are observed. Large caecum.

Embryos are brooded in the interior of ovisacs in the distal portion of the peristome.

Discussion

Numerous specimens of a small ctenostome bryozoan (Fig. 1) were collected from the north coast of Galicia (NW

Spain), between 1990 and 1996, and were provisionally denominated as *Nolella pusilla sensu* Ryland, 1958 (Fernández-Pulpeiro & Reverter-Gil, 1995; Reverter-Gil, 1995; César-Aldariz *et al.*, 1997; Reverter-Gil & Fernández-Pulpeiro, 2001).

The reason we used this provisional denomination for the species was that, although we were sure that it fitted perfectly to the description of *Nolella pusilla* (Hincks, 1880) made by Ryland (1958), we could not be sure that it corresponded to the original description of *Cylindroecium pusillum* made by Hincks (1880). Kayser (1984) must have found himself in a similar situation when he cited *N. pusilla* from the German Bight, as he stated that the material "... corresponded to *Nolella pusilla* (Hincks), described by Ryland (1958)", leading us to understand that his description was based on that of the latter author.

At that time we were unaware of the existence of the study of Jebram (1985) in which the validity of the citations made by Hincks (1880) and by Ryland (1958) are discussed, and at the same time the material of Kayser (1984) is described as a new species, denominated *Panolicella nutans*.

Hincks (1880) described the species *Cylindroecium pusillum* very superficially, omitting important details and not including any biometric data, in accordance with the style of the era; moreover in the opinion of the author himself (Hincks, 1880: 537) only woodcut 29 is correct, as in the others (Hincks, 1880: pl. 80, fig. 8) the basal dilatation of the zooids is not drawn.

This type of problem is not unusual, and in fact many of the descriptions of species made in the 19th century are ambiguous. However, usual practice dictates that when material cannot be definitely ascribed to a particular species because of a poor original description, then the original material (preferably the holotype, if it has been formally designated) should be examined.

D'Hondt (1983: 45) indicated that the type specimen of *C. pusillum*, deposited in the British Museum, did not correspond to a species of the genus *Nolella* because it showed branching arising from the stolons and not from the basal portions of the zooids; the author himself (d'Hondt pers. com.) informed us that the specimen was not included in the museum's inventory and that he found it by chance some 25 years ago. We therefore asked Miss M. E. Spencer Jones (Natural History Museum, London) to try to find the material in the museum's collection, using the information provided by Dr. d'Hondt, but the search was unsuccessful. In fact, Cook (pers. com. in Jebram, 1985) has already pointed out that the type specimens of *C. pusillum* are missing from the British Museum's collection. We were recommended to search for the material in other British museums, but again we were unsuccessful; some of Hincks' collections were donated by Mrs. E. Hincks to the

