***Sellaphora flammarionensis* (VanLandingham) comb. nov. (Bacillariophyta, *Sellaphoraceae*) based on Manguin's original gathering of *Navicula lepidula* Manguin**

Carlos E. Wetzel, *Luxembourg Institute of Science and Technology (LIST), Environmental Research & Innovation (ERIN) Department, 41 rue du Brill, L-4422 Belvaux, Luxembourg* (*corresponding author: carlos.wetzel@list.lu*)

Michel Coste, *IRSTEA-UR EABX, 50 avenue de Verdun, FR-33612 Cestas Cedex, France*

Navicula lepidula Manguin (in Bourrelly & Manguin 1952: 70) was described from Guadeloupe (French Antilles) at the "Savane aux Ananas", a sampling site located on the island lowlands (Basse-Terre) and the following diagnosis was given:

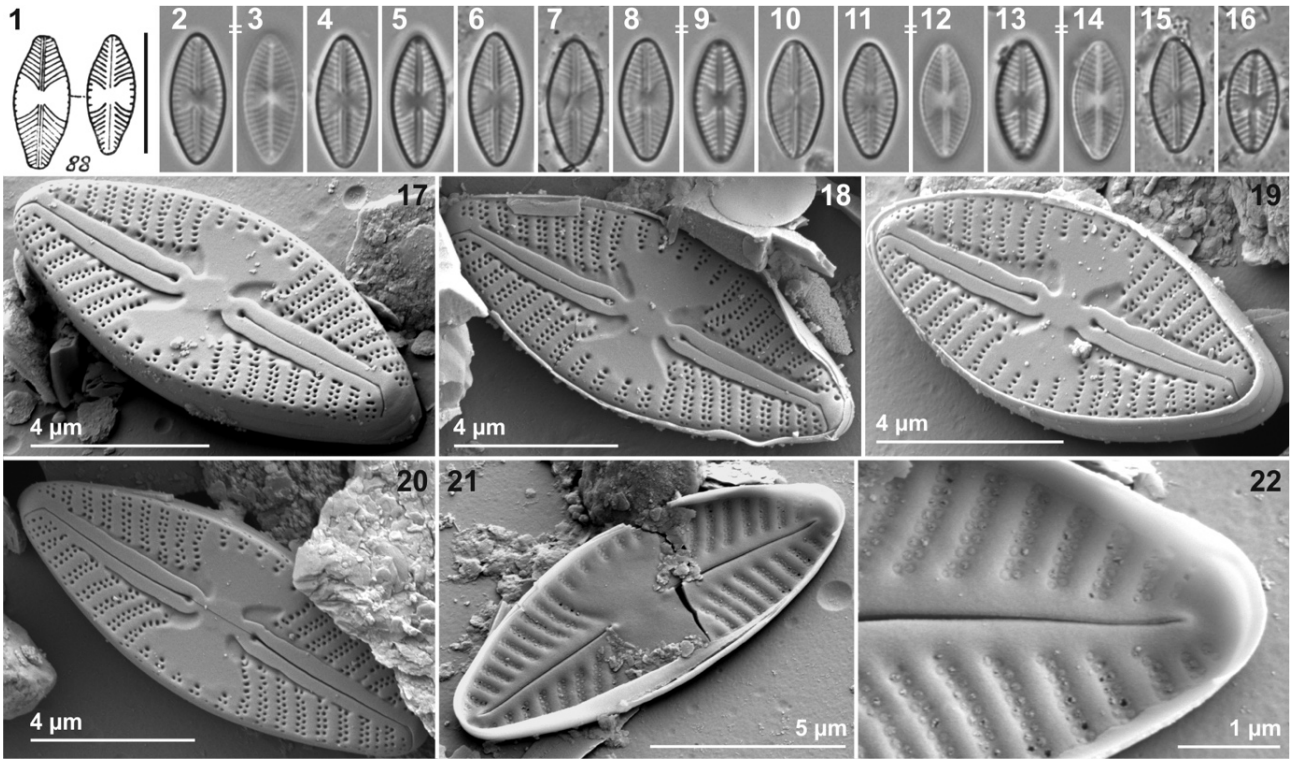
> "*N. lepidula nov. sp. - Pl. IV, f. 88 a-b. Long. 9,5-12 µ, larg. 4,5-5 µ ; 23-25 stries transapicales en 10 µ. Valve elliptique-lanceolée, plus ou moins resserrée et subrostrée aux extrèmités, à pôles largement arrondis obtus. Raphé droit, filiforme. Area axiale droite. Area centrale toujours développée, transversalement élargie en forme d'ailes, limitée sur les bords par de très courtes stries médianes. Stries toutes radiantes, fortement incurvées vers le nodule central*".

