

Fig. 187. *Stenopterobia* spp. **A-F.** LM, living cells. **A-B.** *Stenopterobia* sp. valve views. **C.** *Stenopterobia* sp. girdle view. **D-E.** *S. delicatissima* (F.W. Lewis) Brébisson ex Van Heurck, valve views. **F.** *S. delicatissima*, girdle view.
Scale bars = 10 µm (A-F).

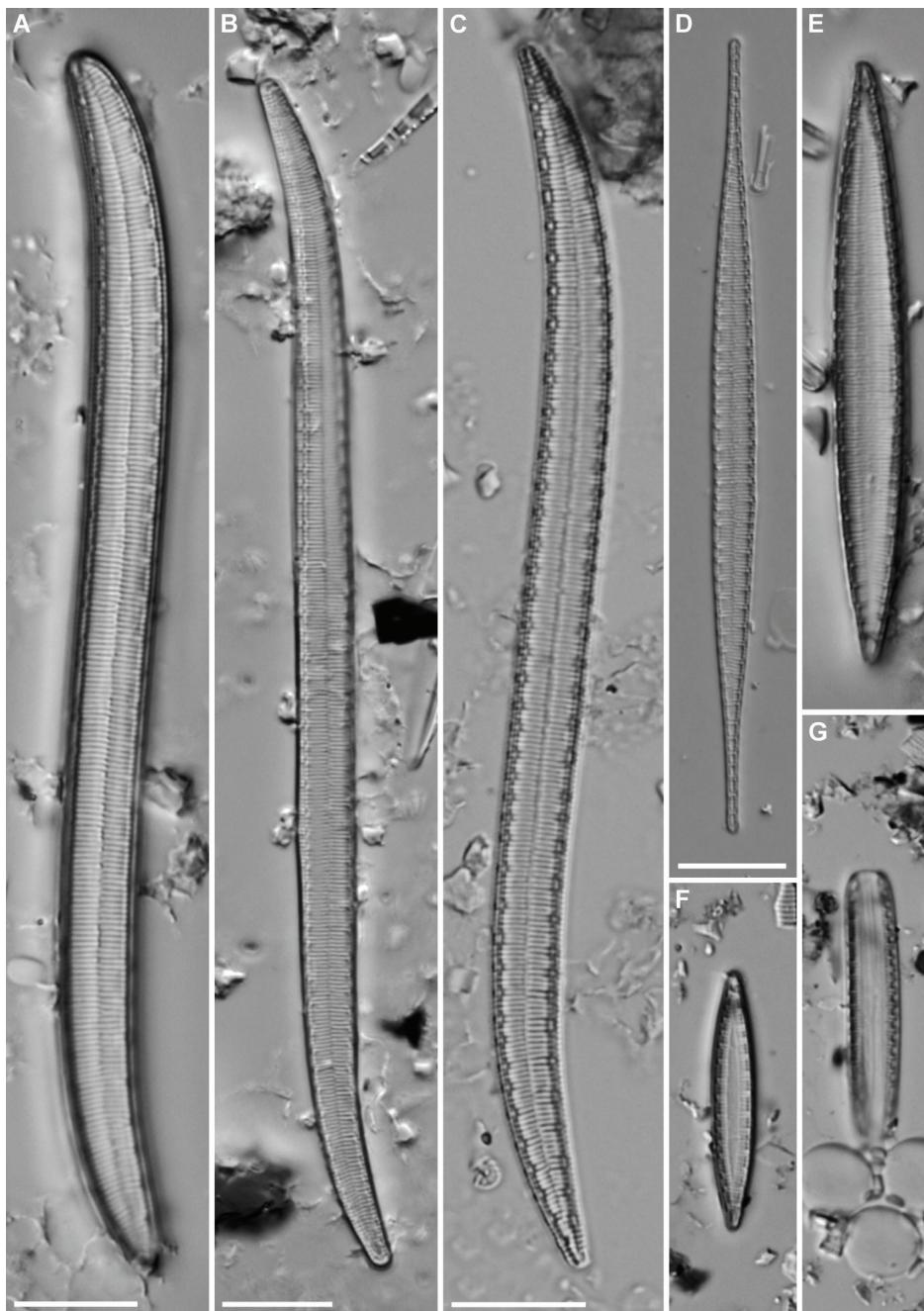


Fig. 188. *Stenopterobia* spp. **A-G.** LM, cleaned valves. **A-C.** *Stenopterobia* spp., valve views. **D.** *S. delicatissima*, valve view. **E-F.** *Stenopterobia* spp., valve views.

