# Nomenclatural changes in the genus *Paraplaconeis* Kulikovskiy, Lange-Bertalot & Metzeltin (*Witkowskiaceae*, *Bacillariophyceae*)

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In the monograph *Lake Baikal: Hotspot of endemic diatoms I* (Kulikovskiy & al. 2012: 222) a new combination was proposed, "*Paraplaconeis maculata* (Hustedt) Kulikovskiy & Lange-Bertalot", supposedly based upon "*Navicula paludinarum* var. *maculata* Hustedt". The latter designation was invalidly published by Hustedt (in Schmidt 1934: pl. 396: fig. 2) from Tertiary material collected in Romania but was later validated by Simonsen (1987: 165, pl. 266: figs 1–5). "*Paraplaconeis maculata* (Hustedt) Kulikovskiy & Lange-Bertalot" is thus invalid as a full and direct reference to the place of valid publication of the basionym was not provided as required by ICN Art. 33.1 (Turland & al. 2025). Additionally, this name cannot now be validated as "*Paraplaconeis maculata*" as there is already a valid name *Paraplaconeis maculata* Pomazkina & Sherbakova (2019: 191) which therefore has priority. A replacement name for "*Paraplaconeis maculata* (Hustedt) Kulikovskiy & Lange-Bertalot" is proposed as follows:

***Paraplaconeis camelopardalis*** Levanets & J.C.Taylor, *nom. nov*.
Replaced designation: *Navicula paludinarum* var. *maculata* Hustedt ex Simonsen, *Atlas and catalogue of the diatom types of Friedrich Hustedt,* vol. 1: 165, vol. 2*:* pl. 266: figs 1–5, 1987.
Synonym: "*Paraplaconeis maculata* (Hustedt) Kulikovskiy & Lange-Bert.", *nom. inval.* (Kulikovskiy & al. 2012: 222).
Lectotype: Slide **B** 184/59. "Rumänien. Tertiär. [Zeiss] Finder: 466.1 (i-type f 2); 440.1–2 (very oblique)" (Simonsen 1987: 165, pl. 266: figs 1–2, reproduced here as fig 4: 1–2).
Isolectotype: Slide N17/32. "Rumänien. Tertiär. [Zeiss] Finder: 588.1–4" (Simonsen 1987: 165).
Paralectotype: Slide 184/88. "Rumänien. 4. Finder: 257.8" (Simonsen 1987: 165, pl. 165: figs 3–5, reproduced here as fig 4: 3–5).
Etymology: species epithet derived from the Latin name of the Nubian giraffe (*Giraffa camelopardalis* Linnaeus, 1758: 66), as the skin patterns of this animal resemble the interstriated spots of different forms and sizes covering the valve surface.
Registration (of name): http://phycobank.org/106873
Type locality: "Rumänien" [Romania]. Unfortunately, no more precise details of the type locality were provided by Hustedt (1934) or Simonsen (1987). A Tertiary fossil.
Notes. Simonsen's (1987: 165) validating diagnosis is: *Differt a typo interstriis maculatis* [It differs from the type with interstriated spots]. *Navicula paludinarum* Pantocsek (1892: 77 (1905), pl. 9: fig. 144, reproduced here as fig 1) is characterised by obtusely lanceolate valves, of length 105.4 µm and width 34 µm (after Pantocsek 1892: 77), with a straight raphe curved towards the poles and striae strongly radiate (7–8 in 10 µm), with elliptical, oblique, confluent alveoli. Syntype localities: '*in stratis tertiaries aquae dulcis ad Bibarcztalva* [known in Romanian as Bățanii Mari]. – Bodos. – Köpecz in Transilvania' (Pantocsek 1892: 77). *Navicula paludinarum* var. *maculata* was transferred by Kulikovskiy & Lange-Bertalot to the genus *Paraplaconeis*, supposedly due to the absence of slit-like areolae (lineolae) composing the striae, characteristic of the genus *Navicula* s. s., and because they observed biseriate striae in the LM illustrations (Simonsen 1987); these biseriate striae are the defining feature of the genus *Paraplaconeis*.

