A complete catalogue of algal taxa described by Pierre Compère

Ann Bogaerts1,*, Myriam de Haan1, Bart Van de Vijver1,2 & Christine Cocquyt1

1Botanic Garden Meise, Nieuwelaan 38, BE-1860 Meise, Belgium
2University of Antwerp, Department of Biology, ECOBE, Universiteitsplein 1, BE-2610 Wilrijk, Belgium
*Author for correspondence: ann.bogaerts@br.fgov.be

INTRODUCTION

Pierre Compère started his scientific career as botanist in 1959 mapping the vegetation of the Lower Congo in Central Africa. Due to political difficulties following the Congolese declaration of independence, he was forced to return to Belgium in 1960. Three years later, he started working as a phycologist at the National Botanic Garden of Belgium. His first algological publication discussed the Belgian Hautes Fagnes, but Africa always held his special interest. Especially the freshwater algae from Chad, Niger, Sudan, Libya, Zambia, Senegal, Egypt, Zaire (D.R.Congo) and Equatorial Guinea attracted his attention. Later in his career he also studied material from Asia and Oceania, including Iran, Cashmere and Papua New Guinea and more recently material from Brazil (Fabri & Symoens 2000, Ector & Hoffmann 2000, van Ee & Cocquyt 2001). Although he did not visit most of these places himself, he studied material collected by other scientists including A. Iltis, P. Baert, J. Léonard, B. Van de Vijver, Th. Monod, H. Dumont, T. Lomema and R.D. Walmsley, resulting in the description of a large number of new taxa.

The present paper demonstrates the importance of Pierre Compère as one of the few phycologists worldwide who dealt with a broad variety of algal groups, including Cyanobacteria.

MATERIAL AND METHODS

The data for this catalogue was acquired in the first place by consulting all publications of Pierre Compère. Secondly, several databases such as BG-BASE which is the database used in the Botanic Garden Meise (Walter & O’Neal 2007), Index Nominum Algarum (Silva 2014), Algaebase (Guiry & Guiry 2014), AlgaTerra (Jahn & Kusber 2014) and the Catalogue of Diatom Names (Fourtanier & Kociolek 2011) were thoroughly searched. Finally the herbaria where the types were deposited have also been contacted.

The holotypes of taxa for which P. Compère featured as first author are in most cases deposited in the National Botanic Garden of Belgium (BR), currently the Botanic Garden Meise. Apart from the collection of Compère, the collections
of J. Léonard, Onclin, Baert, Ilitis, Walmsley and Monod also are deposited in BR. The isotypes and paratypes are dispersed throughout various other herbaria worldwide: Natural History Museum, London, UK (BM), Alfred-Wegener-Institut für Polar- und Meeresforschung, Bremerhaven, Germany (BRM), Muséum national d’Histoire naturelle, Paris, France (PC), Academy of Natural Sciences, Philadelphia, USA (PH), Harvard University, Farlow Reference Library and Herbarium of Cryptogamic Botany, Cambridge, USA (FH), Botanical Institute, Academy of Science of the Czech Republic, Tréboň, Museum of Natural History, Vienna, Austria (W), Laboratoire Géologique, Talence, France (TALE) and South African National Biodiversity Institute, Pretoria, South Africa (PRE). In the past isotypes also were deposited in the Van Heurck Herbarium (AWH) but although this herbarium is now permanently housed at the Botanic Garden Meise, it is still dealt with as a separate collection and the AWH numbering is kept. For taxa of which Pierre Compère was co-author, holotypes have been deposited in the associated herbarium of the first author such as the Université de Perpignan, France (USR 3278 CNRS-EPHE CROIBE), Laboratoire d'Océanographie Biologique, Paris 6, France (LOB CNRS/UPMC), Ghent University, Belgium (GENT), Academy of Natural Sciences, Diatom Herbarium, Pennsylvania, USA (ANSP), California Academy of Sciences, USA (CAS), Eastern Michigan University, USA (EMC) and Universidade Federal do Paraná, Brazil (UPCB). According to the old accession list of BR, the entire algal collection of J. Léonard was deposited in the herbarium of the National Botanic Garden of Belgium, but up to now we were unable to locate all of the material.

Diatoms, described in collaboration with Riaux-Gobin, have no light microscopic slides as holotype but are based on scanning electron microscopy (SEM). The number between brackets given after the figure number represents the number of the SEM stub. However, in some cases only the SEM micrograph of the diatom valve is mentioned and no stub number is available. Riaux-Gobin et al. (2010) always explained very well their point of view that it is impossible to preserve durable specimens on stubs used for SEM study.

The acronym of each herbarium, according to Index Herbariorum (Thiers 2014), is given for each type. Abbreviations of the authorities follow the International Plant Names Index (2012).

To illustrate Pierre Compère’s work we added a few pictures. LM images were taken with an Olympus BX51 microscope equipped with differential interference contrast and digital UC30 camera, SEM images with a JEOL 5800 LV operating at 20 kV. Drawings were scanned with an EPSON 10000 XL.

RESULTS

Approximately 1,600 of Pierre Compère’s algal specimens, comprising untreated material as well as microscopic permanent diatom slides, were deposited in the collection of the National Botanic Garden of Belgium (BR), currently housed at the Botanic Garden Meise.

A study of all his publications, as first or co-author, revealed that he described 123 algal taxa, including three new genera, 61 species, 43 forms, and sixteen varieties. Two genera belong to the Bacillariophyta, Nupela Vyverman & Compère and Olifantella Riaux-Gobin & Compère, and one to the Chlorophyta, Bourrelyodesmus Compère. Most of the new taxa (including forms and varieties) belong to the Bacillariophyta (i.e. 59, belonging to 23 genera). But Pierre Compère also described several new taxa of Cyanobacteria (thirteen taxa distributed over nine genera), Chlorophyta (43 taxa distributed over twenty genera), Chrysophyta (one taxon) and Euglenophyta (four taxa distributed over three genera). One name, Caloneis silicula f. angusta has been formally validated.