G. *Stenopterobia* sp., girdle view.

Scale bars = 10 µm (A-G).

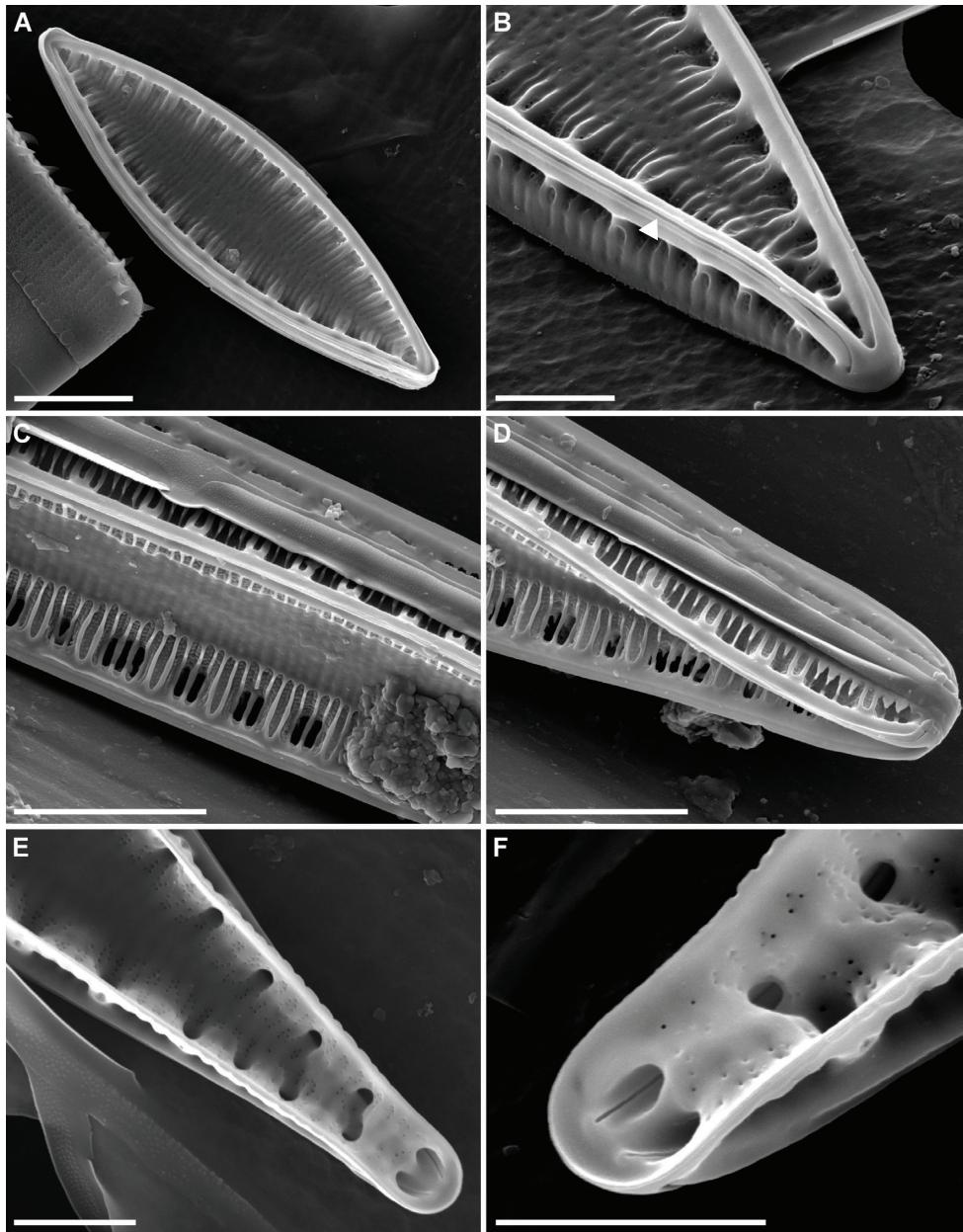


Fig. 189. *Stenopterobia* spp. **A-F.** SEM. **A-B.** *S. delicatissima*, external view of valves, note the raphe keel (arrow - B). **C-D.** *Stenopterobia* sp., detail of valve mantle and girdle bands. **E-F.** *S. delicatissima*, internal view of valves, detail of apices and terminal raphe endings..
Scale bars = 5 µm (A, C-D) 2 µm (B, E-F).