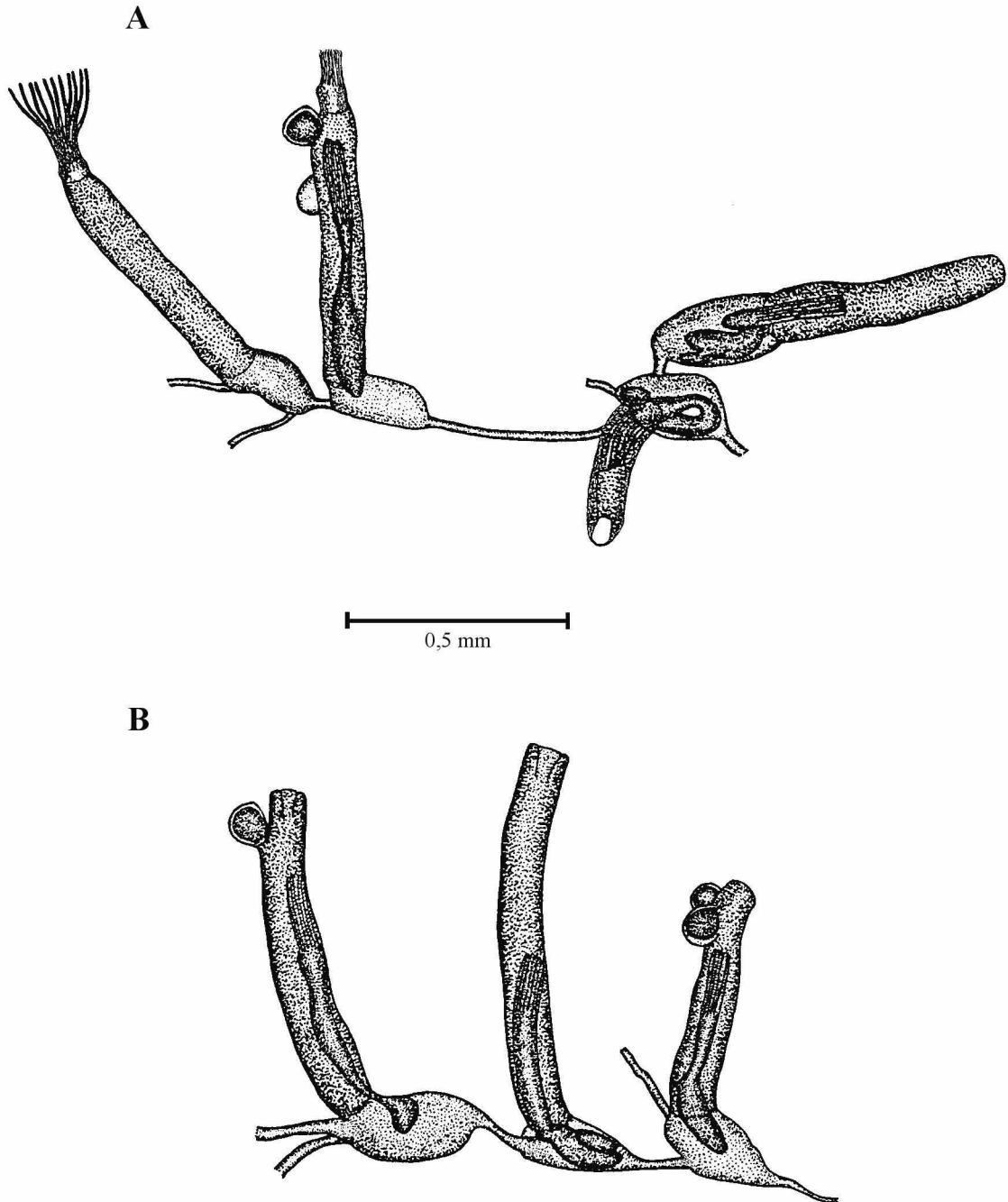


Figure 1. *Panolicella nutans* Jebram, 1985 (Ría de Ferrol). **A.** Group of autozooids; note the ovisacs and an expanded polypide with 11 tentacles. **B.** Autozooids with ovisacs.

Figure 1. *Panolicella nutans* Jebram, 1985 (Ría de Ferrol). **A.** Groupe d'autozoécies ; noter les sacs embryonnaires et un polypide épanoui avec 11 tentacles. **B.** Autozoécies avec sacs embryonnaires.

Museum of Bristol, but many were destroyed during the Blitz in November 1940. The original material of *C. pusillum* must therefore be assumed to be lost, and the only valid information existing at present is that provided by d'Hondt (1983), referred to above.

In our opinion, the original description of Hincks (1880) is so ambiguous that we cannot definitely ascribe our material, or any other presently known material to the species described by Hincks, and therefore the designation of a neotype is impossible. We therefore believe that this