LIST OF ALGAL TAXA DESCRIBED BY P. COMPÈRE

Cyanobacteria

*Anabaena* (Bory) Bornet & Flahault

*Anabaena leonardii* Compère (fig. 1B)

Protologue – Compère 1967: 246, fig. 27.

Type – *J. Léonard* 3875bis (holo-).

Collector, number and date – *J. Léonard* 3875bis (29 Dec. 1964).

Locality – Chad, Onnianga Kébir, small salt lake near Lake of Katam, 19°04’N 20°30’E.

*Anabaena sphaerica* Bornet & Flahault var. *ellipsoida* Compère

Protologue – Compère 1967: 247, fig. 28.

Type – *J. Léonard* 3806 (holo-).

Collector, number and date – *J. Léonard* 3806 (6 Dec. 1964).

Locality – Chad, Lake Chad, Chari Delta, 12°49’N 14°30’E.

*Chroococcidiopsis* Geitler

*Chroococcidiopsis bourrelyana* Compère


Type – *P. Compère* 4343 (holo-).

Collector, number and date – *P. Compère* 4343 (Nov. 1984).

Locality – Senegal, Fatisch, river Siné, 14°20’N 16°23’W.

*Dichothrix* (Zanardini) Bornet & Flahault

*Dichothrix elongata* Compère


Type – *Monod* 13772 (holo-).


Locality – Chad, North Chad, massif of Ennedi, Aoué.

*Fortiea* G.De Toni

*Fortiea africana* Compère

Protologue – Compère 1967: 247, fig. 29.

Type – *J. Léonard* 3806 (holo-).

Collector, number and date – *J. Léonard* 3806 (6 Dec. 1964).

Locality – Chad, Lake Chad, Chari Delta, 12°49’N 14°30’E.
Katagnymene Lemmerm.
Katagnymene mucigera Compère, Komárek, Walmsley & Barlow
Protologue – Compère et al. 1979: 387, figs 1 & 8–17.
Type – Walmsley 78 LA (holo-); in PRE & Tréboñ (iso-); fig. 1 (icon).
Collector, number and date – Walmsley 78 LA (15 Nov. 1976).
Locality – South Africa, Transvaal Prov., Lindleyspoort reservoir.

Lyngbya C.Agardh ex Gomont
Lyngbya tchadensis Compère
Protologue – Compère 1974: 18, fig. 1.
Type – P. Compère 3880 (holo-).
Collector, number and date – P. Compère 3880 (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, southeastern part, in front of the pass to Hadjer el Hamis, 12°57’N 14°41’E.

Oscillatoria (Vaucher) Gomont
Oscillatoria chlorina Kütz. ex Gomont f. major Compère
Protologue – Compère 1967: 246, fig. 15.
Type – J. Léonard 3818 (holo-).
Locality – Chad, Ounianga Kébir, Lake Djobo, 19°04’N 20°30’E.

Oscillatoria gerdae Compère
Protologue – Compère 1974: 20, fig. 3.
Type – P. Compère 3795 (holo-).
Collector, number and date – P. Compère 3795 (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, Kare Katia, creek of the lake, 13°54’N 14°11’E.

Oscillatoria itisii Compère
Protologue – Compère 1974: 20, fig. 2.
Type – A. Iltis P (holo-).
Locality – Niger, Lake Chad, northern part, bay south of Diakimé, 14°23’N 13°28’E.

Oscillatoria leonardii Compère (fig. 1A)
Protologue – Compère 1967: 246, fig. 19.
Type – J. Léonard 3828 (holo-).
Locality – Libya, Oasis of Koufra, El Giof, Goudouie, 24°12’N 23°18’E.

Plectonema (Thur.) Gomont
Plectonema monodii Compère
Type – Monod 13879 (holo-).
Collector, number and date – Monod 13879 (11 Jan. 1967).
Locality – Chad, North Chad, massif of Ennedi, Ouro Gale.

Spirulina Turpin ex Gomont
Spirulina subsalsa Oerst. ex Gomont f. minor Compère
Protologue – Compère 1967: 246, fig. 25.
Type – J. Léonard 3827 (holo-).
Locality – Libya, Koufra Oasis, El Giof, Goudouie, 24°12’N 23°18’E.
Euglenophyta

Lepocinclis Perty

Lepocinclis senegalensis Compère
Protologue – Compère 1991: 192, fig. 69.
Type – P. Compère fig. 69 (icon).
Collector and date – P. Compère (Nov. 1984).
Locality – B11 - Senegal, Lake Guiers, Mbran, 16°02’N 15°56’W / B13 - Senegal, Lake Guiers, Sier, 16°04’N 15°54’W.

Strombomonas Deflandre

Strombomonas lagenaeformis Hub.-Pest. f. minor Compère
Protologue – Compère 1991: 195, fig. 84.
Type – P. Compère 4311 (holo-); fig. 84 (icon).
Collector, number and date – P. Compère 4311 (Nov. 1984).
Locality – Senegal, Lake Guiers, 16°04’N 15°56’W.

Trachelomonas Ehrenb.

Trachelomonas armata (Ehrenb.) F.Stein f. longicollis Compère
Protologue – Compère 1975a: 229, fig. 1.
Type – A. Iltis 1 (holo-).
Locality – Chad, Chari Basin, Chari at N’Djamena (Fort-Lamy), 12°07’N 15°02’E.

Trachelomonas nigerica Compère
Protologue – Compère 1975a: 229–230, fig. 2.
Type – P. Compère 3917 (holo-).
Collector, number and date – P. Compère 3917 (Jan.–Mar. 1968).
Locality – Nigeria, Yobé Basin, Mamouri, delta river Yobé, 13°42’N 13°22’E.

Bacillariophyta

Achnanthes Bory

Achnanthes exiguides Compère
Protologue – Compère 1967: 247, fig. 55.
Type – Slide 905 in BR (holo-); slide 906 in BR (iso-).
Locality – Chad, Lake Chad, archipelago, c. 13°30’N 14°30’E.