The species has been rarely recorded in the literature and all records are from tropical and subtropical areas: Brazil (Santos *et al*. 2011), Costa Rica (Wydrzycka & Lange-Bertalot 2001), Seychelles (Indian Ocean) (Coste & Ricard 1982) and Papua New Guinea (Vyverman 1991, 1992).

We here examine in detail with light and scanning electron microscopy the original gathering of this species using Émile Manguin's original slide and material deposited at the Muséum national d'Histoire naturelle, Paris (**PC**).

Light microscopy analysis revealed an elliptic-lanceolate valve with sub-rostrate to obtusely rounded apices. Straight and filiform raphe, and a narrow axial area with longitudinal silica ribs visible in light microscope along the raphe canal. A large transversal bow-tie like central area limited on the borders by the very short (usually 5) median striae. Transapical striae strongly radiate (Figs 2−15) agrees with the drawing provided by Manguin (Fig. 1). Ultrastructural analysis (Figs 17−22) revealed the presence of striae composed by one to two small areolae (mainly bi-seriate) (Figs 17−20) occluded internally by hymens (Figs 21−22). The striae continue shortly on the valve mantle with a presence of one to two areolae per stria on the valve mantle. A thick conopeum is present along the raphe canal. The conopeum is interpreted here as a silica flap covering a part of the primary valve surface, in the form of a delicate, secondary siliceous structure closely linked to the raphe system (*sensu* Lange-Bertalot *et al.* 1990). This conopeum grows out from the edge of the groove adjacent to the raphe and extends to its opposite margin being sometimes merged with the interstriae on the apices. No foramen-like pit beyond the helictoglossa is present.

Navicula lepidula Manguin (in Bourrelly & Manguin 1952: 70) is illegitimate as it was a later homonym of *Navicula lepidula* Grunow (in Van Heurck 1880: 108). A replacement for *Navicula lepidula* Manguin was proposed as *Navicula flammarionensis* VanLandingham (1975: 2636), but went unnoticed by later authors. *Navicula lepidula* Manguin was transferred into *Eolimna* Lange-Bertalot & Schiller (in Schiller & Lange-Bertalot 1997: 66) by Metzeltin & Lange-Bertalot (2007: 82, pl. 140: figs 28−30) based on the SEM images previously published by Wydrzycka & Lange-Bertalot (2001, p. 18, pl. 14, figs 13−16) as "*Navicula(dicta) flammarionensis*" VanLandingham (1975: 2636).



Figures 1-22. *Sellaphora flammarionensis* (VanLandingham) C.E.Wetzel & M.Coste, *comb. nov*. Fig. 1: Reproduction of *Navicula lepidula* Manguin in Bourrely & Manguin (1952, fig. 88). Figs 2-16: LM images from slide AD7800 (**PC!**). Figs 17-22: SEM images from sample n°16, "Savane aux Ananas", Guadeloupe.

Sellaphora manguinii C.E.Wetzel (in Wetzel *et al.* 2015: 227) was also introduced as a replacement name for *Navicula lepidula* Manguin, but it is superfluous and illegitimate as the VanLandingham replacement name was valid and available.

