

The nomenclature and type locality of *Berkeleya adeliensis* (Bacillariophyceae): a correction

Linda K. Medlin

Marine Biological Association of the UK, The Citadel, Plymouth, GB-PL12PB, UK
Email: lkm@MBA.ac.uk

Background and aims – *Berkeleya adeliensis* was described in 1990 by Medlin, unfortunately with an error in its typification. This note discusses and corrects the error.

Key results and conclusions – The type locality is in McMurdo Sound, Antarctica, not in Adélie Land where the species was first recorded by Manguin as “*Amphipleura rutilans* var. *antarctica*”. Nevertheless, the species does occur in both localities, as shown by published illustrations. Morphometric data are given for *Berkeleya* species reported from the Antarctic, including the two locations where *B. adeliensis* occurs.

Key words – Antarctic diatoms, Bacillariophyta, *Berkeleya*, diatoms, taxonomy, typification.

Van Heurck (1896) and Peragallo & Peragallo (1897) retained the tube dwelling genus *Berkeleya* Grev. separate from *Amphipleura* Kütz. Cox (1975a, 1975b) provided clear supporting evidence for this, which included, along with the ability to form mucilage tubes, differences in valve outline, apex shape, terminal raphe endings, and girdle bands.

In 1880, Grunow transferred *Schizonema antarcticum* Harv., a tube dwelling diatom, to *Berkeleya*. Peragallo (1897) appears to have been the first to use the combination *Berkeleya rutilans* var. *antarctica* Perag., but treated this as a later synonym of the northern hemisphere taxon, *Berkeleya rutilans* var. *parasitica* (Harv.) Perag. Medlin (1990) documented that more than one taxon in the Antarctic had been identified as *Berkeleya rutilans* var. *antarctica*. Medlin illustrated one taxon that could be regarded as a variety of *B. rutilans* (Trentep. ex Roth) Grunow (Medlin 1990: figs 1, 4, 10–13) but she did not describe this as a new variety; instead she left it unnamed but documented that it was distinct from the nominate form. Medlin listed other names that were considered as later synonyms of *Berkeleya rutilans* var. *antarctica* but did not examine them.

To establish the true features of *Berkeleya rutilans* var. *antarctica*, Medlin was able to float off some specimens from the dried herbarium sheet of material originally collected by Hooker in Berkeley Sound in the Falkland Islands. This

was the material upon which Harvey described *Schizonema antarcticum* and Medlin examined it by light and electron microscopy. She concluded that this entity was sufficiently different from *B. rutilans* to reinstate it as a separate species, which, when transferred to *Berkeleya*, should be called *Berkeleya antarctica* (Harv.) Grunow in Van Heurck. However, the specimens identified as *Berkeleya rutilans* var. *antarctica* by Manguin (1960) were not the same as Harvey's species and so Medlin described those specimens as a new species, *Berkeleya adeliensis* Medlin, using material from several sites in McMurdo Sound, Antarctica. Manguin's diatom is linear in valve view with broadly rounded obtuse ends. Its valves are fragile and appear hyaline in the light microscope because of its striae being 50–60 in 10 mm. Apparently, this taxon is widely distributed in benthic and sea ice samples from the Antarctic and Medlin (1990) cited several papers where it was present but identified under different names (Medlin 1990: 82). More recently, Riaux-Gobin & Poulin (2004) have provided more documentation of its biogeography around Antarctica.

However, Prof. Paul Silva kindly informed Medlin of an error in the description of *Berkeleya adeliensis* by Medlin (1990): the type locality and the type slide are not from the same location. Although this diatom was initially identified (as *Amphipleura rutilans* var. *antarctica* (Grunow) Grunow)

Table 1 – Morphometric measurements of *Berkeleya* species reported from the Antarctic taken from Medlin (1990) and Riaux-Gobin & Poulin (2004).

This table updates the information given by Medlin (1990: table 1), providing diagnostic measurements for the three known Antarctic *Berkeleya* species. ¹ For further information on *B. rutilans* var. ? see Medlin (1990: figs 1–4, 10–11).

