

# A complete catalogue of algal taxa described by Pierre Compère

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**Background** – On the occasion of the 80<sup>th</sup> anniversary of Pierre Compère, a catalogue of all algal and cyanobacterial taxa he described during his scientific career, was compiled.

**Methods** – This catalogue was assembled through consultation of Compère's numerous publications, database queries and contacts with different herbaria where his types are deposited.

**Results** – Pierre Compère described 123 new algal and cyanobacterial taxa. Most of the species belong to the Bacillariophyta, but he also published taxa in the Cyanobacteria, Chlorophyta, Chrysophyta and Euglenophyta. For each taxon, details on the location of the type specimens are included along with their sample localities, dates and references to the protologues. A selection of pictures and drawings are added to illustrate Pierre Compère's work. One name, *Caloneis silicula* f. *angusta* is being formally validated.

**Key words** – Algae, Bacillariophyta, Chlorophyta, Chrysophyta, Cyanobacteria, Euglenophyta, nomenclature, types, catalogue.

## 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 algal 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, sev-

eral 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 catalogue is composed as followed. The different algal phyla are ordered according to recent taxonomic insights starting with the Cyanobacteria, followed by the Euglenophyta, Bacillariophyta, Chrysophyta and Chlorophyta. Within each phylum genera and species names are listed in alphabetical order. Reference to the protologue for each taxon is given together with more detailed information on the type if available, such as where the types are housed, the name of the main collector and the collector number, date and locality of the sample. All publications by Compère were written in French or in English with one exception which was written entirely in Latin. In order to retain consistency, all information concerning the locality of the types written in French has been translated into English. Only the slides of the Bacillariophyta have been given a special BR code. The wet collections have a unique barcode which can be requested at the Botanic Garden Meise. In this case type and collector number are the same.

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, Iltis, 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, Třeboň, 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 CRIOBE), 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 *Olifantiella* Riaux-Gobin & Compère, and one to the Chlorophyta, *Bourrellyodesmus* 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, Ounianga Kébir, small salt lake near Lake of Katam, 19°04'N 20°30'E.

*Anabaena sphaerica* Bornet & Flahault var. *ellipsoidea* 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.

