Freshwater Benthic Diatoms of Central Europe (FBDCE): Updates & corrections (as of July 17th 2020)

Levkov & Ector (2010) should be used as a reference for *Reimeria sinuata* and *R. uniseriata*.
Reimeria sinuata: width 3.5-5.0 µm, length 12-22 µm, striae 11-13/10 µm), areolae not resolvable with LM.
Reimeria uniseriata: width 5.0-7.0 µm, length 19-25 µm, striae 9-11/10 µm), areolae clearly resolvable with LM.
The complete reference must be included in FBDCE:
Levkov Z. & Ector L. 2010. A comparative study of *Reimeria* species (Bacillariophyceae). *Nova Hedwigia* **90**(3-4): 469-489.

Levkov et al. (2010) should be followed for ***Rhoicosphenia* terminology**, and for *R. abbreviata*.
The genus *Rhoicosphenia* is characterized by heterovalvar frustules, with the concave valve (referred to as R-valve) with a fully developed raphe, and the convex valve (referred to as D-valve) with a reduced raphe.
The most frequent species of the genus, ***R. abbreviata***, shows as main features narrow, linear valves with low stria density: width 5-7 µm, length 14-52 µm, striae 9-12/10 µm on both valves.
The complete reference must be included in FBDCE:
Levkov Z., Mihalić K.C. & Ector L. 2010. A taxonomical study of *Rhoicosphenia* Grunow (Bacillariophyceae) with a key for identification of selected taxa. *Fottea* **10**(2): 145-200.

What is reported and illustrated in FBDCE as *Mastogloia smithii* in FBDCE corresponds to ***Mastogloia pseudosmithii*** S.S.Lee, E.E.Gaiser, B.Van de Vijver, M.B.Edlund et Spaulding 2014 according to Lee et al. (2014): valves elliptic-lanceolate with rostrate apices (small valves with subrostrate to rounded apices); central area elliptic to polygonal, commonly asymmetrical; width 11-14 µm, length 28-51 µm, striae 16-17/10 µm), 16 areolae in 10 µm; ecology: high conductivity waters (e.g., brackish areas near coastal marshes), with slightly higher total phosphorus.
The complete reference must be included in FBDCE:
Lee S.S., Gaiser E.E., Van de Vijver B., Edlund M.B. & Spaulding S.A. 2014. Morphology and typification of *Mastogloia smithii* and *M. lacustris*, with descriptions of two new species from the Florida Everglades and the Caribbean region. *Diatom Research* **29**(4): 325-350.

Gomphonema lateripunctatum. The original publication (Reichardt & Lange-Bertalot 1991) included a wrong width range in the description: 8-14 µm [in reality this corresponds to the stria density range). This mistake has been perpetuated in several identification books, including FBDCE. The **correct width range** is: **4.3-6.7 µm**.
The complete reference must be included in FBDCE:
Reichardt E. & Lange-Bertalot H. (1991). Taxonomische Revision des Artencomplexes um *Gomphonema angustum—G. dichotomum—G. intricatum—G. vibrio* und ähnliche Taxa (Bacillariophyceae). *Nova Hedwigia* **53**(3-4): 519-544.

According to Levkov (2009, *Diatoms of Europe* **5**) the genus ***Amphora*** has **few** (**usually 3**) girdle bands, not none as currently stated in FBDCE.

FBDCE Pag. 601: please replace "*Synedra baltica*" with "*Synedra balthica*".

Freshwater Benthic Diatoms of Central Europe (**FBDCE**):
Errata corrige (**March 27th 2018**)

Fragilaria recapitellata. Several specimens shown in FBDCE (Plate 9: Figs 41-43, 45) have width > 4.5 µm and illustrate ***Fragilaria candidagilae*** **Almeida, C. Delgado, Novais et Blanco 2015**. *F. candidagilae* (length 13-25.8 µm, width 4.5-5 µm, stria density 12-14 in 10 µm) can be differentiated from *F. recapitellata* by the greater width (2.8-4.2 µm in *F. recapitellata*) and lower stria density (17-19 in 10 µm in *F. recapitellata*). Also the ecology of these two species is different: *F. recapitellata* inhabits alpha-mesosaprobic, eutrophic waters whilst *F. candidagilae* appears to be typically found in low nitrate, mesotrophic waters (Delgado et al. 2015, *Phytotaxa* **231**: 1-18).

