

**Observations and typification of *Tryblionella plana* (W.Smith) Pelletan (*Bacillariaceae*, *Bacillariophyta*)**

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The Reverend William Smith (1808–1857) described in 1853 several broad-celled, constricted *Nitzschia* taxa in the first volume of his *Synopsis of the British Diatomaceae* (Smith 1853). One of these taxa was *Nitzschia plana* W.Smith, characterized as “*F.*[Frustule] *on F. V.* [Front view of Frustule] *elliptical, with a central constriction and acute extremities; V. linear-lanceolate, acute; puncta in a single row; keel eccentric; surface of V. [Valve] obscurely striated; striae interrupted, 56 in .001". Length .0058" to .0076". v.v. [seen living]*” (Smith 1853: 42). Smith (1853: pl. XV: fig. 114) illustrated his new species with three line drawings showing a rather long, broad *Nitzschia* valve with a clear central constriction (Fig. 1, herewith). Smith (1853: 42) determined the species as being brackish using a sample from Poole Bay coll. date June 1849) as original material. Pelletan (1889: 30) transferred the species to the genus *Tryblionella* W.Smith. Although this transfer was done by only indirect citation with only the epithet and author leading to the basionym. Prior to 1 January 1953 (ICN Art. 41.3, Turland & al. 2018) for valid publication the reference to the basionym can be direct or indirect. Krammer & Lange-Bertalot (1988, pl. 33: figs 1–3) depicted three valves, apparently taken from the type material in Poole Bay, England. However, the valves illustrated do not correspond with Smith’s description, raising doubt about their identity and origin.

Original Smith material composed of unmounted samples and slides prepared by Smith’s nephew, Charles Coppock (Hoover 1976), is conserved in the Van Heurck collection (**BR**, Meise Botanic Garden, Belgium) and the London Natural History Museum (**BM** Smith 1859, Hoover 1976). At **BM**, two slides are listed (Shagalieu Marsh, June 23, 1849, and Poole Bay, June 1849). In **BR**, two slides were found, seemingly from W. Smith material. One slide (**BR** catalogue number VI-48-B9) is labelled ‘*Nitzschia plana*’ with ‘Poole Bay – Shagalieu 1854 fide W. Arnott’ etched in the glass slide, indicating that the slide was probably by Walker Arnott in 1854. The number ‘114’ also etched on the glass refers to the figure number in Smith (1853). The other slide (**BR** catalogue number VI-48-B10) is labelled ‘Diatomaceae - *Nitzschia plana*’ without any further details. Both slides were also examined by Albert Grunow, as indicated by the small label ‘A.Gr.’ attached to the slides. The card catalogue for the Van Heurck slide collection indicates, however, that both slides were collected by W. Smith from Poole Bay in June 1849 and identified by A. Grunow. Whereas the first slide contains valves that are identical with the original *N. plana* drawing, the second slide shows a monoculture of the species illustrated in Krammer & Lange-Bertalot (1988). Apart from these two slides, two unmounted samples were found in **BR**, one of them collected from Shagalieu Marsh on 15.VI.1849 (Fig. 2). Based on the labels on other samples in the Smith collection and Smith (1853) (for instance unmounted type material for *Nitzschia obtusa* W.Smith), Shagalieu Marsh is located near Poole Bay. Analysis of a slide made from the **BR** Shagalieu Marsh material showed an identical species composition as the Poole Bay slide, including the presence of a fairly large population of *Tryblionella plana*, making it highly likely that the slide was originally made from this material. The slide is dominated by several marine and brackish species such as *Nitzschia obtusa* W.Smith [for which Shagalieu Marsh is also the type locality], *Navicula vaneii* Lange-Bertalot and *Pinnunavis elegans* (W.Smith) Okuno, but also several *Stauroneis* and *Frustulia* valves were recorded pointing to a slight freshwater input (Van de Vijver, pers. obs.).

In this contribution, we detail observations on specimens of *T. plana* from a slide prepared from the original William Smith sample collected at Shagalieu Marsh on June 15<sup>th</sup> 1849, kept in **BR**, using light and scanning electron microscopy. The material from Shagalieu Marsh is designated as lectotype.

*Tryblionella plana* (W.Smith) Pelletan, 1889 (Figs 3–8)

Basionym: *Nitzschia plana* W.Smith, *Synopsis of the British Diatomaceae*, Vol. I p. 42, pl. XV: fig. 114, 1853. *Non Nitzschia plana* W.Smith *sensu* Krammer & Lange-Bertalot 1988, pl. 33, figs 1–3.