In 2018, in an *Atlas and key of benthic diatom algae of the family Naviculaceae of Lake Baikal, Paraplaconeis maculata* Pomazkina & Sherbakova was described (Pomazkina & al. 2018: 85). This name was not validly published since it was accompanied only by a Russian language diagnosis, rather than a Latin or English description or diagnosis as is required (Art. 44.1, Turland *& al.* 2025). A year later a validation of this designation was published (Pomazkina & al. 2019: 191) with an English description, but there are a few issues that need to be noted.

Firstly, the English validating description in (Pomazkina & al. 2019: 191) contains different cell length and width measurements than those in Pomazkina & al. (2018: 85): length 44.0 µm and width 16.8 µm opposed to 94–101 µm and 34–41 µm, respectively. And secondly, in (Pomazkina & al. 2018) the type material is indicated as follows: Holotype: project "Darwin initiative", slide 0045-BK, st[ation] 25 (Limnological Institute Siberian Branch of Russian Academy of Sciences, Irkutsk); Isotype: project "Darwin initiative", slide 0045-BK, st[ation] 25 (Limnological Institute Siberian Branch of Russian Academy of Sciences, Irkutsk). In (Pomazkina & al. 2019) the types are noted differently, as: Holotype: slide 0083-BK collection "Darwin initiative" housed at the Limnological Institute Siberian Branch of Russian Academy of Sciences, Irkutsk, Russian Federation; isotype: slide 0084-BK, *ibid*.).

Comparing the Lake Baikal species to the illustrations of *Paraplaconeis* from Romania (Schmidt 1934: pl. 396, fig. 2 [reproduced here as fig. 2]; Simonsen 1987: 165, pl. 266: figs 1–5 [reproduced here as fig. 4]), we can distinguish the two by their morphological characteristics, dimensions and some other features (Table 1).

**Table 1.** Morphological comparison of *Paraplaconeis maculata* with *P. camelopardalis*.

| **Features** | ***Paraplaconeis maculata*** | ***Paraplaconeis camelopardalis*** |
|---|---|---|
| **Length/width** | 94–101/34–41 µm | 105.4–156/34 µm |
| **Outline** | elliptic-lanceolate | rhombic-lanceolate |
| **Apices** | slightly protracted rostrate | protracted sharply rounded |
| **Central area** | small transversally widened | rounded large |
| **Valve surface** | covered with scattered dents (grooves) of irregular form | interstriae covered with siliceous bulges |

We also want to draw attention to the dimensions of these species: *P. maculata* is smaller in length with the same, or larger width (94–101/34–41 µm vs. 105.4–156/34 µm). As far as can be distinguished from the LM images, it also differs in the pattern of uni- and biseriate striae. These distinctive features allow us to consider *P. camelopardalis* Levanets & J.C.Taylor, *nom. nov*. and the *Paraplaconeis maculata* Pomazkina & Sherbakova as independent species. Below is a corrected description of the latter species.

*Paraplaconeis maculata* Pomazkina & Sherbakova in Pomazkina & al. 2019: 191

Description: Valve elliptic-lanceolate with attenuated rostrate ends. Length 94–101 µm, width 34–41 µm. Axial area narrow, slightly widening to the middle of the valve; central area small transapically extended. Striae radiate, biseriate, 6–7 in 10 µm. Raphe filiform with narrow simple proximal endings, terminal fissures curved to the same side. SEM. Externally, areolae in striae poroid, very small, *ca.* 50 in 10 µm. Striae biseriate becoming uniseriate close to the margin. Proximal raphe endings narrow, simple. Valve margins slightly waved, mantle with rows of slit-like areolae which then become poroid. Terminal raphe endings widely rounded. Valve apices with smooth hyaline areas. The valve surface is rough, covered with dents of different forms and size.

