

Priority of the names *Euodiella* P.A.Sims and *Flexibiddulphia* Simonsen (*Sheshukoviaceae*, *Bacillariophyceae*)

David M. Williams & Patricia A. Sims, *Department of Life Sciences, the Natural History Museum, Cromwell Road, London, SW7 5BD, UK* (correspondence: dmw@nhm.ac.uk)

Before discussing the two genus names *Euodiella* P.A.Sims and *Flexibiddulphia* Simonsen, a short account of the diatom name *Euodia* J.W.Bailey is necessary. Its complex history has been tackled several times (Simonsen 1987: 263; Sims 2000: 384; Blanco & Wetzel 2016: 195–6; Gómez & al. 2017: 21) but can be briefly summarised here. The name *Euodia*, as applied to diatoms, was first used by Ralfs in Pritchard's *History of the Infusoria* (Ralfs in Pritchard 1861: 852), and its description was attributed to Jacob Whitman Bailey (1811–1857). The only definitely included species was *Euodia gibba* Ralfs (in Pritchard 1861: 852, 'Recent. Gulf Stream'), based upon 'a drawing by Professor Bailey' (Ralfs in Pritchard 1861: pl. VIII: fig. 22). Along with *Euodia gibba*, Ralfs included *Euodia brightwellii*, albeit with some ambivalence ("*E? Brightwellii*"), suggesting it was a synonym of *Triceratium semicirculare* Brightwell (1853: 252, "Bermuda Earth") and possibly of *Triceratium obtusum* Ehrenberg (1844: 88 [1843: 329, "Virginia, Richmond"], 1854: pl. XVIII: figs 48, 49). Ralfs added, under his description of *Hemidiscus* Wallich (1860: 42), the following: "We doubt whether *Hemidiscus* be distinct from *Euodia*, since the only distinction seems to be the marginal nodule of the former, — a character perhaps overlooked by Professor Bailey" (Ralfs in Pritchard 1861: 852–3). The 'marginal nodule' is now known as the pseudonodulus, a defining character of the *Hemidiscaceae* (Simonsen 1975; Hasle & Syvertsen 1996: 116). Of the species placed in *Euodia* since its description, most have been transferred to *Hemidiscus*, largely due to reasons of priority as *Euodia* Bailey is a junior synonym of *Hemidiscus*, the latter being the earlier name. In addition, *Euodia* is a later homonym of *Euodia* J.R.Forster & G.Forster (1776, *Rutaceae*), thus the diatom name *Euodia* is illegitimate but also taxonomically superfluous (see Blanco & Wetzel 2016: 195–6). As noted above, many species of *Euodia* were transferred to *Hemidiscus*, while others have been transferred to different genera: *Leudugeria* Tempère ex Van Heurck, *Cymatotheca* Hendey, *Eunotia* Ehrenberg, *Eunotogramma* Weisse and *Euodiella* P.A.Sims.

With respect to *Triceratium semicirculare* Brightwell, Simonsen placed it in a new genus *Flexibiddulphia* Simonsen (1987: 263) along with "*Euodia udiensis* Hustedt" (Hustedt 1940: pl. 434: figs 24, 25, invalidly published at first by Hustedt, as it lacked a description, but validated later as *Euodia udiensis* Hustedt ex Simonsen 1987: 263, "Udi, Russland [Kharkiv, Ukraine]"). Simonsen referred to the plate legend in Schmidt's *Atlas der Diatomaceen-kunde* where Hustedt noted that *Triceratium semicirculare* could not be retained in that genus (Hustedt 1940: pl. 434: figs 24, 25). To resolve the problem, Hustedt utilised the older genus name *Euodia* for *Triceratium semicirculare* and *Euodia udiensis*. This was clearly inappropriate for the reasons outlined above. Sims (1990: 385) documented the same history of *Euodia* but, unaware of Simonsen's *Flexibiddulphia*, placed *Triceratium semicirculare* in her new genus *Euodiella* P.A.Sims. As Simonsen's valid and legitimate name *Flexibiddulphia* has priority, it should be adopted for species of *Euodiella*. It should be noted that both *Flexibiddulphia* and *Euodiella* are based upon fossil taxa and hence a Latin description or diagnosis was not needed at the time of their publication (Art. 39.1).

A summary of the species to be included in *Flexibiddulphia* is given below—a more detailed account of these species will appear later.

Flexibiddulphia Simonsen, 1987: 263

Type: *Flexibiddulphia semicircularis* (Brightwell) Simonsen, 1987: 263

Flexibiddulphia semicircularis (Brightwell) Simonsen 1987: 263.

Basionym: *Triceratium semicirculare* Brightwell 1853: 252, pl. 4, fig. 21 - Type: Bermuda “5130 | Bermuda Hundred | Virginia” (“Bermuda Earth”, Brightwell 1853: 252), BM 38036 (ex Payne; lectotype designated in Sims 1990: 399; Payne’s unpublished notebook states for his slide 5130: “*Euodia brightwelli*, Ehrenberg’s ‘Bermuda’ from J.B. Bessell from Hardman”, noted in Sims 1990: 399).