**Lectotype (here designated):** **BR**-4664, original W. Smith slide VI-48-B9, prepared from sample Shagalieu Marsh, UK, leg. W. Smith, coll. date 15.VI.1849, original material present in the Van Heurck collection (**BR**). The lectotype is represented by Figs 3–8.

Isolectotypes: **BM** 23381 (slide labelled “Shagalieu Marsh, 23<sup>rd</sup> June 1849”), **BM** 28832 & **BM** 28833 (slides labelled Poole Bay, June 1849), all slides conserved in **BM**.

Registration (of lectotypification): <http://phycobank.org/102792>

Description: Valves linear with parallel margins and a clear central constriction. Valve margins becoming convex near the apices. Apices acutely rounded, shortly subrostrate. Valve dimensions (n=25): valve length 140–175 µm, valve width (at constriction) 16–17 µm. Raphe keel entirely eccentric, fibulae up to 5–9 in 20 µm, irregularly distributed along the keel. Clear longitudinal hyaline undulation visible along the apical valve axis, interrupting the striae (Fig. 7). Striae distinctly punctate, well discernible in LM, parallel almost throughout the entire valve, becoming slightly radiate near the apices, 19–21 in 10 µm. External valve surface covered with complex network of irregular ridges and shallow depressions (Fig. 7), the latter clearly visible in LM (Figs 3–6). Striae externally located between narrow, raised virgae (Fig. 7). Internally valve face smooth, lacking ridges (Fig. 8).

The results of this morphological analysis show that the valves illustrated in Krammer & Lange-Bertalot (1988, pl. 33, figs 1–3) do not represent *Tryblionella (Nitzschia) plana* as the type material shows a totally different valve outline and striation pattern. It is unclear at present what species is present on slide VI-48-B10 and more analysis of the material will be needed to clarify its taxonomic identity.