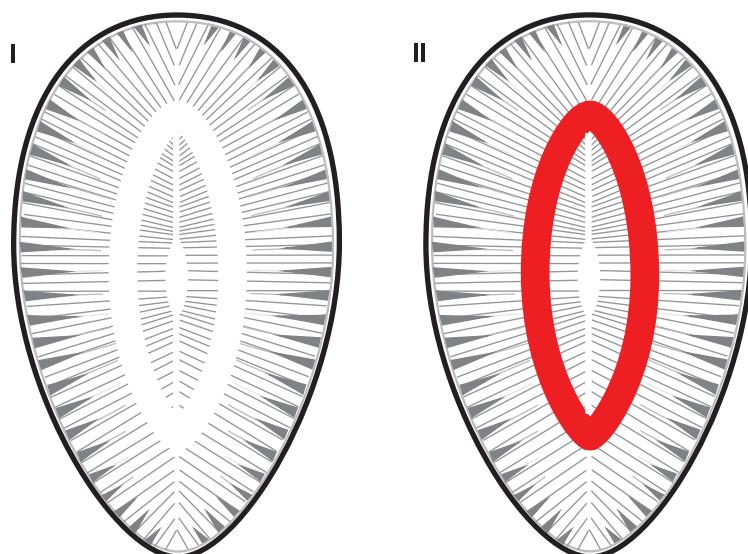
***Surirella* Turpin 1828**Type species: *Surirella striatula* Turpin

Characteristics – Cells **isopolar** or **heteropolar, biraphid**, sometimes constricted mid-valve. Striae fine, parallel to radiate composed of one or several rows of small round areolae which are not discernable under LM (Fig. 191). **Transapical valve undulations** (Fig. 191) cross the valve face, interrupted by the axial area which is variable in width (Fig. 191). Raphe runs around the whole circumference of the valve face, interrupted at the foot pole (Fig. 192: D). Raphe in a canal on both margins which may be raised on a keel above the valve face (Fig. 192: A-B, E-F) forming a wing, **fenestrae** may be present. Valve face may have small scattered spines (Fig. 191: B), granules (Fig. 192: E) or other siliceous structures. Some species have one to several large spines in the axial area (Fig. 192: A).

Plastid structure – Cells with one large lobed plastid divided into 2 plates, one against each valve connected by a very narrow isthmus near one pole (Fig. 190).

Identification of species – Species can be identified by cell size, cell shape, shape of the apices, structure and density of the costae, presence and structure of spines, structure of the axial area, as well as structure of the wings.

Ecology – Cells solitary, free living and highly motile. Found in the benthos and plankton of oligotrophic to eutrophic waters in low to high conductivities.