Diagnostic figures: Pomazkina & al. (2018: pl. 128: figs 1–5, reproduced here as fig. 3).
Type locality: Russian Federation, Lake Baikal, the northern basin, the Cape Orlovij, sand, st[ation] 25, 12 m depth, leg. V. Votyakov, 5 July 1997.
Holotype: slide 0083-BK collection "Darwin initiative" housed at the Limnological Institute Siberian Branch of Russian Academy of Sciences, Irkutsk, Russian Federation; isotype: slide 0084-BK, *ibid.*).

The authors wish to thank Michael D. Guiry, David Williams and Wolf-Henning Kusber for their helpful comments.

Kulikovskiy, M.S., Lange-Bertalot, H., Metzeltin, D. & Witkowski, A. (2012). Lake Baikal: Hotspot of endemic diatoms I. *Iconographia Diatomologica* 23: 1–607, incl. 156 pls.
Linnaeus, C. (1758). *Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editio decima, reformata. Editio decima revisa. Vol. 1.* pp. [i-iv], [1]-823. Holmiae [Stockholm]: impensis direct. Laurentii Salvii.
Pantocsek, J. (1892). Beiträge zur Kenntnis der Fossilen Bacillarien Ungarns. Teil III: Süsswasser Bacillarien. Anhang-analysen 15 neuer Depots von Bulgarien, Japan, Mahern, Russland und Ungarn. pp. pls 1–42. Nagytapolcsány Topo: Buchdrucherei von Julius Platzko.
Pomazkina, G.V., Rodionova, E.V. & Sherbakova, T.A. (2018). *Benthic diatom algae of the family Naviculaceae of Lake Baikal. Atlas and key.* pp. [1]–313. Novosibirsk: Nauka [in Russian].
Pomazkina, G.V., Rodionova, E.V. & Sherbakova, T.A. (2019). Validation of 123 names of new diatom taxa from Lake Baikal. *Limnology and Freshwater Biology* 2019(1): 181–198.
Schmidt, A.[W.F.] (1934). *Atlas der Diatomaceen-kunde Series VIII: Heft 99/100*. pp. pls 393–400 [F. Hustedt]. Leipzig: O.R. Reisland.
Simonsen, R. (1987). *Atlas and catalogue of the diatom types of Friedrich Hustedt*. Vol. 1. Catalogue. Vol. 2. pls 1-395. Vol. 3. pls. 396-772. pp. 1–525, 772 pls. Berlin & Stuttgart: J. Cramer in der Gebrüder Borntraeger Velagsbuchhandlung.
Turland, N.J., Wiersema, J.H., Barrie, F.R., Gandhi, K.N., Gravendyck, J., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Klopper, R.R., Knapp, S., Kusber, W.-H., Li, D.-Z., May, T.W., Monro, A.M., Prado, J., Price, M.J., Smith, G.F. & Zamora Señoret, J.C. editors (2025). *International code of nomenclature for algae, fungi, and plants (2025 Edition Madrid Code).* Regnum Vegetabile. Volume 162. pp. [i]–xlvii, 1–303. Chicago & London: The University of Chicago Press.