*Chroococidiopsis* Geitler

*Chroococidiopsis bourrellyana* Compère

**Protologue** – Compère 1998: 165, figs 1–11.

**Type** – P. Compère 4343 (holo-).

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

**Locality** – Senegal, Fatich, river Siné, 14°20'N 16°23'W.

*Dichothrix* (Zanardini) Bornet & Flahault

*Dichothrix elongata* Compère

**Protologue** – Compère 1970: 56, figs 45–48.

**Type** – Monod 13772 (holo-).

**Collector, number and date** – Monod 13772 (24 Dec. 1966).

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

*Fortiea* G.De Toni

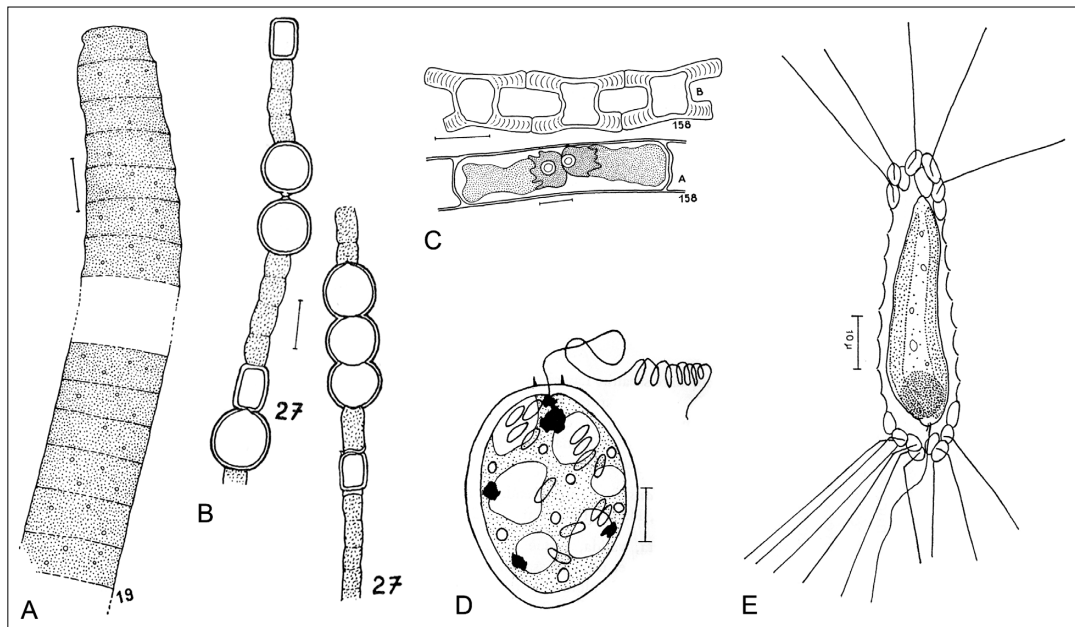
*Fortiea africana* Compère

**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.



**Figure 1** – Original drawings of P. Compère: A, *Oscillatoria leonardii* Compère (Compère 1967: pl. 1, fig. 19); B, *Anabaena leonardii* Compère (Compère 1967: pl. 2, fig. 27); C, *Zygnemopsis densepunctata* Compère (Compère 1967: pl. 11, fig. 158); D, *Trachelomonas nigerica* Compère (Compère 1975a: fig. 2); E, *Mallomonas bronchartiana* Compère (Compère 1974: fig. 1). Scale bars = 10 µm.

**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 & Třeboň (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-).