The following combination will serve to rectify the problems with this name:

***Sellaphora flammarionensis* (VanLandingham) C.E.Wetzel & M.Coste, comb. nov. (Figs 1−22)**
Basionym: *Navicula flammarionensis* VanLandingham, *Catalogue of the fossil and recent genera and species of diatoms and their synonyms*, *Part V*: Navicula, p. 2636, 1975

Replaced synonyms:

Navicula lepidula Manguin in Bourrelly & Manguin 1952, *Algues d'eau douce de la Guadeloupe*, p. 70, pl. 4 : fig. 88a, b, *nom illeg.*
Eolimna lepidula Metzeltin & Lange-Bertalot 2007, *Iconographia Diatomologica*, 18 : 82, pl. 140 : figs 28−30 [intended combination].
Sellaphora manguinii C.E.Wetzel in Wetzel *et al.* 2015, *Fottea*, 15: 227*, nom. illeg.*

Holotype: GUADELOUPE. Basse-Terre. Slide AD7800 (PC!), '*Expression d'epiphytes de 'la Savane aux Ananas', à 1.100m, d'altitude (...); pH=4.0−4.5 (eau de ruissellement des épiphytes (17/4/36)*'. Slide made from sample n° 16, leg. P. Allorge, in Muséum national d'Histoire naturelle, Paris (**PC**).

We are grateful to Bruno de Reviers (Muséum national d'Histoire naturelle, Paris) for the loan of Manguin's original material and to Michael Guiry for the correction and careful revision of the manuscript.

Bourrelly, P. & Manguin, E. (1952) *Algues d'eau douce de la Guadeloupe et dépendances.* pp 1-281. Centre National de la Recherche Scientifique, Société d'Edition d'Enseignement Supérieur, Paris.

Coste, M. & Ricard, M. (1982) Contribution a l'étude des Diatomées d'eau douce des Seychelles et de l'île Maurice. *Cryptogamie Algologie* 3: 279-313.

Lange-Bertalot, H., Ruppel, M. & Sabater, S. (1990) Conopeum-like structures in pennate diatoms. In M.Rocard & M.Coste (eds). *Ouvrage dédié à la Mémoire du Professeur Henry Germain (1903–1989)*. Koeltz Scientific Books, Königstein, pp. 157-167.

Metzeltin, D. & Lange-Bertalot, H. (2007). Tropical diatoms of South America II: Special remarks on biogeography disjunction. *Iconographia Diatomologica* 18: 1-877.

Santos, E. M., Tremarin, P. I., & Ludwig, T. A. V. (2011). Diatomáceas perifíticas em Potamogeton polygonus Cham. & Schltdl.: citações pioneiras para o estado do Paraná. *Biota Neotropica* 11: 303-315.

Schiller, W. & Lange-Bertalot, H. (1997) *Eolimna martinii* n. gen., n. sp.(Bacillariophyceae) aus dem Unter-Oligozän von Sieblos/Rhön im Vergleich mit ähnlichen rezenten Taxa. *Paläontologische Zeitschrift* 71:163-172.

Van Heurck, H. (1880). *Synopsis des Diatomées de Belgique*. Atlas. – pls 1-30. J. Ducaju & Cie, Anvers.

VanLandingham, S.L. (1975). *Catalogue of the fossil and recent genera and species of diatoms and their synonyms. Part V. Navicula* pp. 2386-2963. Lehre, Verlag von J. Cramer.

Vyverman, W. (1991). Diatoms from Papua New Guinea. *Bibliotheca Diatomologica* 22: 1-225, 208 pls.

Vyverman, W. (1992). Altitudinal distribution of non-cosmopolitan desmids and diatoms in Papua New Guinea. *British Phycological Journal* 27: 49-63.

Wetzel, C.E., Ector L., Van de Vijver, B.V., Compére, P. & Mann, D.G. (2015). Morphology, typification and critical analysis of some ecologically important small naviculoid species (Bacillariophyta). *Fottea* 15: 203-234.

Wydrzycka, U., & Lange-Bertalot, H. (2001) Las diatomeas (Bacillariophyceae) acidófilas del río Agrio y sitios vinculados con su cuenca, volcán Poás, Costa Rica. *Brenesia* 55-56: 1-68.