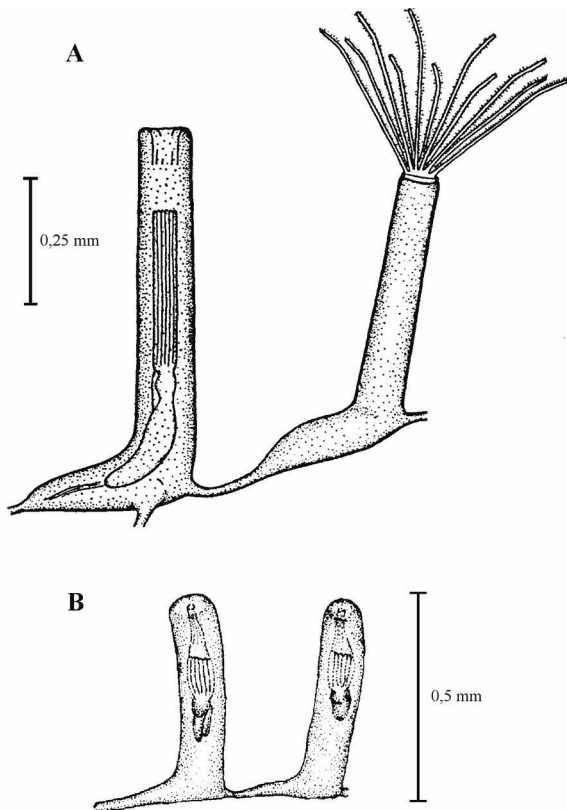


Figure 2. A. *Nolella pusilla* (Hincks) after Ryland (1958). **B.** *Nolella pusilla* (Hincks) after Hayward (1985).

Figure 2. A. *Nolella pusilla* (Hincks) d'après Ryland (1958). **B.** *Nolella pusilla* (Hincks) d'après Hayward (1985).

species is unrecognisable, as established by Jebram (1985), and that *Cylindroecium pusillum* Hincks, 1880 should be formally considered *nomen dubium*.

The remaining question is what to do about the citations previously attributed to *Nolella pusilla*. The central problem in this confusion is the attempt by Ryland (1958) to re-describe *Nolella pusilla*. Ryland was the first author to cite this species after the original description; following this author, there are only two previous nominal citations from the Isle of Man (Thornely, 1901, and Moore, 1937, both in Ryland, 1958) but they do not provide any further information that would help to resolve the problem. Ryland (1958) considered that the original description of *C. pusillum* was inadequate and decided to re-describe the species; however, and this is the critical point, he did not use the original material but rather his own material collected from different parts of the UK, while assuming that it was the species described by Hincks (1880), which is fairly unlikely.

Nolella pusilla is included in "British Fauna" (Hayward, 1985: 87) using the citation and material described by

Ryland (1958), as it has never again been found in British waters; the species, whatever it is, has only been observed once, but no specimens were collected (Hayward, pers. com., May 2005). The description therefore reproduces that of Ryland (1958), whereas the drawing (Hayward, 1985, fig. 28) represents the original material of the former author, deposited in the Natural History Museum (NHM-1994.8.5.1; NHM-1994.9.5.2). The drawing does not at all resemble those made by Ryland (1958) or even the original drawing of Hincks (1880): the peristomes are thicker, retracted and do not reach the basal dilated portion, which furthermore is barely evident and continues gradually with the pseudostolons, without any clear separation. We studied the samples some years ago and they are the same samples studied by Jebram (1985: 17). Without being aware of the work of the latter author, we reached the same conclusion, i.e. that this material is so incomplete and so poorly conserved that it is difficult to establish even the genus that it belongs to; the material is therefore of no help in establishing which species Ryland (1958) was referring to, and cannot be designated as the neotype of any taxon. There are another sample labelled *Cylindroecium pusillum* Hincks? in the Natural History Museum (NHM-1911.10.1.244) corresponding to the Norman Collection, but the specimen is dry and is not of any use.

In the same year that "British Fauna" was published, the study of Jebram (1985) appeared, in which the author describes material provided by Kayser, as belonging to a new genus and species, *Panolicella nutans*. According to Jebram, the species described as *Cylindroecium pusillum* by Hincks (1880) would be unrecognisable, as we commented previously, and the author also discusses the citation of *Nolella pusilla* made by Ryland (1958), concluding that the latter description could also be considered as *incertae sedis*. The reasons for this are based on 4 points.

Firstly, the lack of valid reference material, as previously commented on. However, we believe it evident that the drawings and the description of Ryland (1958) were either not of the presently existing material, or that the material was conserved very badly; compare the original drawing of Ryland (1958) (Fig. 2A) with that of the conserved material (Hayward, 1985) (Fig. 2B).