**Collector, number and date** – J. Léonard 3818 (24 Dec. 1964).

**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 iltisii*** Compère

**Protologue** – Compère 1974: 20, fig. 2.

**Type** – A. Iltis P (holo-).

**Collector, number and date** – A. Iltis P (Mar.–Apr. 1967).

**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-).

**Collector, number and date** – J. Léonard 3828 (5 Jan. 1965).

**Locality** – Libya, Oasis of Koufra, El Giof, Goudouie, 24°12'N 23°18'E.

***Plectonema*** (Thur.) Gomont

***Plectonema monodii*** Compère

**Protologue** – Compère 1970: 57, figs 49–54.

**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-).

**Collector, number and date** – J. Léonard 3827 (4 Jan. 1965).

**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* I (holo-).

**Collector, number and date** – *A. Iltis* I (Dec. 1965–Jan. 1966).

**Locality** – Chad, Chari Basin, Chari at N'Djamena (Fort-Lamy), 12°07'N 15°02'E.

#### *Trachelomonas nigerica* Compère (fig. 1D)

**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 exiguoides* Compère

**Protologue** – Compère 1967: 247, fig. 55.

**Type** – Slide 905 in BR (holo-); slide 906 in BR (iso-).

**Collector, number and date** – *J. Léonard* 3853 (10 Dec. 1964).

**Locality** – Chad, Lake Chad, archipelago, c. 13°30'N 14°30'E.

### *Achnanthidium* Kütz.

#### *Achnanthidium flexuistriatum* Riaux-Gob., Compère & Witkowski

**Protologue** – Riaux-Gobin et al. 2010: 161, figs 13–22.

**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-).

**Collector, number and date** – *C. Riaux-Gobin* 140307-58 (14 Jun. 2005).

**Locality** – Réunion, St. Leu South.

#### *Achnanthidium glyphos* Riaux-Gob., Compère & Witkowski

**Protologue** – Riaux-Gobin et al. 2010: 161, figs 25–37.

**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-).

**Collector, number and date** – *C. Riaux-Gobin* 190706-1 (Jun. 2005).

**Locality** – Réunion, 'Ferme corail 3'.

#### *Achnanthidium 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-).

**Collector, number and date** – *C. Riaux-Gobin* 070307-61 (24 Jun. 2005).

**Locality** – Réunion, St. Leu city, lagoon beach, 21°09'S 55°18'E, 'St. Leu U3'.

#### *Achnanthidium 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-).

**Collector, number and date** – *C. Riaux-Gobin* 140307-65 (14 Jun. 2005).

**Locality** – Réunion, St. Leu South.

#### *Achnanthidium scalariforme* Riaux-Gob., Compère & Witkowski

**Protologue** – Riaux-Gobin et al. 2010: 170, figs 48–53.

**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-).

**Collector, number and date** – *C. Riaux-Gobin* 061206-53 (Jun. 2005).

**Locality** – Réunion, 'Ferme corail 2'.

### *Amphicocconeis* M.De Stefano & D.Marino

#### *Amphicocconeis mascarenica* Riaux-Gob. & Compère

**Protologue** – Riaux-Gobin et al. 2011: 176, figs 1–5, 7–27 & 39–41.

**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-).

**Collector, number and date** – *C. Riaux-Gobin* A24/01/2007 (24 Jun. 2005).

**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

**Protologue** – Souza & Compère 1999: 358, figs 1–6.

**Type** – Sample 19133a in UPGB (holo-); slide A-GC 26798a in ANSP, slide 100169 in BM, slide ZU 4/95 in BRM, slide 4036 in BR (iso-).

**Collector and date** – *M.G.M de Souza* (Mar. 1989–Mar. 1990).

**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 ornamentioneque valvae tenuiori. – Type: Algeria, Adrar, 27°50'N 0°10'W, 1964, sample *J. Léonard* 3799 (lecto-: slide 1994 in BR, **designated here**).

**Remark** – The valve representing the lectotype is here illustrated in fig. 2C.

*Cocconeis* Ehrenb.

*Cocconeis alucitae* Riaux-Gob. & Compère

**Protologue** – Riaux-Gobin & Compère 2008: 132, figs 2–15 & 41–44.

**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 (Jun. 2005).

**Locality** – Réunion, 'Ferme Corail 3'.

*Cocconeis borbonica* Riaux-Gob. & Compère

**Protologue** – Riaux-Gobin & Compère 2008: 138, figs 24–32 & 45–47.

**Type** – SEM fig. 24 (03306-29) (holo-); slide 101328 in BM, slide ZU 6/20 in BRM, slide 4108 in BR, slide REU1 in LOB CNRS/UPMC (para-).

**Collector, number and date** – *C. Riaux-Gobin* 03306-29 (Jun. 2005).

**Locality** – Réunion, 'Ferme Corail 3'.

*Cocconeis coralliensis* Riaux-Gob. & Compère

**Protologue** – Riaux-Gobin & Compère 2008: 135, figs 16–23 & 52–55.

**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-).

**Collector, number and date** – *C. Riaux-Gobin* 120705-28 (Jun. 2005).

**Locality** – Réunion, 'L'Hermitage 50 cm'.

*Cocconeis mascarenica* Riaux-Gob. & Compère

**Protologue** – Riaux-Gobin & Compère 2008: 140, figs 33–40, 48–51.

**Type** – SEM fig. 33 (101106-7), 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-).

**Collector, number and date** – *C. Riaux-Gobin* 101106-7 (Jun. 2005).

**Locality** – Réunion, 'Ferme Corail 1'.

*Cocconeis peltoides* Hust. **var. archaeana** Riaux-Gob. & Compère

**Protologue** – Riaux-Gobin et al. 2011: 330, figs 32–34.

**Type** – SEM fig. 25 (280207-47), original pict. in USR 3278 CNRS-EPHE, CRIOBE (holo-); slide 101389 in BM, slide ZU 6/81 in BRM, slide 4158 in BR, slide REU5 in USR 3278 CNRS-EPHE, CRIOBE (para-).

