



The taxonomic status of the putative desmid genus *Trapezodesmus* Kufferath, 1932

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Kufferath (1932: 279) described a new monospecific desmid genus, *Trapezodesmus* Kufferath from dried material collected by Hyacinthe Julien Robert Vanderyst (1860–1934) in the Belgian Congo (currently the Democratic Republic of the Congo) for a single new species, *Trapezodesmus vanderystii* Kufferath, found in the following four collections:

- 18779: Kibumba, 8 June 1925
- 18784: Ndembo, 3 June 1925
- 18787: At the Nzawa (limestone region), 29 September 1925
- 18788: Kiluama (Ndembo), 3 June 1925

The description is written in French and here translated into English:

“This interesting filamentous Chlorophyceae was abundant in sample [187]78 and was found more or less frequently in n[umbe]rs [187]84, [187]87 and [187]88. In other words, in four different localities, in June and September. It certainly struck the collector because the herbarium sheet bears a schematic pencil drawing (fig. 17) giving the filaments a bizarre appearance at first glance.

In the herbarium, we see a slightly greyish green, confervoid mass, intermingled with debris of twigs, leaves and insect fragments. The mass has a filamentous appearance and takes on a dark green-brown colour when immersed in water. The filaments in long strands show no apparent ramifications, nor any changes in macroscopic appearance that might indicate fructifications or behaviour different from that of the alga.

When examined microscopically, the filaments usually have the arrangement of fig. 10 and 12, the one that struck the collector. They are 17 to 29 μm wide and are divided into rectangular cells by transverse partitions perpendicular to the filament axis. A cell wall parallel to the outer edge of the axis appears at 1/4 to 1/5 of its width, dividing the filament into two very unequal portions. At first sight, this is puzzling and intriguing. Dissolution of the filament will help us to understand the reason for these peculiarities. The cells have a trapezoidal shape reminiscent of Napoleon's bicorne. The base is the same width as the filaments and appears slightly concave, while the apex, which is a little sunken, is less wide and measures between 9 and 17 μm . The sides of the sharply curved trapezoid are joined at the top by a rounded edge and at the base by a protrusion forming a broadly rounded edge. Cell height is 11 to 12 μm . The length of the cells is between 10 and 15 μm , with dividing cells up to 18 to 20 μm , i.e. twice the length of normal cells.

The membranes are fairly thick and well defined. There is no discontinuity between the filament cells. We did not see any punctation or granulation, nor any jellies or visible ornamentation. We did not find any fructifications.

The chromatophore is made up of small, scattered green plastids (figs. 16 and 14), sometimes joined together to form a lateral mass (fig. 12). Desiccation of the samples makes it difficult to observe the intracellular elements.”

Although Kufferath described this taxon as a new desmid genus and species, in his 1932 paper he expressed doubts about the true identity of this alga as is apparent from the comments he added to the description (translated from the French):

“What is the systematic position of this characteristic alga? At first sight, we think of classifying it with the filamentous Desmidiaceae. But we need to know more about the chlorophytan apparatus; above all, we need to study the fructifications in order to give a diagnosis of this alga. The frequency with which it occurs at different stations gives us hope that we will soon be able to provide a more perfect description. It is so characteristic that we can hope to find it easily in the Kisantu region (Belgian Congo).”

An annotated reprint, in the possession of the present author and given in the 1980s by L. Van Meel to my late husband A. Caljon, has a correction of the identity of this taxon as a diatom, as being near to *Eunotia papilio* (Ehrenberg) Grunow (Fig. 1). Ludo Van Meel (1908–1990), working at Royal Belgian Institute for Natural Sciences in Brussels, Belgium, probably received this annotated reprint from Hubert Kufferath (1882–1957), who had also been attached to the same institute.

According to Kufferath (1932), the materials were deposited in the herbarium of the “*Jardin Botanique de Bruxelles*”, currently the Meise Botanic Garden. Indeed, the four herbarium sheets, Vanderyst 18778, Vanderyst 18784, Vanderyst 18787 and Vanderyst 18788, were found in the herbarium of the Meise Botanic Garden (**BR**) more specifically among the phycology collections; the first under *Micrasterias papillifera* Brébisson (<https://www.botanicalcollections.be/specimen/BR5010038346549>), two under *Closterium ehrenbergii* Meneghini ex Ralfs (<https://www.botanicalcollections.be/specimen/BR5010039770527> and <https://www.botanicalcollections.be/specimen/BR5010039769781>) and one under *Closterium moniliferum* (Bory) Ehrenberg ex Ralfs (<https://www.botanicalcollections.be/specimen/BR5010039670490>).