Secondly, Jebram (1985) severely criticised the description of Ryland (1958), saying that it was incomplete or even wrong in certain aspects, as according to Jebram it lacks a series of characters that he considers indispensable, characters that on the other hand are not usually found in the description of ctenostome bryozoans. It is true that Ryland's description omits many of the details that Jebram includes in his meticulous and accurate description of *P. nutans*, but if his reasoning was generally applied, many long-established descriptions currently in use would be

considered as *incertae sedis* for not complying with currently-accepted patterns. Furthermore, Jebram (1985) recognises that the drawings, biometries and the description of Ryland (1958) may fit well to the description of *P. nutans*.

Thirdly, Ryland (1958) cited the existence of a short collar, present in the genus *Nolella* but absent in *Panolicella*. However Jebram (1985: 18) recognised that Ryland may have easily confused the hyaline neck fold of fully protruded polypides with a collar, as he himself did on first observing his own material.

Fourthly and finally, Ryland (1958: 319) stated that “*Branching occurs occasionally and is of the cruciform type (Harmer, 1915), extra stolons issuing laterally from the base of the erect portion*”. We think that Jebram may have misinterpreted this comment as he assumes that the “extra stolons” are produced additionally to the ordinary cruciform branches, which does not occur in *P. nutans*; we believe that Ryland (1958) was simply describing the cruciform branches in his material, and was not referring to any additional branches.

In summary, we consider that the arguments of Jebram (1985) questioning the validity of the description of *N. pusilla* made by Ryland (1958) are not sufficient, and that the citation should be considered, although with some reservations, as belonging to *P. nutans*.

Unfortunately the study of Jebram does not appear to have been seriously considered in the relevant literature. Although, in our previous description of *N. pusilla* (Fernández-Pulpeiro & Reverter-Gil, 1995; Reverter-Gil, 1995), we omitted mention of Jebram’s article due to inexcusable negligence, in “British Fauna” published in the same year (Hayward, 1985), no reference was made to the article - except to indicate that Jebram considered the species described by Hincks as unrecognizable - and the content of the study was not discussed at all. Hayward (1985) considered Hincks’ description as valid and indicated that Kayser (1982 & 1984) carried out a complete study of its culture and biology. The material used by the latter author is the same as that used by Jebram (1985) in describing *P. nutans*, and we deduce that Hayward considered the species as synonymous with *N. pusilla*; however, Jebram’s species is not included in the synonyms of *N. pusilla*, and is neither discussed nor formally rejected.

We consider that the specimens cited as *N. pusilla* by Ryland (1958) and by Kayser (1982 & 1984), as well as the material from Galicia, previously cited as *N. pusilla* (*sensu*) Ryland, 1958, may be ascribed to *P. nutans*. Our material is markedly similar to the isotype of the species, conserved in the *Zoologisches Museum der Universität Hamburg* (B-1881); the only notable difference is the size and form of the caecum, as in our material it is shorter and thicker than in the original description of Jebram (1985), although this

difference may be attributed to the long period of conservation of our material in formalin. Finally, the recent citation of *N. pusilla* on the Netherlands coast by De Blauwe (2003), part of whose material we have been able to examine, also corresponds to *P. nutans*.

Panolicella nutans has been described from colonies cultured under laboratory conditions, originally collected from tanks at the Helgoland Marine Biological Station (Germany). The species does not appear to have been found in British waters since the re-description made by Ryland (1958), who cited material from Swansea and Holyhead. This appears to indicate that the species is not common in the area. In contrast, we have collected *P. nutans* from several locations on the north coast of Galicia (Spain), along more than 150 km of coastline ranging from the Ría de Ribadeo to the Ría de Ferrol, indicating that, although inconspicuous and easily overlooked, the species is relatively common in the area. *Panolicella nutans*, which usually appears mixed together with *Bowerbankia* spp., is found in the intertidal zone, particularly on algae such as *Saccorhiza polyschides* (Light.) Batt., *Himanthalia elongata* (L.) S.F. Gray and *Fucus* spp. We have collected specimens at almost all times of the year, although we observed the yellow embryos in July, October and November.

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