The fossil diatom *Didymosphenia nipponica* (*Cymbellaceae*, *Bacillariophyta*): a tale of two names

Michael D. Guiry, *AlgaeBase, Ryan Institute, University of Galway, Galway, H91 TK33, Ireland* (correspondence: michael.guiry@universityofgalway.ie)

David M. Williams, *Department of Life Sciences, the Natural History Museum, Cromwell Road, London, SW7 5BD, UK*

The genus *Didymosphenia* Mart.Schmidt, 1899, *nom. cons*. (introduced in Schmitz 1899: pl. 214: figs 1–12) and typified (by conservation) with *Didymosphenia geminata* (Lyngbye) Mart.Schmidt, includes some 23 species (Guiry & Guiry 2023), most of which were described from extant populations. However, several fossil species have been described including *Didymosphenia nipponica*, which we have found recently was independently described twice from Japanese fossil deposits:

Didymosphenia nipponica H.Tanaka *Atlas of freshwater fossil diatoms in Japan* p. 14, pls 178: 1-5, 179: 1-4, 2014.
Holotype: “Matamizu, Kitsuki City, Oita Prefecture, Japan. 33°29' N, 131°35 'E”. Micropaleontology Collection, National Museum of Nature and Science, Japan MPC-25062; H. Tanaka OIT-104 (**TNS**).

Didymosphenia nipponica Metzeltin, Lange-Bertalot & Levkov, *Iconographia Diatomologica* 25: 22, pls 114–116, 2014.
Holotype: “Asona Mura, Japan”. **BRM** slide S1/13
Type locality: ‘Asonomura’ (Asonomura, Gifu, Japan) is now part of Mino City (Mino-shi, Gifu, Japan; 35° 33′ 31.39″ N, 136° 55′ 20.1″ E). The specimens were acquired from the Swiss phycologist E. Chenevière on a slide made by Albert Elger (http://microscopist.net/ElgerA.html) held in the Hustedt diatom collection (**BRM**). The slide has four selected specimens (see Metzeltin & al. 2014, pl. 114: figs 1-4). Neither Hustedt nor Chenevière appear to have published on this material.

An examination of the published descriptions and the figures shows clearly that the same taxon is being described in each case. Both studies included light and electron microscope images and detailed descriptions. Briefly, the size ranges of both species overlap, with *D. nipponica* Tanaka having valve length ranges of 93–191 µm and breadth as 26–38 µm, with 8 uniseriate striae in 10 µm, and 7–12 ‘puncta’ in 10 µm, contrasted with *D. nipponica* Metzeltin, Lange-Bertalot & Levkov, who give valve length ranges as 105–175 µm and breadth as 26–35 µm, uniseriate striae 9–10 in 10 µm, and 6.5–7.0 ‘puncta’ in 10 µm. For *D. nipponica* Tanaka, there are 2-5 stigmata (and 1 and 6 noted as rare), with *D. nipponica* Metzeltin, Lange-Bertalot & Levkov as 1–3 stigmata. Closer inspection of the electron microscope images may provide a diagnosis to accompany the descriptions provided by both Tanaka and Metzeltin, Lange-Bertalot & Levkov, but both sets of observations support the view that the specimens are of the same species.

Tanaka’s *Atlas* was published on 10 March 2014 (publisher’s imprint), while *Iconographia Diatomologica* Vol. 25 was published on 25 August 2014, according to the publisher’s records (Per Koeltz, pers. comm.). Accordingly, *Didymosphenia nipponica* H.Tanaka has nomenclatural priority and *Didymosphenia nipponica* Metzeltin, Lange-Bertalot & Levkov is an illegitimate later homonym (ICN Art. 11.4, Turland & al. 2018).

This is a rather unusual case as identical names describing the same taxon are usually isonyms (ICN Art. 6.3 Note 2, Turland & al. 2018) but in this instance the names are homonyms as they are based upon different types, even though these types are taxonomically identical.

Guiry, M.D. & Guiry, G.M. 2023. *AlgaeBase*. World-wide electronic publication, National University of Ireland, Galway. https://www.algaebase.org; searched on 29 March 2023.

Metzeltin, D. & Lange-Bertalot, H. (2014). The genus *Didymosphenia* M. Schmidt. A critical evaluation of established and description of 11 new taxa. *Iconographia Diatomologica* 25: [1]–293, 126 pls.

Schmidt, A.[W.F.] (1899). *Atlas der Diatomaceen-kunde.* Series V: Heft 54 . pp. pls 213-216 [M. Schmidt]. Leipzig: O.R. Reisland

Tanaka, H. (2014). *Atlas of freshwater fossil diatoms in Japan*, including related recent taxa. pp. [i]-vii, 1–602, 271 pls. Tokyo: Uchida Rokakuho Publishing Co., Ltd.

Turland, N.J., Wiersema, J.H., Barrie, F.R., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Kusber, W.-H., Li, D.-Z., Marhold, K., May, T.W., McNeill, J., Monro, A.M., Prado, J., Price, M.J. & Smith, G.F., editors (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*, Vol. 159. pp. [i]–xxxviii, 1–253. Glashütten: Koeltz Botanical Books.