
Analysis of the type material of *Navicula tenuis* Krasske (*Bacillariophyta*) and its transfer to the genus *Adlafia*

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Navicula tenuis Krasske (1939, 385, pl. XI: fig. 51) was described based on a sample collected from sediment taken from a small pond (“*Grundsclamm des Teiches auf der Dachstein-Westplatte*”) in southern Chile (Krasske 1939, Lange-Bertalot *et al.* 1996: 151). Krasske’s species name was illegitimate as it was a later homonym of *Navicula tenuis* F.Meister (1937: 269). As a relationship with *Navicula tridentula* Krasske (1923: 198) was suggested, the taxon was later treated as a variety of this species, *Navicula tridentula* var. *tenuis* Lange-Bertalot & Willmann, in Lange-Bertalot *et al.* (1996: 151), essentially treating the variety as a new name with the same type.

Records of this entity in the literature are scarce. The species was recorded from Tasmania (Australia) by John (2018: 245, fig. 296 A), who incorrectly mentioned a possible record in Hodgson *et al.* (1997), although the latter actually discussed and illustrated the nominal variety, *N. tridentula* var. *tridentula* (Hodgson *et al.* 1997, pl. 15: fig. 8). Several valves of this taxon were recently observed in some peatbogs near Ushuaia, Tierra del Fuego, Argentina (Van de Vijver, unpubl. obs.).

During a survey of the diatom flora of an historic moss collection from the sub-Antarctic Campbell Island (southern Pacific Ocean), a very small population was discovered of *Navicula tridentula* var. *tenuis*. Comparison of the light microscopy observations with the illustrations in Lange-Bertalot *et al.* (1996, pl. 17: figs 4-6) did not show any morphological differences. Type material of *N. tenuis* Krasske (D III 163/4263 from the Krasske Collection, **KASSEL**), was retrieved but unfortunately, no unmounted type material was available. Therefore, material from Campbell Island was analysed with SEM to elucidate the ultrastructure of the Krasske taxon in order to establish its correct taxonomic identity.

Here we detail, using light and scanning electron microscopy observations, specimens from the type population and our Campbell Island population. The sample from Campbell Island (BAS255) was collected on 2 January 1970 by Dale Vitt from the moss *Breutelia elongata* (Hook.f. & Wilson) Broth. growing on soil at the base of a cliff on the northern slope of Mt. Dumas at an altitude of 1300–1500 ft (Dale Vitt, pers. comm.). We here designate BAS255 as epitype linked to the selected lectotype material.

Description: Valves linear with parallel, triundulate margins and clearly protracted, capitate apices. Valve dimension (n=15): length 13–21 µm, width 3.5–4.5 µm. Morphological structures, other than the raphe not discernible in LM. Raphe branches straight to weakly undulating, with simple, weakly deflected central endings and bent terminal raphe fissures (Fig. 11, arrow), although the latter not always visible in LM. Further morphological details only visible in SEM. Axial area relatively broad, linear and widening into an apically elliptical central area. Fascia never present due to

shortened, marginal striae in the central area. Striae uniseriate, composed of large, rounded areolae covered externally by individual porous hymenes, ca. 45 in 10 μm . Central raphe endings simple, unilaterally deflected. Terminal raphe fissures unilaterally bent, terminating on the valve face in a relatively broad, shallow groove. Internal structure not observed. Girdle composed of several, open copulae, bearing one row of transapically elongated perforations.

Based on the observed morphological features, it is clear that the species does not belong to the genus *Navicula*, the latter being characterized by a different (never undulated) valve outline, striae composed of internally covered lineolae, terminal raphe fissures clearly hooked and continuing onto the valve mantle and a different girdle structure (Lange-Bertalot 2001). The only genus showing such a combination of features is *Adlafia*, described by Gerd Moser, Lange-Bertalot & Metzeltin (1998: 87) to accommodate species with a filiform raphe, simple central raphe endings, clearly bent terminal raphe fissures, uniseriate striae with areolae that are externally closed by individual porous hymenes and two open, perforated copulae (Moser *et al.* 1998: 87-88). As the Krasske taxon shows the same features as *Adlafia*, referral to this genus is proposed below.

Since *Navicula tenuis* Krasske 1939 is an illegitimate alter homonym, a new name can be introduced if the taxon is referred to a different genus (ICN Art. 6.11, Turland *et al.* 2018). Lange-Bertalot *et al.* (1996) published “D III 163” as “holotype” of for this species although Krasske (1939) did not designate a holotype from the three collections he cited and, contrary to what Lange-Bertalot *et al.* (1996) stated, no marked specimen was found on Krasske’s slide.