Achnanthisium Kütz.

Achnanthisium flexuistriatum Riaux-Gob., Compère & Witkowski
Type – SEM fig. 13 (140307-58) (holo-); slide 101388 in BM, slide ZU 6/80 in BRM, slide 4157 in BR, slide REU4 in USR 3278 CNRS-EPHE, CRIOBE (para-).
Locality – Réunion, St. Leu South.

Achnanthisium glyphos Riaux-Gob., Compère & Witkowski
Type – SEM fig. 27 (190706-1) (holo-); slide 101328 in BM, slide ZU 6/20 in BRM, slide 4108 in BR, slide REU1 in USR 3278 CNRS-EPHE, CRIOBE (para-).
Locality – Réunion, ‘Ferme corail 3’.

Achnanthisium pseudochamaepinnularia Riaux-Gob., Compère & Witkowski
Protologue – Riaux-Gobin et al. 2010: 166, figs 38–47.
Type – SEM fig. 38 (070307-61) (holo-); slide 101389 in BM, slide ZU 6/81 in BRM, slide 4158 in BR, slide REU5 in USR 3278 CNRS-EPHE, CRIOBE (para-).
Locality – Réunion, St. Leu city, lagoon beach, 21°09’S 55°18’E, ‘St. Leu U3’.

Achnanthisium pseudodelicatissimum Riaux-Gob., Compère & Witkowski
Protologue – Riaux-Gobin et al. 2010: 159, figs 1–12.
Type – SEM fig. 1 (140307-65) (holo-); slide 101388 in BM, slide ZU 6/80 in BRM, slide 4157 in BR, slide REU4 in USR 3278 CNRS-EPHE, CRIOBE (para-).
Locality – Réunion, St. Leu South.

Achnanthisium scalariforme Riaux-Gob., Compère & Witkowski
Type – SEM fig. 50 (061206-53) (holo-); slide 101390 in BM, slide ZU 6/82 in BRM, slide 4159 in BR, slide REU6 in USR 3278 CNRS-EPHE, CRIOBE (para-).
Locality – Réunion, ‘Ferme corail 2’.

Amphicocconeis M.De Stefano & D.Marino

Amphicocconeis mascarenica Riaux-Gob., & Compère
Type – SEM stub ‘A24/01/2007’ (holo-); SEM fig. 20 (240107-56) (icon); slide 101389 in BM, slide ZU 6/81 in BRM, slide 4158 in BR, slide REU5 in USR 3278 CNRS-EPHE, CRIOBE (para-).
Locality – Réunion, St. Leu city, lagoon beach, 21°09’S 55°18’E, ‘St. Leu U3’.

Brachysira Kütz.

Brachysira staurophora M.G.M.Souza & Compère
Type – Sample 19133a in UPCB (holo-); slide A-GC 26798a in ANSP, slide 100169 in BM, slide ZU 6/95 in BRM, slide 4036 in BR (iso-).
Locality – Brazil, Federal District of Brazil, Lagoa Bonita, 15°34’45”S 47°31’38”E.

Caloneis Cleve

Caloneis silicula (Ehrenb.) Cleve f. angusta Compère, nom. invalid.
Protologue – Compère 1967: 168, fig. 60.
Type – no Latin diagnosis, no indication of type.
Collector, number and date – Onclin in J. Léonard 3799 (Dec. 1964).
Locality – Algeria, Adrar, 27°50’N 0°10’W.
Remark – as a Latin diagnosis and the indication of the type are lacking in the protologue, which were needed for a valid description in 1967, it is considered invalid according to the International Code of Nomenclature for algae, fungi, and plants (Art. 40 & 44, McNeill et al. 2012). In order to validate this taxon, a Latin description and a lectotype are provided here:

Caloneis silicula (Ehrenb.) Cleve f. angusta Compère ex Cocquyt & Van de Vijver, f. nov.

Fig. 2
Differt a varietate nominata latitudine angustiori ornamentatione valvae tenuiori.

Cocconeis Ehrenb.

Cocconeis alucitae Riaux-Gob. & Compère
Type – Slide REU1 in LOB CNRS/UPMC (holo-); slide 101328 in BM, slide ZU 6/20 in BRM, slide 4108 in BR (iso-).
Collector, number and date – C. Riaux-Gobin REU1 (Jan. 2005).
Locality – Réunion, ‘Ferme Corail 3’.

Cocconeis borbonica Riaux-Gob. & Compère
Type – SEM fig. 24 (03306-29) (holo-); slide 101328 in BM, slide ZU 6/20 in BRM, slide 4108 in BR (iso-).
Collector, number and date – C. Riaux-Gobin 03306-29 (Jun. 2005).
Locality – Réunion, ‘Ferme Corail 3’.

Cocconeis coralliensis Riaux-Gob. & Compère
Type – SEM fig. 16 (120705-28), original pict. in LOB CNRS/UPMC (holo-); slide 101329 in BM, slide ZU 6/21 in BRM, slide 4110 in BR, slide REU2 in LOB CNRS/UPMC (para-).

Cocconeis mascarenica Riaux-Gob. & Compère
Type – no Latin diagnosis, no indication of type.
Collector, number and date – C. Riaux-Gobin 101106-7 (Jun. 2005).
Locality – Réunion, ‘L’Hermitage 50 cm’.

Cocconeis peltoides Hust. var. archaena Riaux-Gob. & Compère
Type – no Latin diagnosis, no indication of type.
Locality – Réunion, St. Leu city, lagoon beach, 21°09’S 55°18’E, ‘St. Leu U3’.

Cymbella C.Agardh

Cymbella hustedtii Krasske f. stigmata Compère
Type – no Latin diagnosis, no indication of type.
Collector, number and date – P. Compère 4187 (Sep. 1977).
Locality – Niger, Air Mountains, Tassenek, 18°32’N 8°45’E.

Locality – Réunion, ‘L’Hermitage 50 cm’.