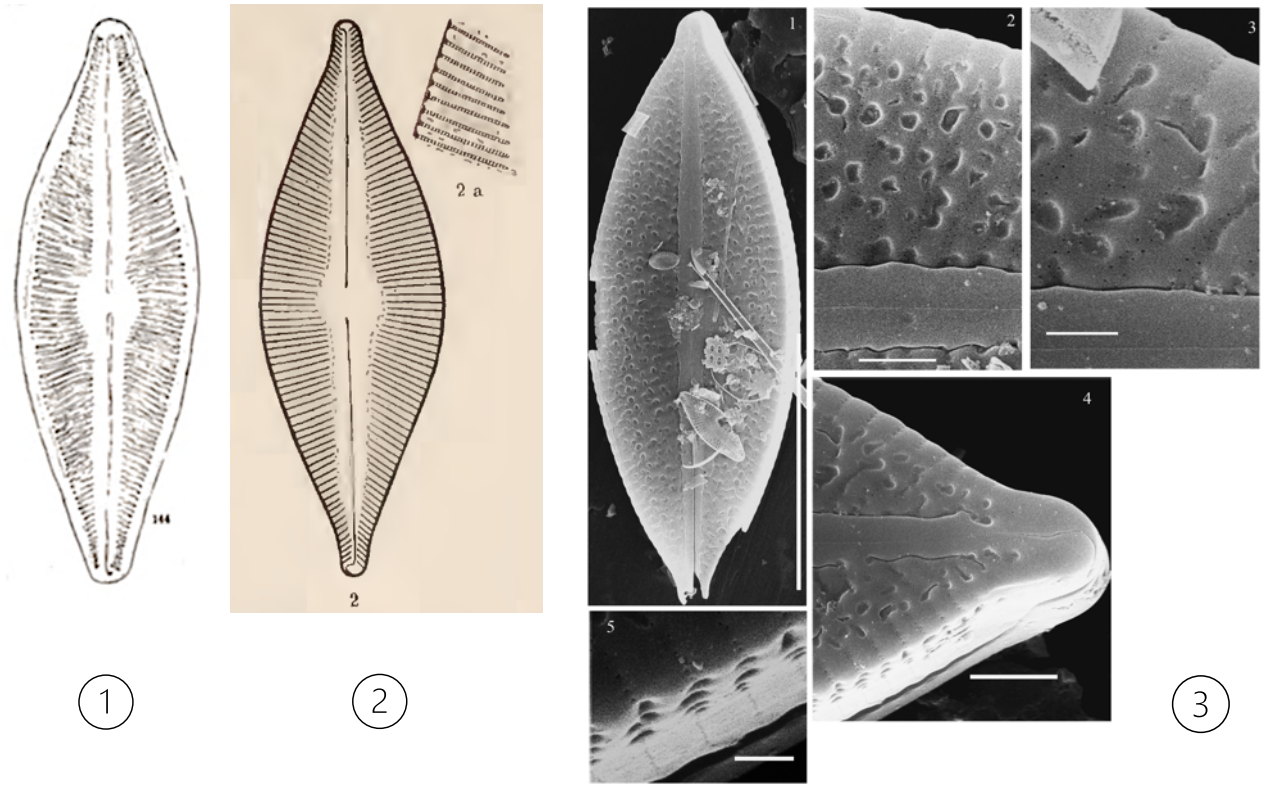


**Fig. 1.** *Navicula paludinarum* Pantocsek 1892 (after Pantocsek 1892).
**Fig. 2.** *Navicula paludinarum* var. *maculata* Hustedt 1934 (in Schmidt 1934).
**Fig. 3.** *Paraplaconeis maculata* Pomazkina & Sherbakova 2019 (after Pomazkina & al. 2018). 1–4 – external views; 1 – axial and central areas, striae, raphe sternum; 2 – interstriae striae with disorderly arranged dents, filiform raphe; 3 – poroid areolae in biseriate striae turn into uniseriate striae; 4 – terminal raphe endings, valve apex with hyaline area; 5 – valve mantle with rows of slit-like and poroid areolae. SEM. Scale bars, µm: **1** – 40; **2**–**3** – 2; **4** – 5; **5** – 1.

