

***Fallacia subvasta* E.Reichardt, sp. nov. (Sellaphoraceae, Bacillariophyceae): morphological circumscription of a misunderstood diatom**

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“*Navicula subvasta* Hustedt” was initially figured in *Atlas der Diatomaceenkunde* by Hustedt (1936, pl. 403: figs 49–50) from Romania, but as no description was provided, the designation was invalid. Simonsen (1987: 197) considered that “*Navicula subvasta* Hustedt” was validated “...under *Navicula rivularis*” by Hustedt (1942: 112). However this is incorrect as no validating description was provided at this time. Hustedt (1945: 930) later provided a description of “*Navicula subvasta* Hustedt” but in the same publication (Hustedt 1945: 973) he declared that *N. subvasta* was identical to *N. helensis* P.Schulz, a species described in 1926 based on core material from the Gulf of Gdansk (Schulz 1926: 217, fig. 110). “*Navicula subvasta* Hustedt”, however, remained invalid as according to Art. 33.1 of the Madrid Code (Turland & al. 2025) that to be validly published “...the name must always be explicitly accepted in the place of its valid publication.”. The name was not validated by Simonsen (1987: 197) and *N. helensis* was transferred to the genus *Fallacia* as *Fallacia helensis* (P.Schulz) D.G.Mann (in Round et al. 1990: 668). Later, the name *Navicula subvasta* J.R.Carter was validly published by Carter (1970: 621, pl. 2: fig. 20) for a freshwater species from Andorra that is not related to “*Navicula subvasta* Hustedt”.

Following an analysis of several populations determined as *Fallacia helensis* in recent samples and after comparing micrographs in the diatom literature, it became clear that many of these identifications do not match the original concept of the latter species. Rakowska (2010), Peeters & Ector (2019), and Werum & al. (2024), show examples that differ from *F. helensis* in outline, width, striae density and especially in the absence of rows of puncta accompanying the raphe, but these match closely with the illustrations of “*N. subvasta* Hustedt” shown in Simonsen (1987, pl. 306: figs 22–31).

As it is now not possible to validate “*N. subvasta* Hustedt” because of the existence of the valid and legitimate name *Navicula subvasta* J.R.Carter, it is best now to propose a new species of *Fallacia* for Hustedt’s original material.

Fallacia subvasta E.Reichardt, sp. nov. (Figs 1–16)

Replaced designation: “*Navicula subvasta* Hustedt”, *Atlas der Diatomaceenkunde*, pl. 403: figs 49–50, 1936, *nom. inval.*

Holotype: “N17/27. Rumänien. 1. Finder: 497-8; 527-6-9” (fossil, Hustedt Collection, **BRM ex B**).

Note: The placement of *Navicula subhamulata* var. *undulata* Hustedt is uncertain since no type is known (Simonsen 1987: 119).

Registration: <http://phycobank.org/107675>

Description: LM: Valves linear with mostly slightly triundulate to nearly parallel margins (in small specimens) and broadly rounded ends. Valve dimensions (n=38): length 13–21 µm, width 4.0–5.5 µm. Raphe situated on a clearly visible sternum, weakly bent with distinct central endings and relatively long distal raphe fissures curved in the same direction. Axial area narrow, central area absent or slightly dilated. Striae weakly radial to subparallel, more radial and slightly curved near the poles, 22–29 (mostly more than 24) in 10 µm. Areolae often not visible in LM, partly discernible under optimal circumstances. SEM: External valve face entirely covered by a very finely structured conopeum masking the areolae (Fig. 14). Boundary of conopeum not visible.

Areolae internally occluded by hymenes (Fig. 16). No separate rows of puncta accompanying the sternum (Figs 15, 16).

Fallacia subvasta is clearly different to *F. helensis*. The latter has broader valves (6–8 μm vs 4.0–5.5 μm in *N. subvasta*) with parallel or slightly constricted margins, a very weak central inflation giving the valves only in the largest individuals a very weakly triundulate outline. *Fallacia helensis* has a lower stria density with 18–20 in 10 μm vs 22–29 in 10 μm in *N. subvasta*, and possesses rows of puncta bordering the raphe as shown by Hustedt (1962: fig. 1314 a–c, as *Navicula helensis*) and clearly visible in the micrographs in Levkov & al. (2007, pl. 68: figs 19–24).