Figure 2 – Light micrographs of Caloneis silicula f. angusta. A–C, valves from sample J. Léonard 3799 (slide 1994 in BR); C, valve representing the lectotype. Scale bar = 10 µm.


**Cymbella oncliniorum** Compère

*Protologue* – Compère 1967: 249, fig. 94.

*Type* – Slide 1166 in BR (holo-).

*Collector, number and date* – Onclin in J. Léonard 3795 (2 Dec. 1964).

*Locality* – Morocco, Oued Dra, 28°32’N 10°58’W.

**Encyonopsis** Krammer

*Encyonopsis horticola* Van de Vijver & Compère

*Protologue* – Van de Vijver et al. 2010: 199, figs 21–44.

*Type* – Slide 4165 in BR (holo-).


*Locality* – Belgium, Meise, National Botanic Garden of Belgium, Herbarium Building, enclosed pond.

**Eunotia** Ehrenb.

*Eunotia sennae* M.G.M. Souza & Compère

*Protologue* – Souza & Compère 1999: 360, figs 7–12.

*Type* – Sample 19146 in UPCB (holo-); slide A-GC 26799 in ANSP, slide 100172 in BM, slide ZU 4/96 in BRM, slide 4037 in BR (iso-).


**Gomphonema** Ehrenb.

*Gomphonema zairense* Compère (fig. 3D)


*Type* – Slide 1135 in BR (holo-); slides 1136 & 1137 in BR, slide 82368 in BM, slide ZU 4/48 in BRM, slide 606368 in CAS, slide in AWH, slide in PC (iso-).


*Locality* – Zaire, Kisangani, Tshopo river waterfalls.

**Hantzschia** Grunow

*Hantzschia distinctepunctata* (Hust.) Hust. var. *circuligera* Compère


*Type* – Slide 1127 in BR (holo-); slide 1128 in BR (iso-).

*Collector, number and date* – Compère 4337 (Nov. 1984).

*Locality* – Senegal, Senegal river, Saint-Louis, Langue de Barbarie, 16°00’N 16°31’W.

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**Figure 3** – A–C, *Surirella murielae*: A, scanning electron micrograph, internal valve view, from sample P. Compère 3875; B–C, light micrographs of valve from slide 984 in BR; D, *Gomphonema zairense*: light micrograph of valve from slide 1135 in BR. Scale bars = 10 μm.
Kobayasiella Lange-Bert.

Kobayasiella mirabilis M.G.M. Souza & Compère
Type – Sample 19133b in UPCB (holo-); slide A-GC 26798b in ANSP, slide 100170 in BM, slide ZU 4/97 in BRM, slide 4038 in BR (iso-).
Locality – Brazil, Federal District of Brazil, Lagoa Bonita, 15°34′45″S 47°31′38″E.

Licmophora C.Agardh

Licmophora gracilis (Ehrenb.) Grunow var. aegyptiaca Compère
Type – Slide 938 in BR (holo-).
Collector, number and date – A. Baert (Jan.–Mar. 1968).
Locality – Egypt, Fayum, Qarum lake saline.

Navicula Bory

Navicula clementis Grunow f. major Compère
Protologue – Compère 1975b: 374, figs 1 & 15.
Type – Slide 938 in BR (holo-).
Collector, number and date – A. Itus X (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, southeastern part, Bol, 13°27′N 14°43′E.

Navicula egregia Hust. f. elongata Compère
Protologue – Compère 1981: 21, fig. 56.
Type – J. Léonard 6239 fig. 56 (icon).
Collector, number and date – J. Léonard 6239 (1972).
Locality – Iran, Dasht-e-Lut, River Kal-Sur, after the plateau Gandum Bitiyan.

Navicula ennediensis Compère
Protologue – Compère 1970: 57, figs 86 & 118.
Type – Slide 2363 in BR (holo-).
Collector, number and date – Monod 13881 (Jan. 1967).
Locality – Chad, northern Chad, massif Ennedi, Ouri Gale.

Navicula leonardi Compère
Protologue – Compère 1967: 247, fig. 72.
Type – Slide 1978 in BR (holo-).
Locality – Chad, Delta of Chari, northeastern branch of the delta, 12°54′N 14°33′E.

Navicula pusilloides Compère
Protologue – Compère 1967: 248, fig. 74.
Type – Slide 942 in BR (holo-).
Locality – Chad, Ounianga Kébir, Lake Djobo, 19°04′N 20°30′E.

Navicula silvatica Cholnoky f. acuta Compère
Type – Slide 944 in BR (holo-).
Collector, number and date – P. Compère 3848 (Jan.–Mar. 1968).
Locality – Chad, Delta of Chari, southeastern part, Polder of Bol-Bérim, 3rd barrier, 13°29′N 14°43′E.

Neidium Pfitzer

Neidium grunowii Compère
Type – Slide 948 in BR (holo-); slide 949 in BR (iso-).
Collector, number and date – P. Compère 3816 (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, southeastern part, Polder of Bol-Bérim, 3rd barrier, 13°29′N 14°43′E.

Nitzschia Hassall

Nitzschia curvata Compère
Protologue – Compère 1981: 25, figs 75 & 124.
Type – J. Léonard 5830 fig. 75.
Locality – Chad, Ounianga Kébir, Lake Djobo, 19°04′N 20°30′E.

Nitzschia fonticola (Grunow) Grunow f. minutissima Compère
Protologue – Compère 1975b: 378, figs 5 & 16.
Type – Slide 950 in BR (holo-); slide 951 in BR (iso-).
Collector, number and date – P. Compère 3952 (Jan.–Mar. 1968).
Locality – Chad, Delta of Chari, northeastern branch of the delta, 12°54′N 14°33′E.
**Nitzschia fragilariiformis** Compère

Protologue – Compère 1986: 254, figs 1–16.  
Type – Slide 952 in BR (holo-); slides 953 up to 956 in BR, slide 81194 in BM, slide ZU 2/98 in BRM, slide in AWH, slide in PC, slide in PH, slide in TALE, slide in W (iso-).  
Collector, number and date – J. Léonard 4991 (1968).  
Locality – Sudan, Jebel Unweinat, Karkur Murru.