**Collector, number and date** – *C. Riaux-Gobin* 280207-47 (24 Jun. 2005).

**Locality** – Réunion, St. Leu city, lagoon beach, 21°09'S 55°18'E, 'St. Leu U3'.

*Cymbella* C.Agardh

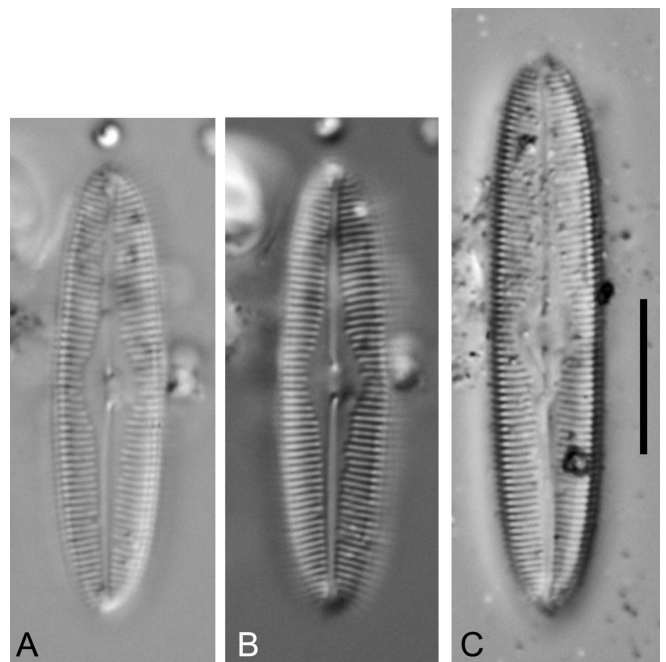
*Cymbella hustedtii* Krasske **f. stigmata** Compère