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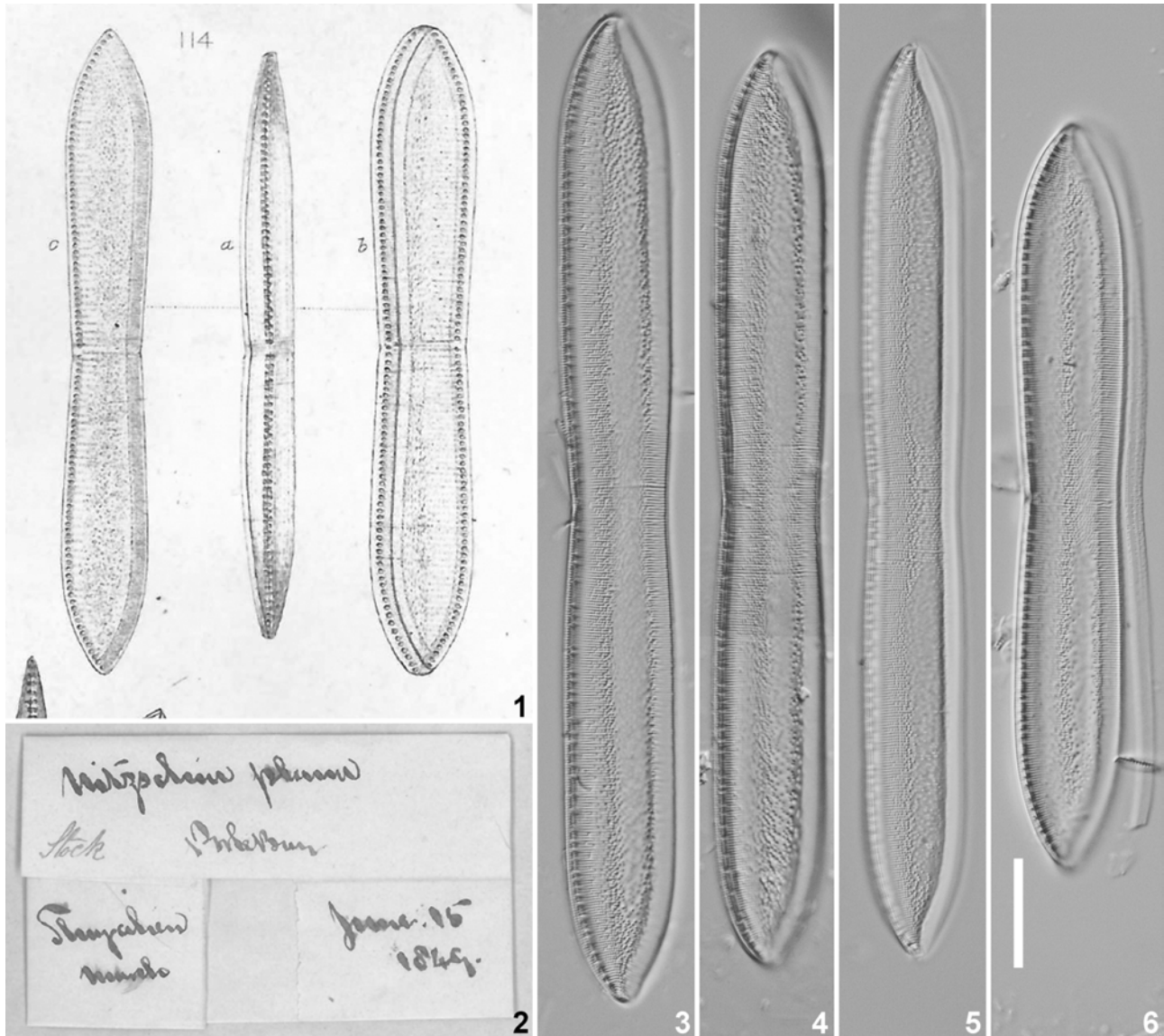
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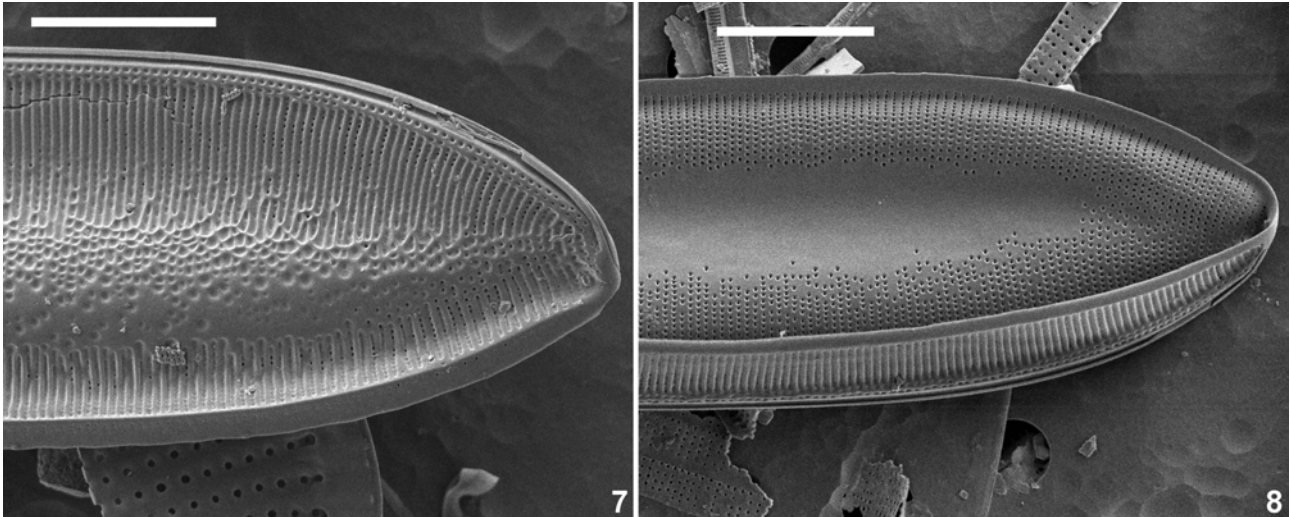
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**Figs 1–6. *Tryblionella plana* (W. Smith) Pelletan. LM pictures taken from the lectotype material (Shagalieu Marsh, Poole Bay, UK, leg. W. Smith, coll. date 15.VI.1853). Fig. 1. Original drawing from Smith (1853: fig. 114) representing three valves of *Nitzschia plana*. Fig. 2. Original sample package conserved in the Van Heurck collection (BR). Figs 3–6. Four valves showing clearly the typical surface structure and the punctate striae. Scale bar = 20  $\mu$ m.**



**Figs 7–8. *Tryblionella plana* (W.Smith) Pelletan. SEM pictures taken from the lectotype material (Shagalieu Marsh, Poole Bay, UK, leg. W. Smith, coll. date 15.VI.1853). Fig. 7. SEM external view of the valve apex with the typical network of ridges and depressions. Fig. 8. SEM internal view of the valve apex. The valve surface is smooth. Striae are composed of very small areola. Scale bars represent 10  $\mu\text{m}$ .**