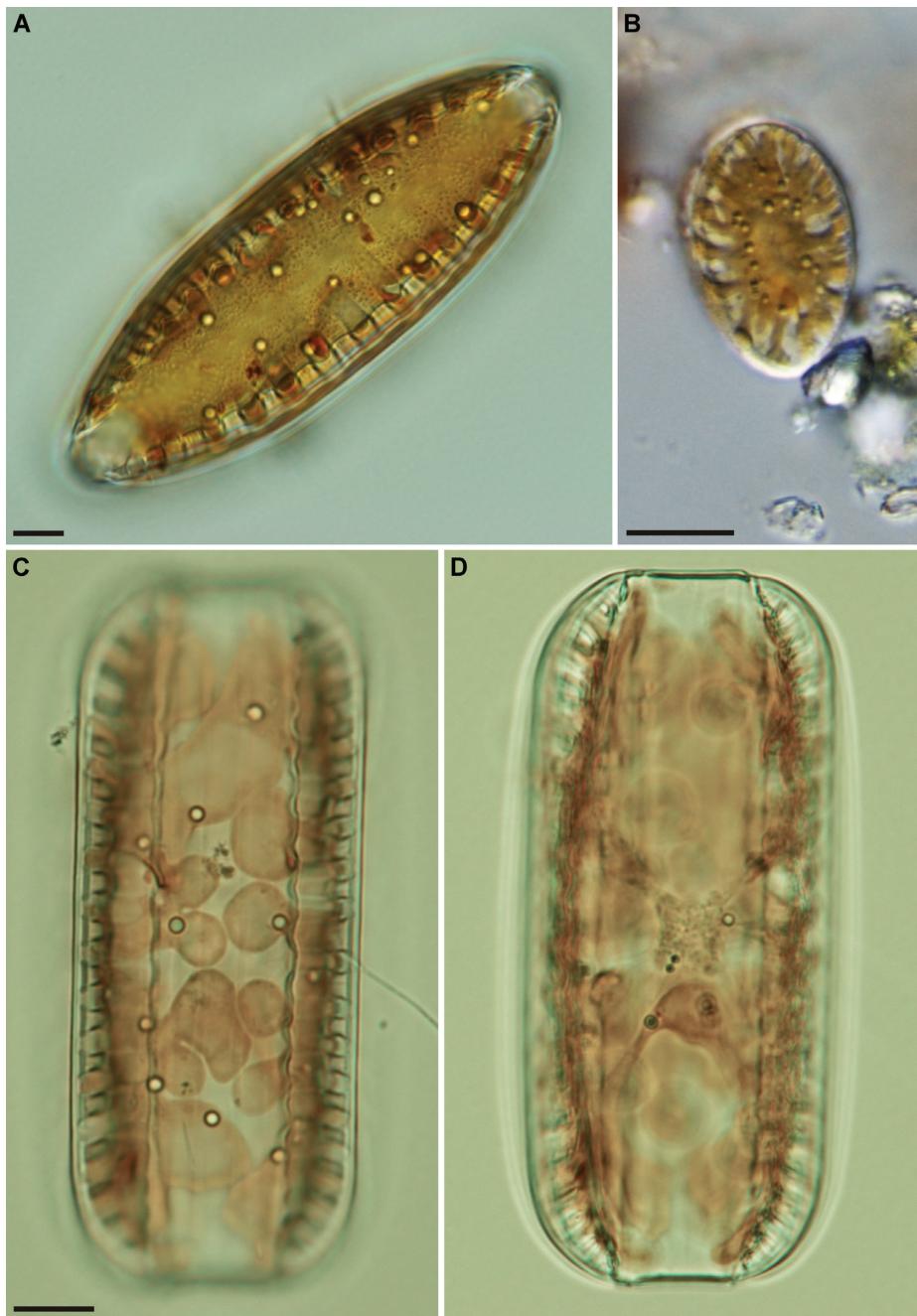


Fig. 190. *Surirella* spp. **A-F.** LM, living cells. **A.** *Surirella* sp., valve view. **B.** *S. brebissonii* Krammer & Lange-Bertalot, valve view. **C-D.** *Surirella* sp., girdle view of the same cell taken at different foci.

Scale bars = 10 µm (A-F).