Synonyms: *Biddulphia semicircularis* (Brightwell) Boyer 1901: 726. *Euodia semicircularis* (Brightwell) Hustedt (in Schmidt & al.) 1940: pl. 434: figs 24, 25. *Euodiella semicircularis* (Brightwell) P.A.Sims, 2000: 399.

Flexibiddulphia udiensis (Hustedt ex Simonsen) Simonsen 1987: 263

Basionym: *Euodia udiensis* Hustedt ex Simonsen 1987: 263 - Type: Ukraine, “Udi, Russland [Kharkiv, Ukraine]”, Hs/05 (= Hustedt in Schmidt et al. 1940: pl. 434: fig. 25, lectotype designated by Simonsen 1987: 263, pl. 386, figs 1–3), Hs/04 (Hustedt in Schmidt et al. 1940: pl. 434: fig. 24, isolectotype, see Simonsen 1987: 263, pl. 387, figs 1, 2, images of specimens can also be found at the Hustedt diatom collection database: <http://hustedt.awi.de/>).

Flexibiddulphia bicornigera (Hanna) P.A.Sims, *comb. nov.*

Basionym: *Triceratium bicornigerum* Hanna *Occasional Papers of the California Academy of Sciences* 13: 34, pl. 4: figs 13, 14, 1927.

Type: USA, Moreno Shale, California; Age: Cretaceous, Maastrichtian CAS 2039 (= CAS 201064; see Nikolaev et al. 2001: pl. 28, fig. 1).

Synonym: *Euodiella bicornigera* (Hanna) P.A.Sims 2000: 385, figs 1-6, 50, 51.

Registration: <http://phycobank.org/103103>

Flexibiddulphia biddulphiodes (P.A.Sims) P.A.Sims, *comb. nov.*

Basionym: *Euodiella biddulphiodes* P.A.Sims *Diatom Research* 15: 390, figs 13-18, 54-56, 2000

Type: USA, Moreno Shale, Moreno Gulch, Fresno County, California; Age: Cretaceous, Maastrichtian, BM 100263 ([mounter] P. Chambers), holotype.

Registration: <http://phycobank.org/103104>

Flexibiddulphia cretacea (P.A.Sims) P.A.Sims, *comb. nov.*

Basionym: *Euodiella cretacea* P.A.Sims *Diatom Research* 15: 389, figs 7-12, 52, 53, 2000.

Type: USA, Moreno Shale, Moreno Gulch, Fresno County, California; Age: Cretaceous, Maastrichtian, BM 100263 ([mounter] P. Chambers), holotype

Registration: <http://phycobank.org/103105>

Flexibiddulphia eocenica (P.A.Sims) P.A.Sims, *comb. nov.*

Basionym: *Euodiella eocenica* P.A.Sims *Diatom Research* 15: 395, figs 37-42, 65, 66, 2000.

Type: “North Atlantic, Bermuda Rise, Middle Eocene”, BM 92190 (“Core no. 1-6-4-2 | 127-128-150-*250 | [mounter] S. Russell”), holotype

Registration: <http://phycobank.org/103106>

Flexibiddulphia hendeyi (P.A.Sims) P.A.Sims, *comb. nov.*

Basionym: *Euodiella hendeyi* P.A.Sims *Diatom Research* 15: 395, figs 31-36, 63, 64, 2000.

Type: South Atlantic, Falkland Plateau, Vema Cruise 17, core 107; Age Middle Eocene, BM 81468

Registration: <http://phycobank.org/103107>

Flexibiddulphia perplexa (J.A.Long, Fuge & James Smith) P.A.Sims, *comb. nov.*

Basionym: *Triceratium perplexum* J.A.Long, Fuge & James Smith *Journal of Paleontology* 20: 114, pl. 17: fig. 17, 1946.

Type: USA, Moreno Shale, Moreno Gulch, Fresno County, California; Age: Cretaceous, Maastrichtian, CAS 3436 [205046] holotype (= CAS 201064).

Synonym: *Euodiella perplexa* (J.A.Long, Fuge & James Smith) P.A.Sims 2000: 390

Registration: <http://phycobank.org/103108>

Flexibiddulphia tristictia (Hanna) P.A.Sims, *comb. nov.*

Basionym: *Trinacria tristictia* Hanna, *Occasional Papers of the California Academy of Sciences* 13: 38, pl. 5: figs 11, 12, 1927.

Type: USA, Moreno Shale, Moreno Gulch, Fresno County, California; Age: Cretaceous, Maastrichtian, CAS 2052, holotype (see Nikolaev & al. 2001: pl. 27: fig. 1)

Synonym: *Euodiella tristictia* (Hanna) P.A.Sims 2000: 393

Registration: <http://phycobank.org/1031039>

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