**Nitzschia itilisi** Compère

Type – *A. Itis* XII (holo-).  
Locality – Chad, Lake Chad, Adjilélé.

**Nitzschia iranica** Compère

Protologue – Compère 1981: 27, figs 82 & 129.  
Type – Slide 2169 in BR (holo-); fig. 82 (icon).  
Collector, number and date – *J. Léonard* 5455 (1972).  
Locality – Iran, Dasht-e-Kavir, surroundings of Tabas, 33°44′N 56°47′E.

**Nitzschia palea** (Kütz.) W.Sm. *f. minor* Compère

Protologue – Compère 1967: 250, fig. 126.  
Type – Slide 1995 in BR (holo-).  
Locality – Algeria, Salah, 27°12′N 2°28′E.

**Nitzschia serrata** Manguin *f. elongata* Compère

Protologue – Compère 1975b: 379, figs 7 & 22.  
Type – Slide 959 in BR (holo-).  
Locality – Chad, Chari Basin, in the Chari of N'Djaména (Fort-Lamy), 12°07′N 15°02′E.

**Nitzschia subrostrata** Hust. *f. elongata* Compère

Protologue – Compère 1975b: 379, figs 8 & 17.  
Type – Slide 960 in BR (holo-).  
Collector, number and date – *P. Compère* 3857 (Jan.–Mar. 1968).  
Locality – Cameroon, Delta of Chari, western branch of the delta, 12°53′N 14°28′E.

**Nitzschia subtilis** Grunow *f. ichadensis* Compère

Type – *P. Compère* 3956 (slides 3269 up to 3271 in BR were made from the holotype sample but not mentioned in the protologue).  
Collector, number and date – *P. Compère* 3956 (Jan.–Mar. 1968).  
Locality – Nigeria, Lake Chad, southern part, bay of Wolgo, 12°32′N 14°10′E.

**Nitzschia tonoënsis** Foged *f. angustata* Compère

Type – *A. Itis* II (holo-).  
Locality – Cameroon, Chari Basin, in the Chari by Kousséri, 12°07′N 15°02′E.

**Nupela Vyverman & Compère 1991a**

Type species of the genus: *Nupela giluwensis* Vyverman & Compère

**Nupela giluwensis** Vyverman & Compère

Type – PNG 435 in GENT (holo-).  
Locality – Papua New Guinea, lake, Mt Giluwe, 6°03′08″S 143°55′40″E.

**Olifantiella** Riaux-Gob. & Compère 2009

Type species of the genus: *Olifantiella mascarenica* Riaux-Gobin & Compère

**Olifantiella mascarenica** Riaux-Gob. & Compère

Type – SEM fig. 8 (200208-61) (holo-); slide 101342 in BM, slide ZU 6/59 in BR, slide 4133 in BR, slide REU3 in LOB CNRS/UPMC (para-).  
Collector, number and date – *C. Riaux-Gobin* 200208-61 (14 Jun. 2007).  
Locality – Réunion, ‘Ferme Corail’.

**Pinnularia** Ehrenb.

**Pinnularia dumontiorum** Compère

Protologue – Compère 1980: 298, figs 102, 117 & 118.  
Type – *P. Compère* 4160 fig. 117 (icon).  
Collector, number and date – *P. Compère* 4160 (Sep. 1977).  
Locality – Niger, Mountains Bagzans, Canyon, Naboru, 17°40′N 8°49′E.

**Pinnularia paulensis** Grunow *f. minor* Compère

Protologue – Compère 1967: 248, fig. 83.  
Type – Slide 1982 in BR (holo-).  
Collector, number and date – *J. Léonard* 3550bis (13 Dec. 1964).  
Locality – Chad, Lake Chad, zone of floating vegetation islands, c. 13°10′N 14°50′E.

**Pinnularia polyoncoides** Compère

Type – *A. Itis* XII (holo-).  
Locality – Chad, Lake Chad, Adjilélé.

**Pinnularia sakulensis** Vyverman & Compère

Type – PNG 4 in GENT (holo-).  
Collector and date – W. Vyverman (Jul.–Sep. 1986).  
Locality – Papua New Guinea, lake, Mt Giluwe, 6°03′08″S 143°55′40″E.

**Pinnularia sulcata** M.G.M. Souza & Compère

Type – Sample 19133c in UPCB (holo-); slide A-GC 26798c in ANSP, slide 100171 in BM, slide 4039 in BR, slide ZU 4/98 in BRM (iso-).
Locality – Brazil, Federal District of Brazil, Lagoa Bonita, 15°34'45"S 47°31'38"E.

**Pleurosisra** (Menegh.) Trevis.

**Pleurosisra laevis** (Ehrenb.) Compère f. *polymorpha* Compère

Protologue – Compère 1982: 179, figs 18, 19, 26 & 40.
Collector and number – Van Heurck 496 (as *Cerataulus laevis*).
Locality – India.

**Pleurosisra socotrensis** (Kitton) Compère var. *bengalensis* Compère

Protologue – Compère 1982: 183, figs 37, 38 & 44.
Type – Slide 6079 in BM (holo-); slide 46204 in BM (iso-).
Collector – Dr Macrae.
Locality – India, Bengal, Salt Lake.

**Rhopalodia** O. Müll.

**Rhopalodia tholulata** Vyverman & Compère

Type – PNG 405 in GENT (holo-).
Collector and date – W. Vyverman (Jul.–Sep. 1986).
Locality – Papua New Guinea, Lake Sirunki, 5°25'21"S 143°31'50"E.

**Stauroneis** Ehrenb.

**Stauroneis abbottii** Cholnoky & G.G.Claus f. *curta* Compère

Protologue – Compère 1967: 249, fig. 86.
Type – J. Léonard 3820 (slides 2032 up to 2042 in BR were made from the holotype sample but not mentioned in the protologue).
Locality – Chad, Ounianga Kébir, Lake Yoan, 19°04’N 20°30’E.