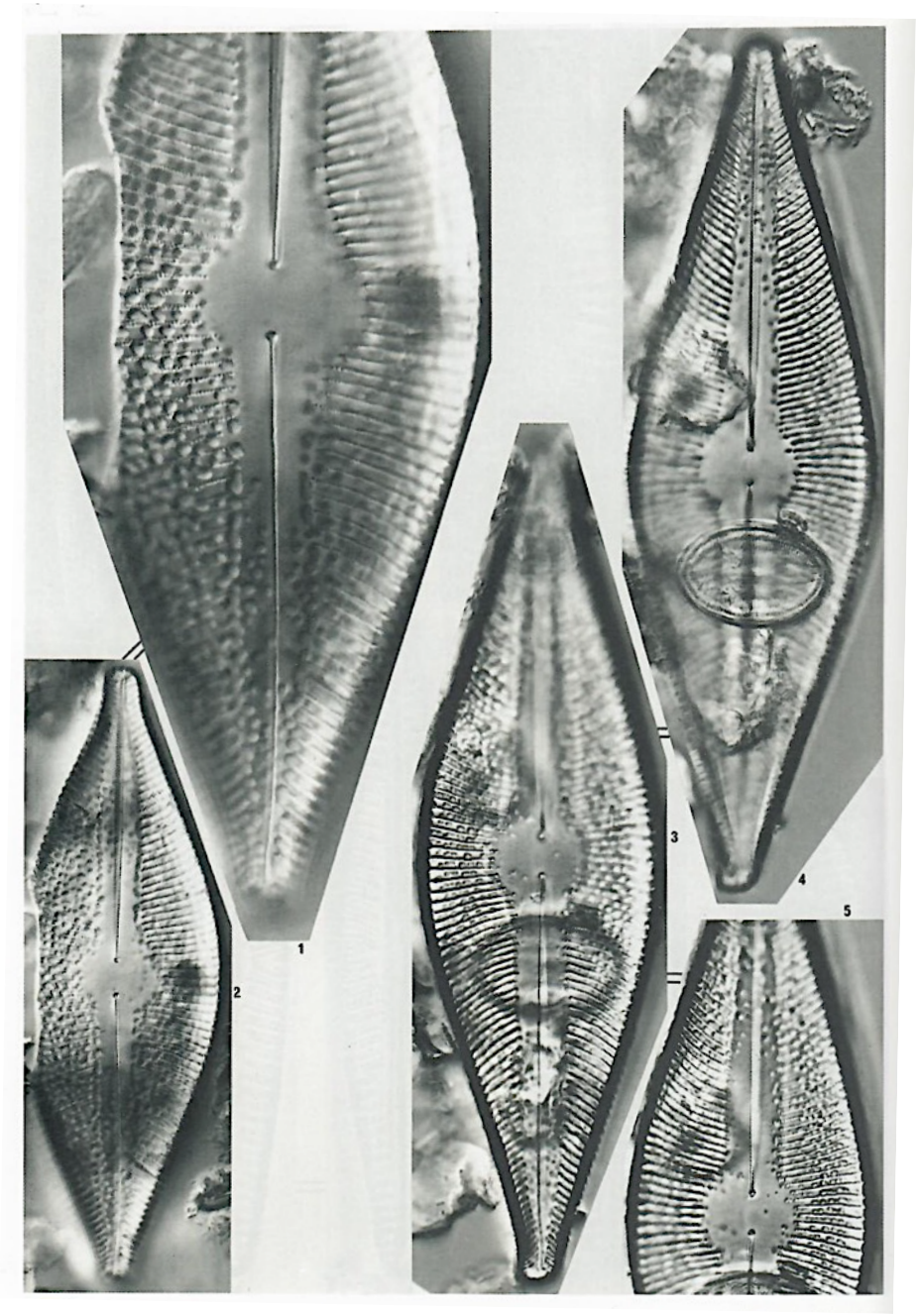


**Fig. 4.** SEM images of *Paraplaconeis camelopardalis* Levanets & J.C.Taylor, *nom. nov*. (after Simonsen 1987, as *Navicula paludinarum* var. *maculata* Hustedt ex Simonsen): 1–2 – Slide 184/59 (466.1), 3–5 – Slide 184/88 (257.8).