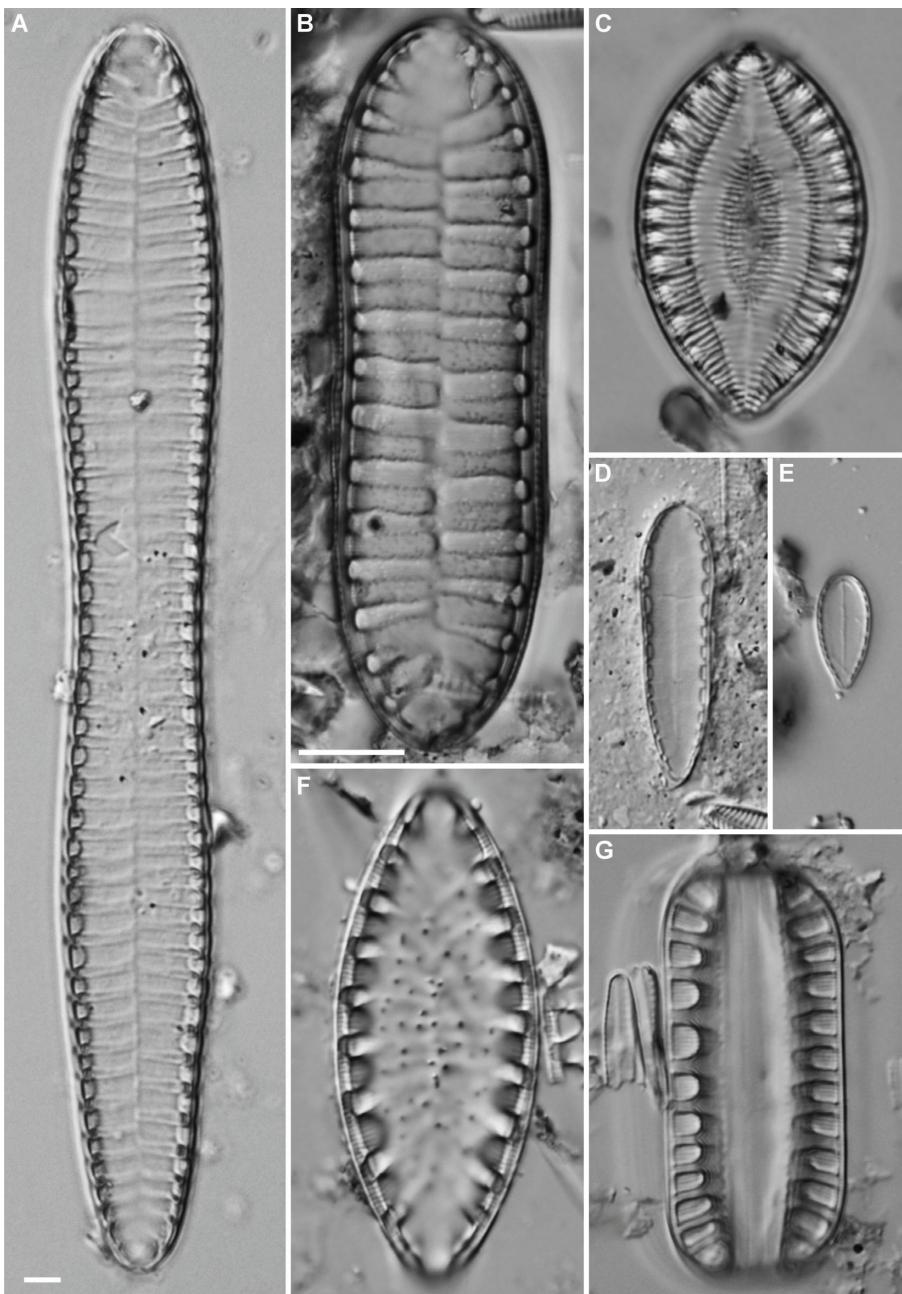


Fig. 191. *Surirella* spp. **A-G.** LM, cleaned valves. **A-F.** Valve views.
B. *S. ebalensis* Cocquyt & J.C. Taylor. **C.** *S. brebissonii*. **D.** *S. congolensis* Cocquyt & J.C. Taylor. **E.** *S. ostentata* Cholnoky. **F.** *S. bifrons* (Ehrenberg) Ehrenberg. **G.** *Surirella* sp., girdle view.
Scale bars = 10 µm (A-G).