**Protologue** – Compère 1980: 291, figs 62, 86 & 87.

**Type** – Slide 917 in BR (holo-); fig. 62 (icon); slide 918 up to 920 in BR (iso-).

**Collector, number and date** – *P. Compère* 4187 (Sep. 1977).

**Locality** – Niger, Air Mountains, Tassenek, 18°32'N 8°45'E.



**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-).

**Collector and date** – Van de Vijver B. (23 Jun. 2009).

**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-).

**Collector and date** – M.G.M de Souza (Mar. 1989–Mar. 1990).

**Locality** – Brazil, Federal District of Brazil, Lagoa Bonita, 15°34'45"S 47°31'38"E.

***Gomphonema* Ehrenb.**

***Gomphonema zairense* Compère (fig. 3D)**

**Protologue** – Compère 1995: 32, figs 1–14.

**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-).

**Collector, number and date** – J. Léonard 1359 (30 Jun. 1947).

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

***Hantzschia* Grunow**

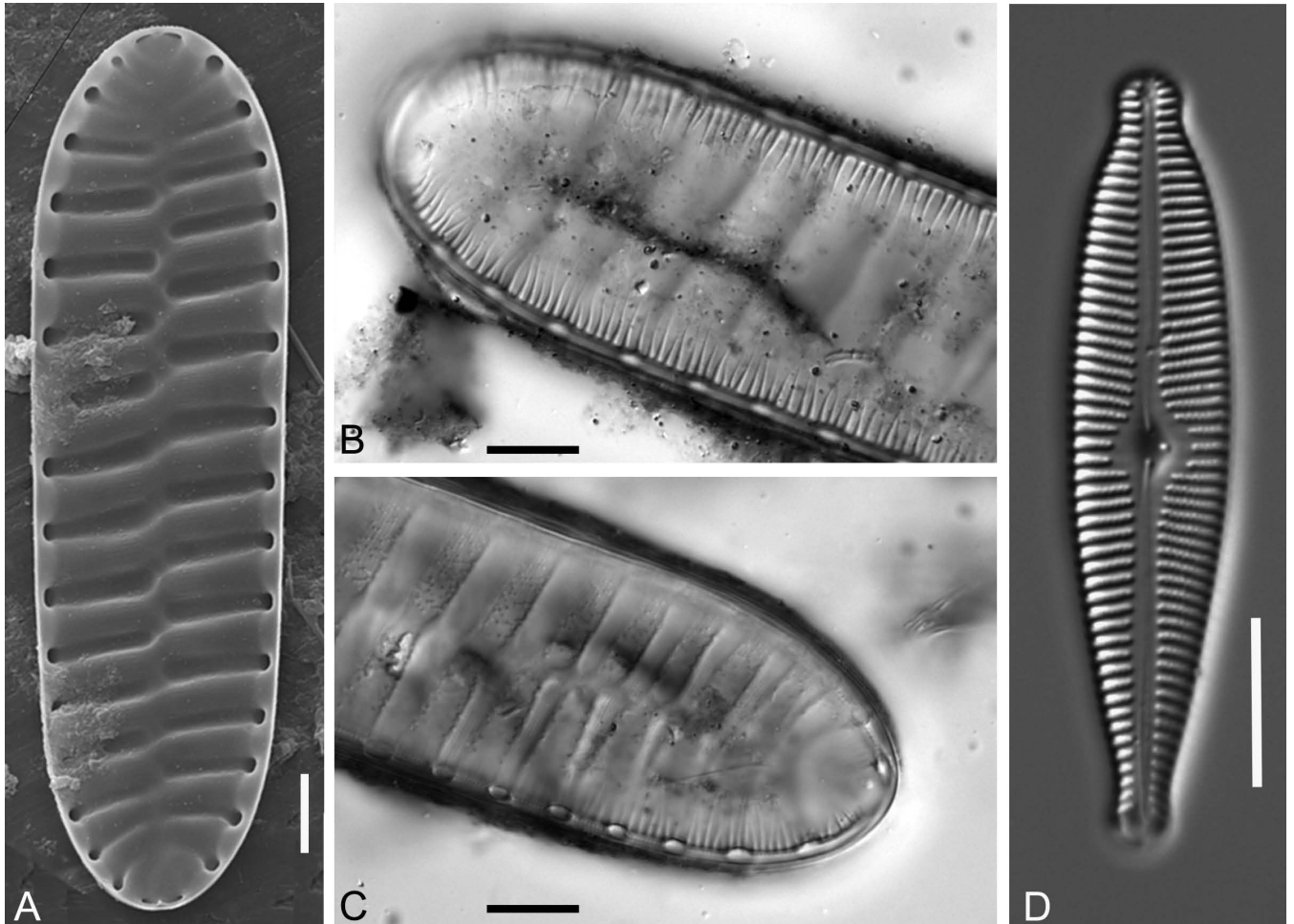
***Hantzschia distinctepunctata* (Hust.) Hust. var. *circuligera* Compère**