**Stauroneis leonardii** Compère

Protologue – Compère 1967: 249, fig. 87.
Type – Slide 981 in BR (holo-).
Collector, number and date – J. Léonard 3694 (29 Dec. 1964).
Locality – Chad, Lake Chad, southeastern part, in front of the pass to Hadjer el Hamis, 12°57’N 14°41’E.

**Stauroneis zairensis** Compère

Type – Slide 1121 in BR (holo-); slide in AWH, slide 81537 in BM, slide ZU 3/66 in BRM, slide in PC, slide A.G.C. 17771 in PH (iso-); fig. 2 (icon).
Locality – Zaire, Kinshasa, Funa Valley, fishpond in Monastery “Prière de Notre Dame de la Paix”.

**Surirella** Turpin

**Surirella linearis** W.Sm. f. *elongata* Compère

Type – Slide 982 in BR (holo-).
Locality – Chad, Lake Chad, Adjilélée.

**Surirella murielae** Compère (fig. 3A–C)

Protologue – Compère 1975b: 381, figs 12 & 19.
Type – Slide 987 in BR (holo-).
Collector, number and date – P. Compère 3880 (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, southeastern part, 10 km north of Chari Delta, 12°58’N 14°38’E.

**Surirella tchadensis** Compère

Protologue – Compère 1975b: 381, figs 13 & 19.
Type – Slide 987 in BR (holo-).
Collector, number and date – P. Compère 3880 (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, southeastern part, in front of the pass to Hadjer el Hamis, 12°55’N 14°41’E.

**Chrysophyta**

**Mallomonas** Perty

**Mallomonas bronchartiana** Compère (fig. 1E)

Type – P. Compère 3833 (holo-).
Collector, number and date – P. Compère 3833 (Jan.–Mar. 1968).
Locality – Cameroon, Lake Chad, enclosed bay east of Meinari, 12°29’N 14°12’E.

**Chlorophyta**

**Arthrodesmus** Ehrenb. ex Ralfs

**Arthrodesmus bifidus** Bréb. var. *brevispinosus* Compère

Protologue – Compère 1967: 250, fig. 162.
Locality – Cameroon, Tildé, on El Béid, between Maltam and Waza, 12°08’N 14°44’E.

**Bourrellyodesmus** Compère 1977

Type species of the genus: *Bourrellyodesmus heimii* (Bourr.) Compère

**Bourrelyodesmus sumatranus** C.E.M.Bicudo & Compère

Protologue – Bicudo & Compère 1978: 419, fig. 10.
Type – M. Sachlan 149 in EMC (holo-); slide in FH (iso-); fig. 10 (icon).
Collector, number and date – M. Sachlan 149 (Dec. 1956).
Locality – Indonesia, South of Palembang, Kaju-Agung, South Sumatra.
Chlamydomonas Ehrenb.

**Chlamydomonas reinhardtii** P.A.Dang f. basimaculata

Compère

Protologue – Compère 1980: 303, fig. 130.

Type – *P. Compère* 4153 (holo-); fig. 130 (icon).


Locality – Chad, Lake Chad, southeastern part, south of the remarkable point, on the border of the floating vegetation islands, 13°01'N 14°43'E.

**Cosmarium kuetzingii** Closterium

– Compère 1967: 251, fig. 165.

Protologue

– Compère 1976b: 458, fig. 165.

Collector, number and date – Compère 1967: 251, fig. 165.

Type – Compère 1967: 251, fig. 165.

Locality – Chad, Lake Chad, southeastern part, south of the remarkable point, on the border of the floating vegetation islands, 13°01'N 14°43'E.

**Cosmarium limneticum** Lemmerm. f. elongatum

Compère

Protologue – Compère 1976b: 457, fig. 1.

Type – *P. Compère* 3960 (holo-).

Collector, number and date – *P. Compère* 3960 (Jan.–Mar. 1968).

Locality – Cameroon, Lake Chad, southeastern part, floating vegetation islands near Hilé Alifa, 12°43'N 14°13'E.

**Cosmarium subulatum** (Kütz.) Bréb. f. minus

Compère

Protologue – Compère 1967: 251, fig. 169.

Type – *J. Léonard* 3812 (holo-).

Collector, number and date – *J. Léonard* 3812 (14 Dec. 1964).

Locality – Chad, Lake Chad, off Hadjer el Hamis, 12°51'N 14°51'E.

**Coelastrum** Nägeli

**Coelastrum reticulatum** (P.A.Dang.) Senn f. duplex

Compère

Protologue – Compère 1970: 57, fig. 178.

Type – Monod 13873 (holo-).

Collector, number and date – Monod 13873 (11 Jan. 1967).

Locality – Chad, North Chad, massif Ennedi, Koubé Basso.

**Cosmarium** Ralfs

**Cosmarium beatum** W.West & G.S.West f. achondrum

Compère

Protologue – Compère 1976b: 457, fig. 2.

Type – *P. Compère* 3878 (holo-).

Collector, number and date – *P. Compère* 3878 (Jan.–Mar. 1968).

Locality – Chad, Lake Chad, southeastern part, in front of the pass to Hadjer el Hamis, 12°36'N 14°41'E.

**Cosmarium bicorne** Borge var. camerounense Compère

Protologue – Compère 1976b: 458, fig. 3.

Type – *P. Compère* 3837 (holo-).

Collector, number and date – *P. Compère* 3837 (Jan.–Mar. 1968).

Locality – Cameroon, El Béid Basin, Bodo, between Mal- tam and Fotokol, 12°21'N 14°28'E.

**Cosmarium clepsydra** Nordst. var. tchadense Compère

Protologue – Compère 1976b: 458, fig. 4.

Type – *P. Compère* 3883 (holo-).

Collector, number and date – *P. Compère* 3883 (Jan.–Mar. 1968).