Luticola goeppertiana. Some specimens shown in FBDCE (Plate 46: Figs 30-32) have broadly-lanceolate outline, a smaller length:width, and ends that are not protracted (girdle view: valve mantles with a single row of elongated areolae) and show ***Luticola hlubikovae*** **Levkov, Metzeltin et Pavlov 2013**. *L. hlubikovae* (length 16.5-29 µm, width 7-9 µm, stria density 18-22 in 10 µm) was observed from several eutrophic rivers in Europe and USA (Levkov et al. 2013, *Diatoms of Europe* **7**).

Luticola mutica as reported in FBDCE includes also *Luticola frequentissima*.
Luticola frequentissima **Levkov, Metzeltin et Pavlov 2013** (length 12-27 µm, width 6.5-9.0 µm, stria density 20-24 in 10 µm) can be differentiated from *L. mutica* by the shape of the central area (much narrower in *L. mutica*), and by the stria morphology (*L. mutica*: coarse striae composed of 3-4 often-elongated areolae). There are also differences in the ecology of these two species: *L. mutica* is a brackish water species whilst *L. frequentissima* is only found in freshwaters. *L. frequentissima* is widely distributed in rivers where it can be abundant.
In FBDCE all micrographs labeled *L. mutica* actually depict *L. frequentissima*.

Pseudofallacia tenera. We followed the authors of the genus *Pseudofallacia* (Liu et al. 2012, *Phycologia* **51**: 620-626), and considered the common species *Fallacia tenera* to belong to the genus *Pseudofallacia* in FBDCE. We had not realised that Li et al. (2014; *Phytotaxa* **164**: 239-254) had provided convincing evidence for keeping this species within *Fallacia*. In particular they showed that it possesses a lyre-shaped canal that does not have areolae. *F. tenera* should thus be reported as ***Fallacia tenera*** **(Hustedt) D.G. Mann**, and not as *Pseudofallacia*.

Most nov. comb in FBDCE were wrong, at least from a formal standpoint. Correct new combinations are provided in the following paper, which also led to the discovery of an old, neglected name that has priority over "Tryblionella tryblio":
Kusber W.-H., Cantonati M. & Lange-Bertalot H. 2017. Validation of five diatom novelties published in "Freshwater Benthic Diatoms of Central Europe" and taxonomic treatment of the neglected species *Tryblionella hantzschiana*. *Phytotaxa* **328**: 090–094. https://doi.org/10.11646/phytotaxa.328.1.6
A pdf of the paper will be provided upon request (contact: marco.cantonati@muse.it).
These names have also been corrected on AlgaeBase.
The most important result of this validation effort was the resurrection of the neglected name:
Tryblionella hantzschiana Grunow 1862 to replace "Tryblionella tryblio Cantonati & Lange-Bertalot 2017")

The other correct names are:
Achnanthidium subhudsonis **var. *kraeuselii*** (Cholnoky) Cantonati et Lange-Bertalot in Kusber *et al*. 2017

Biremis bicontracta (Østrup) Cantonati et Lange-Bertalot in Kusber *et al*. 2017
Tryblionella angustatula (Lange-Bertalot) Cantonati et Lange-Bertalot in Kusber *et al*. 2017
Tryblionella brunoi (Lange-Bertalot) Cantonati et Lange-Bertalot in Kusber *et al*. 2017
Ulnaria grunowii (Lange-Bertalot et S.Ulrich) Cantonati et Lange-Bertalot in Kusber *et al*. 2017

Formatiert: Deutsch (Deutschland)

- Pag. 106: *Aneumastus balticus* not Fig. 101: 3 but Fig. 103: 5.
- Plate 43: figure legend (Fig. 60): "*Eolimna tantula*" should be changed to "*Sellaphora atomoides*".
- Plate 68: *Diploneis carloswetzelii* and *Diploneis minuta* legends are inverted. Also species description (pag. 195) needs to be adjusted [e.g., "(Plate 68: 24, 25)" in the "Note" needs to be moved after "The "true" *D. minuta*"].
- Pag. 866, Plate 119, pag 866: Replace *Denticula subtilis* with *Denticula tenuis* (32-37).
- Plate 2: *Meridion circulare* and *Meridion constrictum* legends are inverted.
- Pag. 82. *Achnanthidium caledonicum*: Note: Plate 24: 61-62 not 54-55.

The *Diploneis* key (pagg. 190-191) has no link to couplet 10: **The first couplet should take users to couplets 2 and 10** (but it currently takes you to 2 or 7).

Acknowledgements
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