**Protologue** – Compère 1991: 218, figs 160–161.

**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.



**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**Protologue** – Souza & Compère 1999: 362, figs 13–19.**Type** – Sample 19133b in UPGB (holo-); slide A-GC 26798b in ANSP, slide 100170 in BM, slide ZU 4/97 in BRM, slide 4038 in BR (iso-).**Collector and date** – M.G.M. de Souza (Mar. 1989–Mar. 1990).**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**Protologue** – Compère 1994: 180, figs 27–31.**Type** – Slide 1129 in BR (holo-); slide 1130 in BR (iso-).**Collector, number and date** – P. Baert 2 (1989).**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. Iltis 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 leonardii* Compère**Protologue** – Compère 1967: 247, fig. 72.**Type** – Slide 1978 in BR (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.*Navicula mutica* Kütz. **f. densestriata** Compère**Protologue** – Compère 1967: 248, fig. 73.**Type** – Slide 1973 in BR (holo-).**Collector, number and date** – J. Léonard 3340bis (26 Dec. 1964).**Locality** – Chad, Fort-Lamy, 12°08'N 15°02'E.*Navicula pseudogrimmei* Compère**Protologue** – Compère 1970: 57, figs 87 & 122.**Type** – Slide 940 in BR (holo-); slide 941 in BR (iso-).**Collector, number and date** – Monod 13867 (9 Jan. 1967).**Locality** – Chad, northern Chad, massif Ennedi, Diona.*Navicula pusilloides* Compère**Protologue** – Compère 1967: 248, fig. 74.**Type** – Slide 942 in BR (holo-).**Collector, number and date** – J. Léonard 3820 (25 Dec. 1964).**Locality** – Chad, Ounianga Kébir, Lake Djobo, 19°04'N 20°30'E.*Navicula scabellum* Hust. **f. major** Compère**Protologue** – Compère 1967: 248, fig. 75.**Type** – J. Léonard 3830 (slides 2062 up to 2067 in BR were made from the holotype but not mentioned in the protologue).**Collector, number and date** – J. Léonard 3830 (11 Jan. 1965).**Locality** – Egypt, between Asyut and Qena, Nile valley, c. 26°05'N 32°30'E.*Navicula silvatica* Cholnoky **f. acuta** Compère**Protologue** – Compère 1975b: 374, figs 2 & 14.**Type** – Slide 944 in BR (holo-).**Collector, number and date** – P. Compère 3848 (Jan.–Mar. 1968).**Locality** – Chad, Delta of Chari, northeastern branch of the delta, 12°54'N 14°33'E.*Navicula subarvensis* Hust. **f. lata** Compère**Protologue** – Compère 1967: 248, fig. 77.**Type** – Slide 2031 in BR (holo-).**Collector, number and date** – J. Léonard 3819 (25 Dec. 1964).**Locality** – Chad, Ounianga Kébir, Lake Yoan, 19°04'N 20°30'E.*Neidium* Pfitzer*Neidium grunowii* Compère**Protologue** – Compère 1975b: 376, figs 3 & 21.**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, 3<sup>rd</sup> 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 (icon).**Collector, number and date** – J. Léonard 5830 (1972).**Locality** – Iran, depression of Jaz Murian, Magmadabad Zere Kalegang, 27°21'N 58°05'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** – Nigeria, Lake Chad, southern part, boundary southern free waters, north of Galaria, 12°35'N 13°55'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 Murr.

*Nitzschia iltisii* Compère

**Protologue** – Compère 1975b: 379, figs 6 & 24.

**Type** – A. Iltis XII (holo-).

**Collector, number and date** – A. Iltis XII (Dec. 1965–Jan. 1966).

**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-).

**Collector, number and date** – Onclin in J. Léonard 3800 (11 Dec. 1964).

**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-).

**Collector, number and date** – A. Iltis I (Dec. 1965–Jan. 1966).

**Locality** – Chad, Chari Basin, in the Chari of N'Djamena (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. tchadensis** Compère

**Protologue** – Compère 1975b: 380, figs 9 & 18.

**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 Wulgo, 12°32'N 14°10'E.

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

**Protologue** – Compère 1975b: 380, figs 10 & 25.

**Type** – A. Iltis II (holo-).

**Collector, number and date** – A. Iltis II (Dec. 1965–Jan. 1966).

**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

**Protologue** – Vyverman & Compère 1991a: 178, figs 1–10.

**Type** – PNG 435 in GENT (holo-).

**Collector and date** – W. Vyverman (Aug.–Oct. 1987).

**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

**Protologue** – Riaux-Gobin & Compère 2009: 181, figs 1–5 & 6–22.

**Type** – SEM fig. 8 (200208-61) (holo-); slide 101342 in BM, slide ZU 6/59 in BRM, 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, Nabaru, 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 polyoncoïdes* Compère