Locality – Chad, Lake Chad, southeastern part, south of the remarkable point, on the border of the floating vegetation islands, 13°01'N 14°43'E.

**Cosmarium cucumis** Cord ex Ralfs f. maximum Compère

Protologue – Compère 1976b: 459, fig. 5.

Type – *P. Compère* 3807 (holo-).

Collector, number and date – *P. Compère* 3807 (Jan.–Mar. 1968).

Locality – Chad, Lake Chad, southeastern part, Bol, 13°27'N 14°43'E.

**Cosmarium furcatospermum** W.West & G.S.West var. bipyrenoidosum

Compère


Type – Monod 13781 (holo-).

Collector, number and date – Monod 13781 (25 Dec. 1966).

Locality – Chad, North Chad, massif Ennedi, Koubé Basso.

**Cosmarium gerdae** Compère

Protologue – Compère 1976b: 458, fig. 4.

Type – *P. Compère* 3883 (holo-).

Collector, number and date – *P. Compère* 3883 (Jan.–Mar. 1968).

Locality – Chad, Lake Chad, southeastern part, south of the remarkable point, on the border of the floating vegetation islands, 13°01'N 14°43'E.

**Cosmarium incavatum** W.B.Turner f. tchadense Compère

Protologue – Compère 1976b: 460, fig. 7.

Type – *P. Compère* 3863 (holo-).

Collector, number and date – *P. Compère* 3863 (Jan.–Mar. 1968).

Locality – Chad, Lake Chad, southeastern part, bay of Wulgo, 12°32'N 14°10'E.

**Cosmarium isthmochondrum** Nordst. f. bipapillatum

Compère

Protologue – Compère 1976b: 460, fig. 8.

Type – *P. Compère* 3957 (holo-).

Collector, number and date – *P. Compère* 3957 (Jan.–Mar. 1968).

Locality – Chad, Lake Chad, southern part, bay of Wulgo, 12°32'N 14°10'E.

**Cosmarium lamyfortanum** Compère

Protologue – Compère 1976b: 460, fig. 9.

Type – *P. Compère* 3762 (holo-).

Collector, number and date – *P. Compère* 3762 (Jan.–Mar. 1968).

Locality – Chad, Chara Basin, N'Djaména, road to Djerma- ya, 12°09'N 15°01'E.

**Cosmarium murielae** Compère

Protologue – Compère 1976b: 462, fig. 10.

Type – *P. Compère* 3830 (holo-).

Collector, number and date – *P. Compère* 3830 (Jan.–Mar. 1968).
**Cosmarium pseudoxichondrum** (Nordst.) f. *simplex* Compère

**Protologue** – Compère 1976b: 462, fig. 11.

**Type** – *A. Itis* XI (holo-).


**Locality** – Chad, Makilala, 13°27’N 14°43’E.

**Cosmarium sinostegos** Schraarschm. var. *denticulatum* Compère

**Protologue** – Compère 1976b: 464, fig. 12.

**Type** – *P. Compère* 3762 (holo-).

**Collector, number and date** – *P. Compère* 3762 (Jan.–Mar. 1968).

**Locality** – Chad, Chari Basin, N’Djaména, road to Djerma-yà, 12°09’N 15°01’E.

**Cosmarium venustum** (Bréb.) W. Archer var. *bimamillatum* Compère

**Protologue** – Compère 1976b: 464, fig. 13.

**Type** – *P. Compère* 3837 (holo-).

**Collector, number and date** – *P. Compère* 3837 (Jan.–Mar. 1968).

**Locality** – Cameroon, Tildé, El Béid, between Maltam and Fotokol, 12°21’N 14°28’E.

**Euastrum** (Ehrenb.) Ralfs

**Euastrum divergens** Joshua var. *bourrellyanum* Compère

**Protologue** – Compère 1966: 251, fig. 201.

**Type** – *J. Léonard* 3407 (holo-).

**Collector, number and date** – *J. Léonard* 3407 (3 Dec. 1964).

**Locality** – Cameroon, Tildé, El Béid, between Maltam and Waza, 12°08’N 14°44’E.

**Euastrum glaziovii** Børgesen f. *simplex* Compère


**Type** – *P. Compère* 3797 (holo-).

**Collector, number and date** – *P. Compère* 3797 (Jan.–Mar. 1968).

**Locality** – Cameroon, Tildé, El Béid, between Maltam and Waza, 12°08’N 14°44’E.

**Euastrum incertum** F.E. Fritsch & M.F. Rich var. *minus* Compère

**Protologue** – Compère 1967: 252, fig. 208.

**Type** – *J. Léonard* 3407 (holo-).

**Collector, number and date** – *J. Léonard* 3407 (3 Dec. 1964).

**Locality** – Cameroon, Tildé, El Béid, between Maltam and Waza, 12°08’N 14°44’E.

**Euastrum subhypochondrum** F.E. Fritsch & M.F. Rich var. *croosdaleae* Compère

**Protologue** – Compère 1976b: 465, fig. 15.

**Type** – *P. Compère* 3883 (holo-).

**Collector, number and date** – *P. Compère* 3883 (Jan.–Mar. 1968).

**Locality** – Chad, Lake Chad, southeastern part, south of the remarkable point, on the border of the floating vegetation islands, 13°01’N 14°43’E.