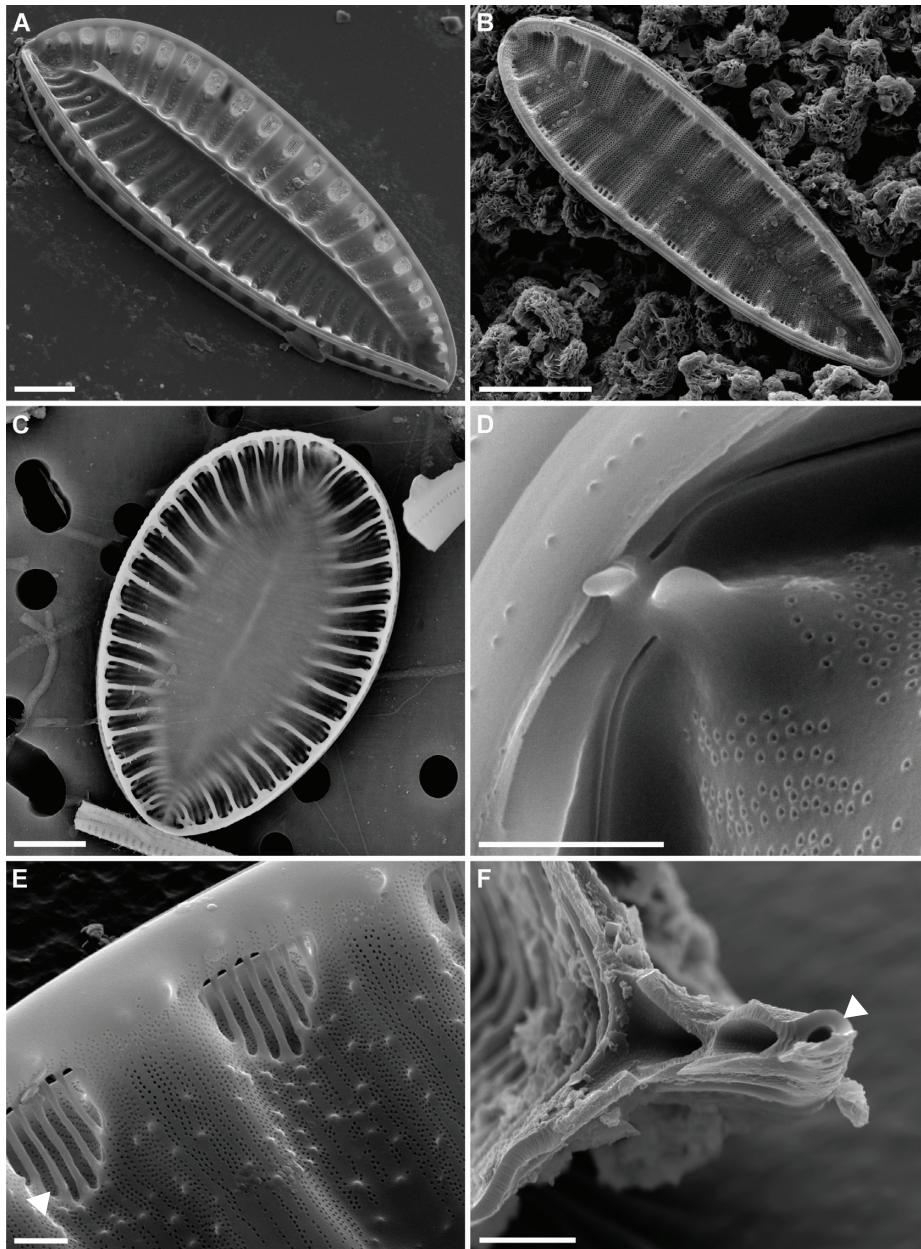


Fig. 192. *Surirella* spp. **A-F.** SEM. **A-B.** External view of valves. **A.** *S. nervosa* (A.W.F. Schmidt) Ant. Mayer **B.** *S. congolensis*. **C-D.** Internal view of valves. **C.** *S. brebissonii*. **D.** *S. ebalensis*, detail of internal raphe endings and helictoglossae at the foot pole. **E.** Detail of open fenestrae with fenestral bars (arrow), note the uniserial striae becoming bi- to triseriate near the keel. **F.** Cross-section of the keel with raphe canal (arrow).

Scale bars = 10 µm (A, C), 5 µm (B), 1 µm (D-F).