Adlafia tenuis Van de Vijver & Goeyers, *nom. nov.*

Replaced synonym: *Navicula tenuis* Krasske 1939, *Archiv für Hydrobiologie* 35: 385, fig. 11: 51, *nom. illeg., non Navicula tenuis* F.Meister.

Synonym: *Navicula tridentula* var. *tenuis* Lange-Bertalot & Willmann, *Iconographia Diatomologica* 3: 151, fig. 17: 4-6, 1996.

Lectotype (here designated): D III 163/4263 (Chile) in coll. Krasske, **KASSEL**.

Epitype (here designated): sample BAS255 (Campbell Island, coll. date 02/01/1970, leg. Dale Vitt, BR-4568, **BR**);

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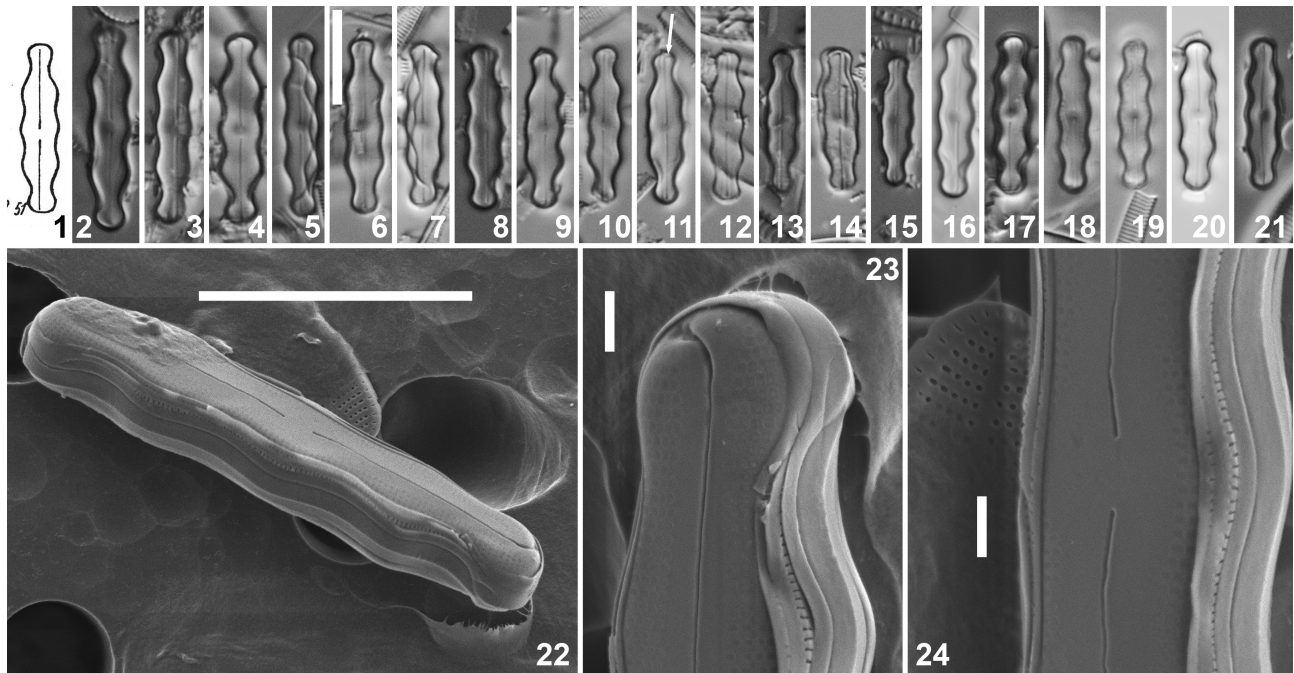
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Figs 1–24. *Adlafia tenuis* Van de Vijver & Goeyers *nom. nov.* Fig. 1. Original drawing of *Navicula tenuis* Krasske (1939, pl 11, fig. 51). Figs 2–15. LM micrographs of the lectotype slide of *Navicula tenuis* Krasske (KASSEL D III 163/4263). Figs 16–21. LM micrographs of *Adlafia tenuis* (population of Campbell Island, sample BAS255). Figs 22–24. SEM micrographs (overview + details) of one specimen of *Adlafia tenuis* (population of Campbell Island, sample BAS255). Scale bar = 10 μ m (Figs 2–22) and 1 μ m (Figs 23–24).