**Gonatozygon** de Bary

**Gonatozygon bourrellyanum** Compère

**Protologue** – Compère 1967: 250, fig. 163.

**Type** – *J. Léonard* 3812 (holo-).

**Collector, number and date** – *J. Léonard* 3812 (14 Dec. 1964).

**Locality** – Chad, Lake Chad, off Hadjer el Hamis, 12°51’N 14°51’E.

**Micrasterias** C. Agardh ex Ralfs

**Micrasterias radios** (A. Braun) Wittr. f. *minuta* Compère

**Protologue** – Compère 1966: 252, fig. 221.

**Type** – *P. Compère* 3846 (holo-).

**Collector, number and date** – *P. Compère* 3846 (Jan.–Mar. 1968).

**Locality** – Cameroon, Tildé, El Béid, between Maltam and Waza, 12°08’N 14°44’E.

**Mougeotia** C. Agardh

**Mougeotia laetevirens** (A. Braun) Wittr. f. *nense* Compère

**Protologue** – Compère 1966: 253, fig. 12.

**Type** – *P. Compère* 3856 (holo-).

**Collector, number and date** – *P. Compère* 3856 (Jan.–Mar. 1968).

**Locality** – Chad, Chari Basin, Douguia, 12°38’N 14°49’E.

**Oedogonium** Hirn

**Oedogonium demaretianum** Compère

**Protologue** – Compère 1966: 233, fig. 12.

**Type** – *P. Compère* 3856 (holo-).

**Collector, number and date** – *P. Compère* 3856 (Jan.–Mar. 1968).

**Locality** – Cameroon, Chari Delta, western delta branch, 12°53’N 14°28’E.

**Pleurotocaenium** Nägeli

**Pleurotocaenium elatum** (W. Turner) Borge var. *camerounense* Compère

**Protologue** – Compère 1966: 233, fig. 11.

**Type** – *P. Compère* 3856 (holo-).

**Collector, number and date** – *P. Compère* 3856 (Jan.–Mar. 1968).

**Locality** – Cameroon, Chari Delta, western delta branch, 12°53’N 14°28’E.

**Provasoliella** A.R. Loebl.

**Provasoliella airensis** Compère

**Protologue** – Compère 1980: 303, fig. 141.

**Type** – *H. Dumont* 126 E (holo-); fig. 141 (icon).

**Collector, number and date** – *H. Dumont* 126 E (Mar. 1977).

**Locality** – Niger, Aïr Mountains, Timia, 18°06’N 8°46’E.
Scenedesmus Meyen

Scenedesmus abundans (Kirchn.) E.Hegewald var. skujae Compère
Protologue – Compère 1970: 57, fig. 181.
Type – Monod 13881 (holo-).
Collector, number and date – Monod 13881 (Jan. 1967).
Locality – Chad, North Chad, massif Ennedi, Ouro Gale.

Scenedesmus dimorphus (Turpin) Kütz. var. longispina Compère
Protologue – Compère 1970: 58, fig. 192.
Type – Monod 13759 (holo-).
Collector, number and date – Monod 13759 (23 Dec. 1966).
Locality – Chad, North Chad, massif Ennedi, Negerba, temporary guelta west of Enneri Berdéké.

Scenedesmus perforatus Lemmerm. f. bicaudatus Compère
Protologue – Compère 1976b: 232, fig. 10.
Type – P. Compère 3890 (holo-).
Collector, number and date – P. Compère 3890 (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, northern part, floating vegetation islands of Fodia, at the beginning of the Great Barrier, 13°24′N 14°06′E.

Sphaeropela C.Agardh

Sphaeropela tenuis Fritsch f. corrugata Compère
Type – P. Compère 4187 (holo-); figs 184–186.
Collector, number and date – P. Compère 4187 (Sep. 1977).
Locality – Niger, Air Mountains, Tassenek, 18°32′N 8°45′E.

Spirogyra Link

Spirogyra chakiensis (Rao) Kolkw. & Krieg. f. major Compère
Protologue – Compère 1967: 250, fig. 154.
Type – J. Léonard 3407 (holo-).
Locality – Cameroon, Tildé, El Béïd, between Maltam and Waza, 12°08′N 14°38′E.

Spirogyra globulispora Gauth.-Lièvre f. ellipsoidea Compère
Protologue – Compère 1970: 58, fig. 212.
Type – Monod 13754 (holo-).
Collector, number and date – Monod 13754 (21 Dec. 1966).
Locality – Chad, North Chad, massif of Ennedi, Archéi.

Staurostrum Meyen ex Ralfs

Staurostrum brachioprominis Borgenæ f. elongatum Compère
Protologue – Compère 1967: 252, fig. 229.
Type – J. Léonard 3811 (holo-).
Locality – Chad, Lake Chad, archipel, c. 13°30′N 14°30′E.

Staurostrum ilitsii Compère
Protologue – Compère 1976b: 467, fig. 16.
Type – A. Ilits VI (holo-).
Locality – Chad, Lake Chad, southeastern part, Isle Tarara, 12°58′N 14°38′E.

Staurostrum muticum Bréb. ex Ralfs f. punctatum Compère
Protologue – Compère 1967: 252, fig. 239.
Type – J. Léonard 3407 (holo-).
Locality – Cameroon, Tildé, El Béïd, between Maltam and Waza, 12°08′N 14°44′E.

Staurostrum thomassonianum Compère
Protologue – Compère 1976b: 468, fig. 17.
Type – P. Compère 3799 (holo-).
Collector, number and date – P. Compère 3799 (Jan.–Mar. 1968).
Locality – Chad, Lake Chad, northern part, Kare Katia, creek of the lake, 13°54′N 14°11′E.

Staurodesmus Teiling

Staurodesmus cuspidatus (Bréb.) Teiling f. granulatus Compère
Protologue – Compère 1967: 253, fig. 251.
Type – J. Léonard 3806 (holo-).
Locality – Chad, Lake Chad, Chari Delta, 12°49′N 14°30′E.

Zygnema C.Agardh

Zygnema airense Compère
Protologue – Compère 1980: 316, figs 198 & 199.
Type – Dumont 147E (holo-); fig. 199 (icon).
Locality – Niger, Air Mountain, Tegguidámô, 19°07′N 8°25′E.

Zygmenopsis (Skuja) Transeau

Zygmenopsis densepunctata Compère (fig. 1C)
Protologue – Compère 1967: 250, fig. 158.
Type – J. Léonard 3828 (holo-).
Locality – Libya, Oasis of Koufra, El Giof, Goudouie, 24°12′N 23°18′E.

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REFERENCES


Van de Vijver B., Lange-Bertalot H., Compère P. (2010) Two new freshwater diatom species (Bacillariophyceae) from a small...


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