**Protologue** – Compère 1975b: 376, figs 4 & 20.

**Type** – A. Iltis XII (holo-).

**Collector, number and date** – A. Iltis XII (Dec. 1965–Jan. 1966).

**Locality** – Chad, Lake Chad, Adjilélé.

*Pinnularia sakulensis* Vyverman & Compère

**Protologue** – Vyverman & Compère 1991b: 27, figs 1–9.

**Type** – PNG 4 in GENT (holo-).

**Collector and date** – W. Vyverman (Jul.–Sep. 1986).

**Locality** – Papua New Guinea, Sakula River, a small low-land river near Bogia on the North Coast, 4°14'06"S 144°53'40"E.

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

**Protologue** – Souza & Compère 1999: 362, figs 20–26.

**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-).



**Collector and date** – *M.G.M de Souza* (Mar. 1989–Mar. 1990).

**Locality** – Brazil, Federal District of Brazil, Lagoa Bonita, 15°34'45"S 47°31'38"E.

*Pleurosira* (Menegh.) Trevis.

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

**Protologue** – Compère 1982: 179, figs 18, 19, 26 & 40.

**Type** – Slide 3228 (AWH V 27 A9) in BR (holo-); slide in BM, slide in BR, slide in PC (iso-); Van Heurck Synopsis Diat. Belg. Atlas, pl. 104, figs 3–4 (icon).

**Collector and number** – *Van Heurck* 496 (as *Cerataulus laevis*).

**Locality** – India.

*Pleurosira 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

**Protologue** – Vyverman & Compère 1991b: 28, figs 10–18.

**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).

**Collector, number and date** – *J. Léonard* 3820 (25 Dec. 1964).

**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, Ounianga Kébir, Lake Djobo, 19°04'N 20°30'E.

*Stauroneis zairensis* Compère

**Protologue** – Compère et al. 1989: 224, figs 2–6 & 8–13.

**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).

**Collector and date** – *T. Lomema* (1987).

**Locality** – Zaire, Kinshasa, Funa Valley, fishpond in Monastery "Prière de Notre Dame de la Paix".

*Surirella* Turpin

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

**Protologue** – Compère 1975b: 380, figs 11 & 23.

**Type** – Slide 982 in BR (holo-).

**Collector, number and date** – *A. Iltis* XII (Dec. 1965–Jan. 1966).

**Locality** – Chad, Lake Chad, Adjilélé.

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

**Protologue** – Compère 1975b: 381, figs 12 & 26.

**Type** – Slide 984 in BR (holo-).

**Collector, number and date** – *P. Compère* 3875 (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°57'N 14°41'E.

**Chrysophyta**

*Mallomonas* Perty

*Mallomonas bronchartiana* Compère (fig. 1E)

**Protologue** – Compère 1974: 61, figs 1–8.

**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.

**Type** – *J. Léonard* 3407 (holo-).

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

**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

*Bourrellyodesmus 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).

**Collector, number and date** – *P. Compère* 4153 (Sep. 1977).

**Locality** – Niger, Aïr Mountains, Kori Tebagao, 17°20'N 8°15'E.

*Closterium* Ralfs

*Closterium kuetzingii* Bréb. f. *minus* Compère

**Protologue** – Compère 1967: 251, fig. 165.

**Type** – *J. Léonard* 3807 (holo-).

**Collector, number and date** – *J. Léonard* 3807 (6 Dec. 1964).

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

*Closterium 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.

*Closterium subulatum* (Kütz.) Bréb. f. *angustum* 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, Bimé, Enneri Michero.

*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°57'N 14°41'E.

*Cosmarium bicornis* 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 Matam 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* Corda 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

**Protologue** – Compère 1970: 58, figs 226 & 227.

**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: 459, fig. 6.

**Type** – *P. Compère* 3881 (holo-).

**Collector, number and date** – *P. Compère* 3881 (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, Chari Delta, northeastern branch of delta, 12°54'N 14°33'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** – Nigeria, 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, Chari 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).