However, the drawings on the herbarium sheet Vanderyst 18779 (<https://www.botanicalcollections.be/specimen/BR5010038346549>), as mentioned by Kufferath (1932), are no longer present. Part of the paper on which the specimen had been dried and was cut away, presumably the drawings used in the 1932 paper where the caption mentions “based on a sketch by P. Vanderyst”. Kufferath annotated the herbarium sheet on which the material was mounted with “*Trapezodesmus vanderystii* H.Kufferath” crossed out and replaced with “*Eunotia* groupe Papillo”. This was repeated on the label of the “Herbier du Jardin Botanique de l’État Bruxelles (Belgique)” glued on the herbarium sheet where the name of *Trapezodesmus vanderystii* Kuff. was written between brackets above the name of “*Eunotia* groupe papillo” (Fig. 2)

A study of this taxon was made using a newly prepared permanent microscope slide, after treating the material with peroxide and embedding in Naphrax, allowed me to identify the species with *Eunotia pierrefuseyi* J.C.Taylor & Cocquyt (Taylor & al. 2016, Taylor & Cocquyt 2019), a species recently described from the Democratic Republic of Congo. The Vanderyst material typically forms long chains (Fig. 3 A), which is why this diatom species was confused with a desmid. Valvar views (Fig. 3 B) are less common. Dimensions of the valves observed in Vanderyst 18779 ranged from 24.0–27.5 µm in length and 8.5–10.0 in width, 6.0–8.5 µm in the constricted part. Striae density ranged from 15–17.5 in 10 µm mid-valve, becoming denser towards the poles. This agrees with the description of *E. pierrefuseyi* (Taylor et al. 2016): length 15.0–40 µm, width 6-10(12) broadest

parts and 14-20 striae in 10 µm. However, the name *Trapezodesmus vanderystii* is the earliest valid name and has priority and the following new combination is necessary. Additionally, the genus *Trapezodesmus* Kufferath now becomes a heterotypic synonym of *Eunotia* Ehrenberg.

Eunotia vanderystii (Kufferath) Cocquyt, *comb. nov.*

Basionym: *Trapezodesmus vanderystii* Kufferath (1932) *Annales de Cryptogamie Exotique* 5(3-4): 279, figs 10-17.

Lectotype (**here designated**): BR 4854, modern slide prepared from material Vanderyst 18779 (BR5010038346549). The lectotype specimen is illustrated as Fig. 3B.

Heterotypic synonyms: *Eunotia pierrefuseyi* J.C.Taylor & Cocquyt (2019: 1). *Eunotia fuseyi* J.C.Taylor & Cocquyt (2016: 305, figs 11-14), *nom. illeg.* *Eunotia papilio* var. *africana* Fusey ('papillo'), (Fusey, 1996: 61, pl. 1, figs 1-4), *nom. inval.*

Registration: <http://phycobank.org/105085>, (name); <http://phycobank.org/105086> (lectotype)

Distribution: tropical Africa, including the Democratic Republic of the Congo, the Republic of the Congo and the Central African Republic.

Etymology: name for Fr Hyacinthe Julien Robert Vanderyst (1860-1934), anthropologist, agronomist, botanist, naturalist and scientific collector.

Note: *Eunotia papilio* var. *africana* Fusey is invalid as a type was not designated.

Fusey, P. (1966). Florule algologique de la République Centrafricaine. Diatomées de quelques collections d'eau de la sous-préfecture de M'Baiki (2). Cahiers de la Maboké 4(1): 55-67.

Kufferath, H. (1932). Quelques Desmidiées du Congo Belge. *Annales de Cryptogamie Exotique* 5(3-4): 276-281.

Taylor, J.C., Cocquyt, C. & Mayama, S. (2016). New and interesting *Eunotia* (Bacillariophyta) taxa from the Democratic Republic of the Congo, tropical central Africa. *Plant Ecology and Evolution* 149(3): 291-307.

Taylor J.C. & Cocquyt C. (2019). *Eunotia pierrefuseyi* J.C.Taylor & Cocquyt, a replacement name for *Eunotia fuseyi* J.C.Taylor & Cocquyt, *nom. illeg.* (non *Eunotia fuseyi* Schoeman) (*Eunotiaceae*, *Bacillariophyta*). *Notulae Algarum* 99: 1-2.