13. References

- ARCHIBALD R.E.M. 1972. Diversity in some South African diatom associations and its relation to water quality. *Water Research* 6: 1229-1238.
- BACHMANN H. 1933. Phytoplankton von Victoria Nyanza-, Albert Nyanza und Kiogasee. *Berichte der Schweizerischen botanischen Gesellschaft* 42: 705-717.
- BACHMANN H. 1938. Beiträge zur Kenntnis des Phytoplantons ostafrikanischer Seen. *Schweizerische Zeitschrift für Hydrologie* 8: 119-140.
- BATE G.C., ADAMS J.B. & VAN DER MOLEN J.S. 2002. Diatoms as indicators of water quality in South African river systems. *WRC Report 814/1/02*. Pretoria, Water Research Commission.
- BELLINGER B.J., COCQUYT C. & O'REILLY C.M. 2006. Benthic diatoms as indicators of eutrophication in tropical streams. *Hydrobiologia* 573: 75-87.
- BEYENE A. 2010. Development and validation of ecological water quality monitoring tools for Ethiopian Rivers. PhD thesis, Vrije Universiteit Brussel, Belgium.
- BEYENE A., ADDIS T., FIFKE D., LEGESSE W., KLOOS H. & TRIEST L. 2009. Comparative study of diatoms and macroinvertebrates as indicators of severe water pollution: Case study of the Kebena and Akaki rivers in Addis Ababa, Ethiopia. *Ecological Indicators* 9: 381-392.
- BEYENE A., AWOKE A. & TRIEST L. 2014. Estimation of environmental optima and tolerances of diatoms using multifactor multiplicative modeling. *Ecological Informatics* 19: 53-61.
- BIJKERK R. (ED.) 2014. Handboek Hydrobiologie. Biologisch onderzoek voor de ecologische beoordeling van Nederlandse zoete en brakke oppervlaktewateren. Deels aangepaste versie. Rapport 2014-02, Stichting Toegepast Onderzoek Waterbeheer, Amersfoort.
- CALJON A. 1987. Phytoplankton of a recently landlocked brackish-water lagoon of Lake Tanganyika: a systematic account. *Hydrobiologia* 153: 31-54.
- CALJON A. 1988. Les algues planctoniques d'un marais d'eau douce de la plaine de la Rusizi (Burundi). *Bulletin de la Société royale de Botanique de Belgique* 121: 18-34.
- CHOLNOKY B.J. 1968. Die Ökologie der Diatomeen in Binnengewässern. Lehre, J. Cramer.

- CHOLNOKY B.J. 1970. Bacillariophyceae from the Bangweulu swamps. In: Hydrobiological survey of the Lake Bangweulu Luapula river system. Bruxelles, Cercle Hydobiologique de Bruxelles.
- COCQUYT C. 1998. Diatoms from the northern basin of Lake Tanganyika. *Bibliotheca Diatomologica* 39: 1-276 pp.
- COCQUYT C. 2006. Lacustrine and riverine algal biodiversity in the African Great Rift Area. In: De Dapper M. & de Lame M. (eds.), Africa's Great Rift: Diversity and Unity. Proceedings of the Internal Conference, Brussels, 29–30 September 2005. *The Royal Academy of Overseas Sciences and The Royal Museum for Central Africa*: 59-71.
- COCQUYT C., VYVERMAN W. & COMPÈRE P. 1993. A check-list of the algal flora of the East African Great Lakes (Malawi, Tanganyika and Victoria). *Scripta Botanica Belgica* 8: 56 pp.
- COMPÈRE P. 1989. *Stauroneis zairensis* sp. nov. d'un étang de pisciculture à Kinshasa, Zaïre. *Diatom Research* 4: 217-225.
- COMPÈRE P. 1995. *Gomphonema zairensis* sp. nov. from the Tshopo waterfalls (Kisangani, Zaïre). *Diatom Research* 10: 31-37.
- CRONBERG G. 1997. Phytoplankton in Lake Kariba 1986-1990. In: Moreau J. (ed.) Advances in the ecology of Lake Kariba. University of Zimbabwe Publications, Harare, Zimbabwe 3: 66-101.
- DICKIE G. 1880. Notes on algae from Lake Nyasa, East Africa. *Journal of the Linnean Society, Botany* 17: 281-283.
- GASSE F. 1986. East African diatoms – Taxonomy, ecological distribution. *Bibliotheca Diatomologica* 11: 1-202 + 44 pls.
- GOLAMA S. K. A. 1996. Bacillariophycées, Desmidiées et Euglénophycées de la région de Kisangani (Zaïre). *Académie Royale des Sciences d'Outre-Mer. Classe des Sciences naturelles et médicales. Mémoires in-8°, Nouvelle Série* 23(3): 232 pp.
- HANCOCK F.D. 1979. Diatom associations and succession in Lake Kariba, South Central Africa. *Hydrobiologia* 67: 33-50.
- HANCOCK F.D. 1985. Diatom associations in the aufwuchs of inundated trees and underwater leaves of *Salvinia*, drowned Mwenda River, Lake Kariba, Zimbabwe. *Hydrobiologia* 121: 65-76.