**Locality** – Cameroon, El Béid Basin, closed bay east of Meinari, 12°29'N 14°12'E.

***Cosmarium pseudotaxichondrum* (Nordst.) f. simplex** Compère

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

**Type** – *A. Iltis* XI (holo-).

**Collector, number and date** – *A. Iltis* XI (Dec. 1965–Jan. 1966).

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

***Cosmarium sinostegos* Schaarschm. 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-ya, 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, El Béid Basin, Bodo, between Maltam and Fotokol, 12°21'N 14°28'E.

***Euastrum* (Ehrenb.) Ralfs**

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

**Protologue** – Compère 1967: 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

**Protologue** – Compère 1976b: 465, fig. 14.

**Type** – *P. Compère* 3797 (holo-).

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

**Locality** – Chad, Lake Chad, northern part, Kare Katia, creek of the lake, 13°54'N 14°11'E.

***Euastrum incertum* F.E.Fritsch & M.F.Rich f. 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. croasdaleae** 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 bourellyanum* 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 radiosa* Ralfs f. minuta** Compère

**Protologue** – Compère 1967: 252, fig. 221.

**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.

***Mougeotia* C.Agardh**

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

**Protologue** – Compère 1976a: 233, fig. 12.

**Type** – *P. Compère* 3846 (holo-).

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

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

***Oedogonium* Hirn**

***Oedogonium demaretianum* Compère**

**Protologue** – Compère 1976a: 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.

***Pleurotaenium* Nägeli**

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

**Protologue** – Compère 1967: 252, fig. 225.

**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.

***Provasoliella* A.R.Loebli**

***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 Berdéché.

*Scenedesmus perforatus* Lemmerm. **f. bicaudatus** Compère

**Protologue** – Compère 1976b: 232, fig. 10.

**Type** – *P. Compère* 3899 (holo-).

**Collector, number and date** – *P. Compère* 3899 (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.

*Sphaeroplea* C.Agardh

*Sphaeroplea tenuis* Fritsch **f. corrugata** Compère

**Protologue** – Compère 1980: 313, figs 184–186 & 187–188.

**Type** – *P. Compère* 4187 (holo-); figs 184–186.

**Collector, number and date** – *P. Compère* 4187 (Sep. 1977).

**Locality** – Niger, Aïr 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-).

**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.

*Spirogyra globulispota* 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, Archeï.

*Staurostrum* Meyen ex Ralfs

*Staurostrum brachioprominens* Børgesen **f. elongatum** Compère

**Protologue** – Compère 1967: 252, fig. 229.

**Type** – *J. Léonard* 3811 (holo-).

**Collector, number and date** – *J. Léonard* 3811 (10 Dec. 1964).

**Locality** – Chad, Lake Chad, archipel, c. 13°30'N 14°30'E.

*Staurostrum iltisii* Compère

**Protologue** – Compère 1976b: 467, fig. 16.

**Type** – *A. Iltis* VI (holo-).

**Collector, number and date** – *A. Iltis* VI (Dec. 1965–Jan. 1966).

**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-).

**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.

*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-).

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

**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).

**Collector, number and date** – *Dumont* 147E (Mar. 1977).

**Locality** – Niger, Aïr Mountain, Tegguidâmo, 19°07'N 8°25'E.

*Zygnemopsis* (Skuja) Transeau

*Zygnemopsis densepunctata* Compère (fig. 1C)

**Protologue** – Compère 1967: 250, fig. 158.

**Type** – *J. Léonard* 3828 (holo-).

**Collector, number and date** – *J. Léonard* 3828 (5 Jan. 1965).

**Locality** – Libya, Oasis of Koufra, El Giof, Goudouie, 24°12'N 23°18'E.

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