
Nomenclatural transfers associated with the phylogenetic reclassification of the Surirellales and Rhopalodiales

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The Surirellales and Rhopalodiales are large orders of canal-raphe-bearing diatoms (Bacillariophyceae) whose monophyly is strongly supported (Ruck & Theriot 2011). Despite differences in taxon sampling, molecular (Ruck & Theriot 2011; Ruck *et al.* 2016) and morphological (Ruck & Kociolek 2004) phylogenies of the Surirellales and Rhopalodiales, support the monophyly of certain unnamed groups and strongly reject the monophyly of several genera in the current classification (Round *et al.* 1990). To rectify a number of these inconsistencies between phylogeny and classification, Ruck *et al.* (2016) proposed a revised classification of Surirellales and Rhopalodiales based on phylogenetic analyses of five genes and in conjunction with previous morphological cladistic studies (Ruck & Kociolek 2004). The reclassification at the genus and order levels was presented and discussed in Ruck *et al.* (2016), and a list of required nomenclatural transfers was provided as supplementary material to that publication. However, new combinations appearing in supplementary material in formats other than PDF are not effectively published and are thus invalid under ICN Arts 29.1, 30.1, and 32.1(a). We therefore validate these names here.

***Epithemia operculata* (C.Agardh) Ruck & Nakov, comb. nov.**

Basionym: *Frustulia operculata* C.Agardh, *Flora oder Botanische Zeitung, Regensburg* 2: 627, 1827.

***Epithemia iriomotensis* (Kobayasi, Nagumo & Tanaka) Ruck & Nakov, comb. nov.**

Basionym: *Rhopalodia iriomotensis* Kobayasi, Nagumo & Tanaka *Nova Hedwigia, Beiheft* 106: 134, figs 1-30, 1993.

***Epithemia contorta* (Hustedt) Ruck & Nakov, comb. nov.**

Basionym: *Rhopalodia contorta* Hustedt 1937. Systematische und ökologische Untersuchungen über die Diatomeen-Flora von Java, Bali, und Sumatrea nach dem Material der Deutschen Limnologischen Sunda-Expedition. *Archiv für Hydrobiologie, Supplement* 15:393-506, pls 21-28, 36-43. Page 460, pl. 39, figs. 26, -27.

***Epithemia parallela* (Grunow) Ruck & Nakov, comb. nov.**

Basionym: *Epithemia gibba* var. *parallela* Grunow *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 12: 13 (327), pl. 3/6: fig. 7, 1862.

***Iconella robusta* (Ehrenberg) Ruck & Nakov, comb. nov.**

Basionym: *Navicula robusta* Ehrenberg *Verhandlungen der Königlich-Preussischen Akademie der Wissenschaften zu Berlin* 1840: 215, 1840.

***Iconella bifrons* (Ehrenberg) Ruck & Nakov, comb. nov.**

Basionym: *Surirella bifrons* *Abhandlungen der Königlich-Akademie der Wissenschaften zu Berlin* 1841: 388, pl. 3: fig. 5; pl. 4, fig. 1, 1843.

***Iconella biseriata* (Brébisson) Ruck & Nakov, comb. nov.**

Basionym: *Surirella biseriata* Brébisson in Brébisson & Godey *Mémoires de la Société Académique des Sciences, Arts et Belles-Lettres de Falaise* 1835: 53, pl. 7, 1835.

***Iconella capronii* (Brébisson & Kitton) Ruck & Nakov comb. nov.**

Basionym: *Surirella capronii* Brébisson & Kitton in Kitton *Hardwicke's Science-Gossip* 5: 61, figs 43, 44, 1869.

***Iconella cincta* (Jurilj) Ruck & Nakov, comb. nov.**

Basionym: *Surirella cincta* Jurilj *Jugoslavenska Akademija Znanosti i Umjetnosti, Zagreb (Prirodoslovnih istrazivanja)* 26: 163, 1853 [= *Surirella costata* Jurilj 1949, *nom. illeg.*; priority for *Surirella costata* Neupauer, 1867]

***Iconella guatimalensis* (Ehrenberg) Ruck & Nakov, comb. nov.**

Basionym: *Surirella guatimalensis* Ehrenberg 1854. *Mikrogeologie. [Atlas]*: pl. XXXIII: VI: fig. 7, 1854.

***Iconella glabra* (Jurilj) Ruck & Nakov comb. nov.**

Basionym: *Helissella glabra* Jurilj *Jugoslavenska Akademija Znanosti i Umjetnosti, Zagreb (Prirodoslovnih istrazivanja)* 24: 182; fig. 8-9, 1949. [Also as “*Helissella*”]

***Iconella helvetica* (Brun) Ruck & Nakov, comb. nov.**

Basionym: *Surirella helvetica* Brun *Diatomées des Alpes et du Jura et de la Région Suisse et Française des Environs de Genève*: 100, pl. II: fig. 4; pl. IX: fig. 28, 1880.

***Iconella imbuta* (Jurilj) Ruck & Nakov, comb. nov.**

Basionym: *Surirella imbuta* Jurilj *Jugoslavenska Akademija Znanosti i Umjetnosti, Zagreb (Prirodoslovnih istrazivanja)* 24: 177, fig. 4, 1849.