There are some misconceptions about *F. subvasta*. Hustedt (1945: 930) described *N. subvasta* having very narrow lateral area parallel to the sternum which are separated only by a very delicate and a series of puncta that are easy to overlook (“... nur durch eine zarte und leicht übersehbare Punktreihe ...” [...only through a delicate and easily overlooked row of puncta]). But he also stated that he did not see the fine rows of puncta when he originally showed the species in the *Atlas* (Hustedt 1936: pl. 403: figs 49–50) and all his figures (1936 loc. cit.; Hustedt 1945, pl. 41: figs 38–40) do not show them. Perhaps he had mistaken the areolae next to the axial area, which are discernible with good optics, and which are sometimes slightly larger than the others (cf. Fig. 15). In any case, *F. subvasta* lacks such rows of puncta as can be seen in Simonsen (1987, pl. 306: figs 22–31) and the matching specimens shown in the present paper. Also, Hustedt (1945: 930) gave the width of “*Navicula subvasta* Hustedt” as 4.5–6 μm . But valves broader than 5.5 μm are nowhere reported and have not been observed. Krammer & Lange-Bertalot (1986: 192, as *N. helensis*) and their micrographs (loc. cit.: fig. 66: 24–25) show *F. subvasta* clearly different from the much larger specimens bearing rows of puncta (loc. cit.: Fig. 66: 26–27) which may represent *F. helensis*.

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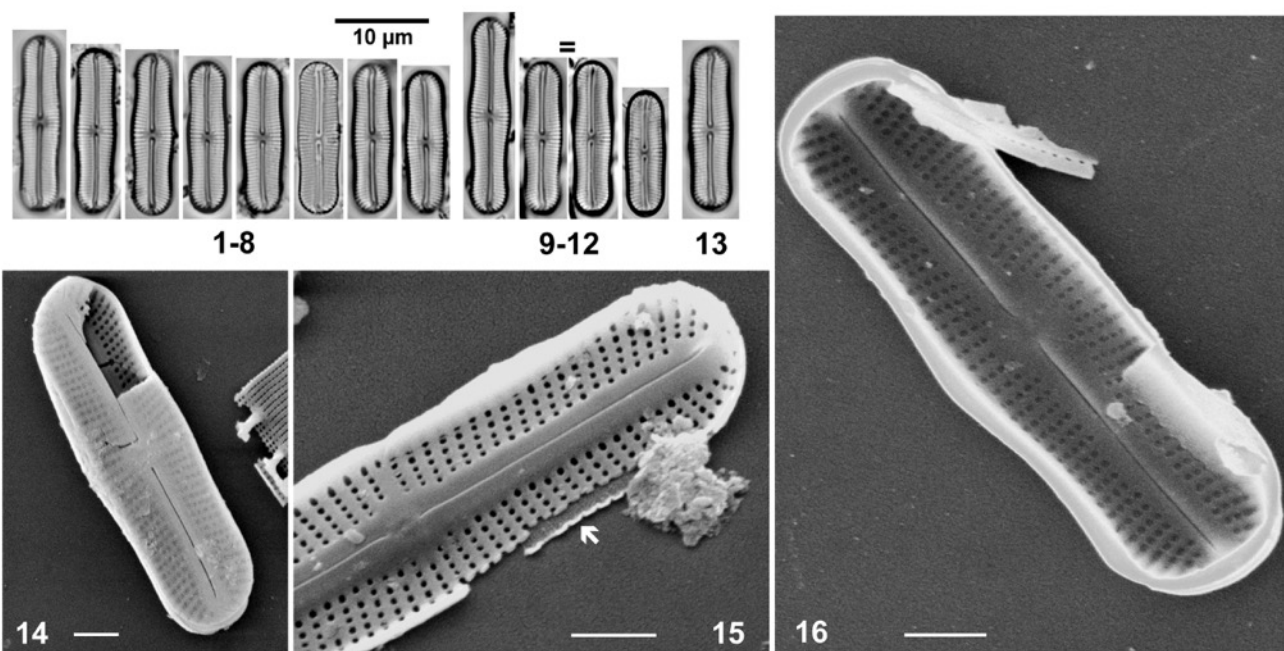
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Figs 1–13. *Fallacia subvasta* E.Reichardt. LM. **Figs 1–8.** River Altmühl, Bavaria, Germany. **Figs 9–12.** Lake Constance. **Fig 13.** Lake Balaton. **Figs 14–16.** SEM. **Fig 14.** External view. Areolae masked by a finely structured conopy. **Fig 15.** Internal view with lacking (corroded) hymenes in the areolae. At the broken margin a part of the conopy is visible (arrow). **Fig 16.** Internal view with hymenes occluding the areolae. Scale bars = 2 µm.