Species	Length (µm)	Width (µm)	Striae in 10 mm
<i>Berkeleya antarctica</i>	20–26	6–8	36–40
<i>Berkeleya rutilans</i> var. ? ¹	18–35	4–6.2	6–28
<i>Berkeleya adeliensis</i> from McMurdo Sound, Antarctica	57–82	7–13	50–60
<i>Berkeleya adeliensis</i> from Adélie Land, Antarctica	50–70	7–11	42–45

by Manguin from Cape Margerie, Adélie Land Antarctica, there was no material for Medlin to use from there as a type when Medlin corrected the systematics of Antarctic *Berkeleya* species. Instead, Medlin used material from McMurdo Sound, but cited the original place where the species was found, Adélie Island, as the type location. This was a mistake because the type slide must be logically from the type location! Therefore, the type location must be corrected as follows, to agree with the holotype specified in 1990:

***Berkeleya adeliensis* Medlin (Medlin 1990: 82, emend.)**

Fig. 1

Type material – slide BM 81621 (holo-: BM).

Type locality – New Harbour, McMurdo Sound, Antarctica. The species was found growing on the underside of fast ice and forms mucilage tubes (illustrated by Medlin 1990: fig. 3; and by Riaux-Gobin & Poulin 2004: fig. 7).

Material of *Berkeleya adeliensis* from Adélie Land is now available (Riaux-Gobin & Poulin 2004) and there is no doubt that this recently collected material is conspecific with the type material from McMurdo Sound (this paper, fig. 1 & table 1, and Riaux-Gobin & Poulin 2001: figs 1–9). Nevertheless, there are minor differences: Riaux-Gobin & Poulin (2004) noted that their specimens did not have a regular fan-shaped apical stria pattern around the poles as did the specimens from McMurdo Sound and the stria density was slightly less (table 1). Samples and slides of Riaux-Gobin & Poulin’s material from Adélie Land can be regarded as au-