***Iconella linearis* (W.Smith) Ruck & Nakov, comb. nov.**

Basionym: *Surirella linearis* W.Smith *Synopsis of British Diatomaceae* Vol. I: 31, pl. VIII: fig. 58a, 1853.

***Iconella lineopunctata* (Jurilj) Ruck & Nakov, comb. nov.**

Basionym: *Surirella lineopunctata* Jurilj *Jugoslavenska Akademija Znanosti i Umjetnosti, Zagreb (Prirodoslovnih istrazivanja)* 24: 179, fig. 6, 1949.

***Iconella rumrichorum* (Metzeltin & Lange-Bertalot) Ruck & Nakov, comb. nov.**

Basionym: *Surirella rumrichorum* Metzeltin & Lange-Bertalot *Iconographia Diatomologica* 5: 224, pl. 219: fig. 7; pl. 216: figs 2, 3, 1998.

***Iconella spiralis* (Kützing) Ruck & Nakov, comb. nov.**

Basioynm: *Surirella spiralis* Kützing *Die Kieselschaligen. Bacillarien oder Diatomeen*: 60, pl. 3: fig. LXIV, 1844.

***Iconella splendida* (Ehrenberg) Ruck & Nakov, comb. nov.**

Basionym: *Navicula splendida* Ehrenberg *Abhandlungen der Königlichen Akademie Wissenschaften zu Berlin, Physikalische Klasse* 1831: 81, 1832.

***Iconella tenera* (W. Gregory) Ruck & Nakov, comb. nov.**

Basionym: *Surirella tenera* W.Gregory *Quarterly Journal of Microscopical Science, New Series* 4: 11, pl. I: fig. 38, 1856

***Iconella hibernica* (Ehrenberg) Ruck & Nakov, comb. nov.**

Basionym: *Campylodiscus hibernicus* Ehrenberg *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich-Preussischen Akademie der Wissenschaften zu Berlin* 1845: 154, no fig., 1845

***Iconella levanderi* (Hustedt) Ruck & Nakov, comb. nov.**

Basionym: *Campylodiscus levanderi* Hustedt in Järnefelt *Annales Botanici Societatis Zoologicae Botanicae Fennicae, Vanamo, Helsinki* 2: 328, no fig., 1925

***Iconella marginata* Ruck & Nakov, nom. nov.**

Replaced name: *Campylodiscus marginatus* Jurilj *nom. illeg.* [priority for *Campylodiscus marginatus* Ehrenberg, 1845] *Jugoslavenska Akademija Znanosti i Umjetnosti, Zagreb (Prirodoslovnih istrazivanja)* 24:196, fig. 19, 1949

***Iconella rectangulata* Ruck & Nakov, nom. nov.**

Replaced name: *Campylodiscus striatus* Jurilj *nom. illeg.* [priority for *Campylodiscus striatus* Ehrenberg, 1845] *Jugoslavenska Akademija Znanosti i Umjetnosti, Zagreb (Prirodoslovnih istrazivanja)* 24: 200, fig. 23, 1949.

***Iconella curvula* (W.Smith) Ruck & Nakov, comb. nov.**

Basionym: *Nitzschia curvula* W.Smith *Synopsis of British Diatomaceae*: 89, no fig., 1856.

***Iconella delicatissima* (F.W.Lewis) Ruck & Nakov, comb. nov.**

Basionym: *Surirella delicatissima* F.W.Lewis *Proceeding of the Academy of Natural Sciences of Philadelphia* 1863 [vol. 15]: 343, fig. 4, 1863.

***Iconella pumila* (Lange-Bertalot & U.Rumrich) Ruck & Nakov, comb. nov.**

Basionym: *Stenopterobia pumila* Lange-Bertalot & U.Rumrich in U.Rumrich, Lange-Bertalot & M.Rumrich 2000. *Iconographia Diatomologica*. 9: 227, pl. 196: figs 1-7; pl. 197: fig. 8-9, 2000.

***Campylodiscus neofastuosus* Ruck & Nakov, nom. nov.**

Replaced name: *Navicula fastuosa* Ehrenberg *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königlich-Preussischen Akademie der Wissenschaften zu Berlin* 1840: 214 1840. [Note: not *Campylodiscus fastuosus* Ehrenberg, 1845.]

***Campylodiscus patens* (Schmidt) Ruck & Nakov, comb. nov.**

Basionym: *Surirella patens* Schmidt 1874. *Atlas der Diatomaceen-kunde Series I (Heft 1)*: pl. 4: figs 16,17.

Species of *Coronia* mentioned in the original publication (Ruck *et al.* 2016) will be the subject of a separate note.

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Round, F.E., Crawford, R.M. & Mann, D.G. (1990). *The Diatoms: Biology and morphology of the genera*. pp. i-xi, 1-747. Cambridge: Cambridge University Press.

Ruck, E.C. & Kociolek, P. (2004). Preliminary phylogeny of the family Surirellaceae- (Bacillariophyta). *Bibliotheca Diatomologica* 50: 1-236.

Ruck, E.C. & Theriot, E.C. (2011). Origin and evolution of the canal raphe system in diatoms. *Protist* 162: 723–737.

Ruck, E.C., Nakov, T., Alverson, A.J. & Theriot, E.C. (2016). Phylogeny, ecology, morphological evolution, and reclassification of the diatom orders Surirellales and Rhopalodiales. *Molecular Phylogenetics and Evolution* 103: 155-171.