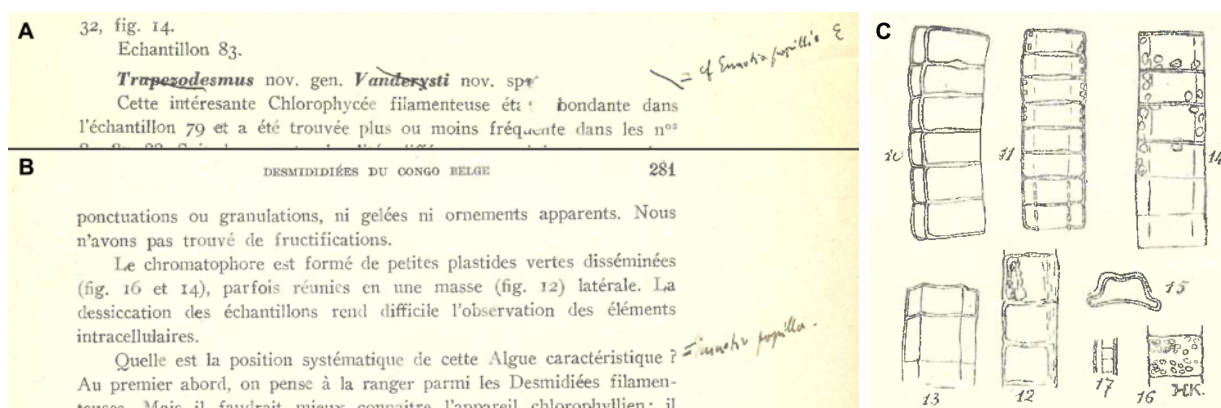


Fig. 1. Parts of the description of *Trapezodesmus vanderystii* Kufferath in the annotated reprint of Kufferath's 1932 paper. **A.** part of page 279. **B.** part of page 281. **C.** Drawings based on a sketch by P. Vanderyst, as given in the 1932 paper.

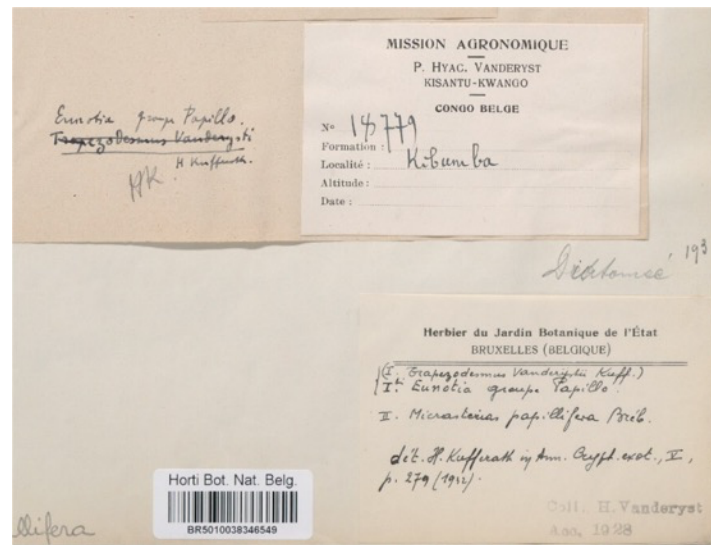


Fig. 2. Part of the herbarium sheet of material Vanderyst 18779 (BR5010038346549), showing the correction made by Kufferath (**HK**) of the name *Trapezodesmus vanderystii* H.Kufferath into “*Eunotia* groupe *Papillo*”.

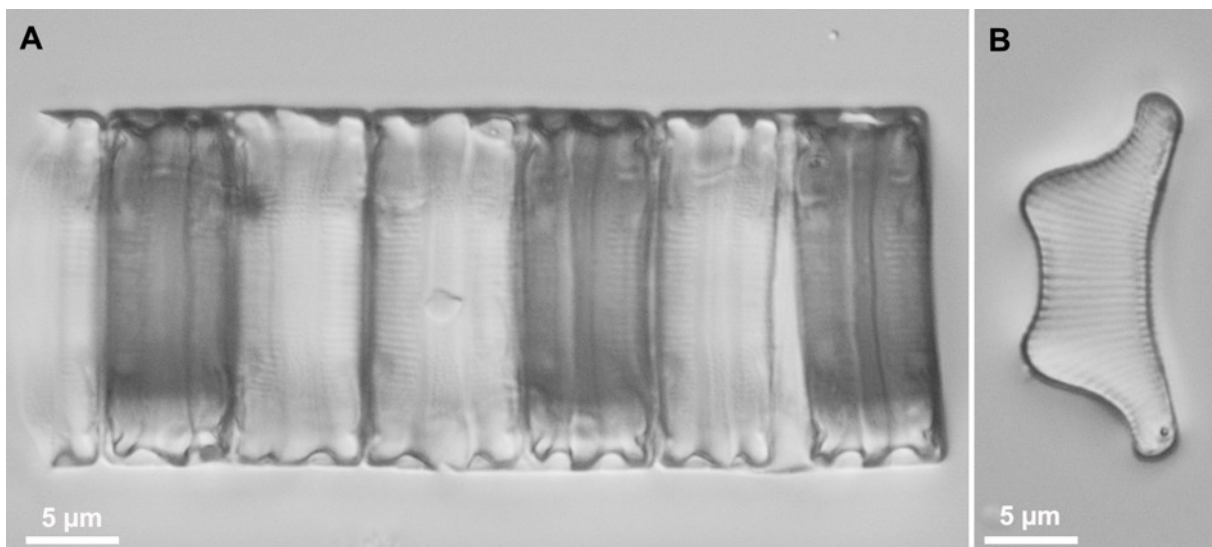


Fig. 3. *Eunotia vanderystii*: light microscope images from material Vanderyst 18779, slide BR 4854. **A.** Girdle view, showing a chain consisting of six and a half cells. **B.** Valvar view.