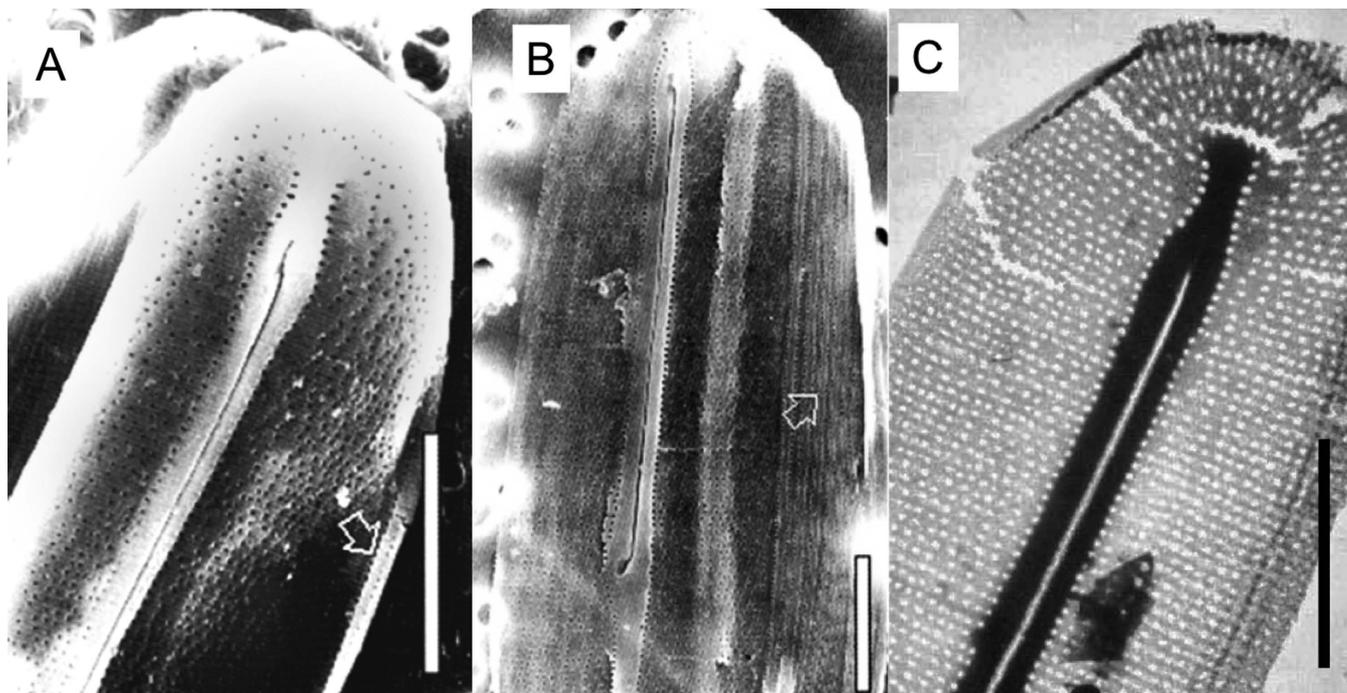


Figure 1 – Comparison of images of *Berkeleya adeliensis* from Medlin (1990) and Riaux-Gobin & Poulin (2004), reproduced with permission from the publishers. A, from Adélie Land locality (Riaux-Gobin & Poulin 2004: fig. 4); B, from Adélie Land locality (Riaux-Gobin & Poulin 2004: fig. 3); C, from New Harbour, McMurdo Sound locality, Antarctica (Medlin 1990: fig. 22). Scale bar = 10 µm. A & B reproduced with permission from Taylor & Francis. These two images are not covered by the terms of the Creative Commons licence of this publication. For permission to reuse, please contact the rights holder (<https://www.tandfonline.com/loi/tdia20>). C reproduced with permission from Schweizerbart Science Publishers. This image is not covered by the terms of the Creative Commons licence of this publication. For permission to reuse, please contact the rights holder (https://www.schweizerbart.de/journals/nova_hedwigia).

thenticated material of *B. adeliensis*. If they had been available and included in Medlin's 1990 paper, they would have been given as paratypes, *sensu* Turland et al. 2018.

ACKNOWLEDGEMENTS

It is with great pleasure that I contribute this paper in honour of Dr. Eileen Cox's 70th birthday. Her early studies on *Berkeleya* and later studies on tracing the correct nomenclature for diatom species formed an important part of this work on *Berkeleya*.

REFERENCES

- Cox E.J. (1975a) A reappraisal of the diatom genus *Amphipleura* Kütz. using light and electron microscopy. *British Phycological Journal* 10: 1–12. <https://doi.org/10.1080/00071617500650011>
- Cox E.J. (1975b) Further studies on the genus *Berkeleya* Grev. *British Phycological Journal* 10: 205–217. <https://doi.org/10.1080/00071617500650191>
- Grunow A. (1868) Beiträge zur Kenntniss der Schizonema- und *Berkeleya*-Arten. *Hedwigia* 7: 1–7.
- Grunow A. (1880) Vorläufige Bemerkungen zu einer systematischen Anordnung der Schizonema und *Berkeleya*-Arten, mit Bezug auf die in Van Heurck's "Diatomeen-Flora von Belgien" veröffentlichten Abbildungen der Frusteln auf Taf. XV, XVI, XVIII. *Botanisches Centralblatt* 4: 1506–1520, 1585–1598.
- Medlin L.K. (1990) *Berkeleya* spp. from Antarctic waters, including *Berkeleya adeliensis*, sp. nov., a new tube dwelling diatom from the undersurface of sea-ice. *Nova Hedwigia*, Beiheft 100: 77–90.
- Peragallo H., Peragallo M. (1897–1908) Diatomées marines de France et des districts maritimes voisins. Atlas et Texte. Grez-sur-Loing, M.J. Tempère. <https://doi.org/10.5962/bhl.title.13501>
- Riaux-Gobin C., Poulin M. (2004) Possible symbiosis of *Berkeleya adeliensis* Medlin, *Synedropsis fragilis* (Manguin) Hasle et al. and *Nitzschia lecointei* Van Heurck (Bacillariophyta) associated with land-fast ice in Adélie Land, Antarctica. *Diatom Research* 19: 265–274. <https://doi.org/10.1080/0269249X.2004.9705874>
- Turland N.J., Wiersma J.H., Barrie F.R., Greuter W., Hawksworth D.L., Herendeen P.S., Knapp S., Kusber W.-H., Li D.-Z., Marchal K., May T.W., McNeill J., Monro A.M., Prado J., Price M.J., Smith G.F. (eds.) (2018) International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. *Regnum Vegetabile* 159. Glashütten, Koeltz Botanical Books. <https://doi.org/10.12705/Code.2018>
- Van Heurck H. (1896) A treatise on the Diatomaceae (translated by W.E. Baxter). London, William Wesley. <https://doi.org/10.5962/bhl.title.2002>

Managing Editor: David G. Mann

Submission date: 6 Sep. 2018

Acceptance date: 2 Nov. 2018