- HUBER-PESTALOZZI G. 1942. Das Phytoplankton des Süßwassers: Diatomeen. In: Die Binnengewässer 16(2/2): 367-549. Stuttgart, Schweizerbart'sche Verlag.
- HUSTEDT F. 1949. Süßwasser-Diatomeen. In: Exploration du Parc National Albert - Mission H. Damas (1935-1936), vol. 8: 199 pp + 16 plates Bruxelles, Institut des parcs nationaux du Congo belge.
- KELLY M.G. & WHITTON B.A. 1995. The trophix diatom index: A new index for monitoring eutrophication in rivers. *Journal of Applied Phycology* 7: 433-444.
- KUFFERATH H. 1948. Potamoplancton du fleuve Congo prélevé près de Nouvelle-Anvers. *Bulletin Musée royal d'Histoire naturelle de Belgique* 24 (23): 1-18.
- KUFFERATH H. 1956a. Algues et protistes du fleuve Congo au large de l'île de Mateba. In: Expédition océanographique belge dans les eaux côtières africaines de l'Atlantique Sud (1948-1949). Resultats Scientifiques 5(1): 1-26. Bruxelles, Institut royal des Sciences naturelles de Belgique
- KUFFERATH H. 1956b. Algues et Protistes prélevés au large et dans la crique de Banana. In: Expédition océanographique belge dans les eaux côtières africaines de l'Atlantique Sud (1948-1949). Resultats Scientifiques 5(1): 35-75. Bruxelles, Institut royal des Sciences naturelles de Belgique.
- LUNG'AYIA H.B.O. 2002. Assessment of water quality using diatoms as bio-indicators in catchments of Lake Victoria, Kenya. PhD thesis, Vrije Universiteit Brussel, Belgium.
- MPAWENAYO B. 1996. Les eaux de la plaine de la Rusizi (Burundi): Les milieux, la flore et la végétation algales. *Académie Royale des Sciences d'Outre-Mer. Classe des Sciences naturelles et médicales. Mémoires in-8°, Nouvelle Série* 23(2): 236 pp.
- MÜLLER O. 1897. *Rhopalodia*, ein neues Genus der Bacillariaceen. *Botanische Jahrbücher* 22: 71.
- MÜLLER O. 1903. Bacillariaceen aus dem Nyassalande und einigen benachbarten Gebieten. I. *Botanische Jahrbücher* 34: 9-38.
- MÜLLER O. 1904. Bacillariaceen aus dem Nyassalande und einigen benachbarten Gebieten. II. *Botanische Jahrbücher* 35: 256-301.
- MÜLLER, O. 1905. Bacillariaceen aus dem Nyassalande und einigen benachbarten Gebieten. III. *Botanische Jahrbücher* 36: 137-205.
- MÜLLER O. 1910. Bacillariaceen aus dem Nyassalande und einigen benachbarten Gebieten. IV. *Botanische Jahrbücher* 45: 69-122.

- MUZAVAZI B., NDEBELE-MURISA M.R. & NHIWATIWA T. 2008. A study of the phytoplankton community and primary production in Lake Kariba. Waterinetonline.ihe.nl: 21 pp.
- OSTENFELD C.H. 1908. Phytoplankton aus dem Victoria Nyanza. *Botanische Jahrbücher* 41: 330-350.
- OSTENFELD C.H. 1909. Notes on the phytoplankton of Victoria Nyanza, East Africa. *Bulletin of the Museum of Comparative Zoology, Harvard College* 50(10): 171-181 + 2 pl.
- ROUND F.E., CRAWFORD R.M. & MANN D.G. (1990). The diatoms. Biology & morphology of the genera. Cambridge University Press, Cambridge.
- SCHMIDT A. (ED.) 1847-1959. Atlas der Diatomaceenkunde. Leipzig, O.R. Reisland.
- SCHOEMAN F.R. 1976. Diatom indicator groups in the assessment of water quality in the Jukskei-Crocodile river system (Transvaal, Republic of South Africa). *Journal of the Limnological Society of South Africa* 2: 21-24.
- SCHOEMAN F.R. 1979. Diatoms as indicators of water quality in the upper Hennops River. *Journal of the Limnological Society of South Africa* 5: 73-78.
- SCHRÖDER B. 1911. *Rhizosolenia victoriae* n. sp. *Berichten der Deutschen Botanischen Gesellschaft* 29: 739-743.
- STOWA 2014. Handboek Hydrobiologie. Hydrobiologische onderzoeksmethoden in samenhang met voor Nederland relevante beoordelingssystemen. Stichting Toegepast Onderzoek Waterbeheer, Amersfoort, Nederland. (www.stowa.nl/handboekhydrobiologie)
- TAYLOR J.C 2004. The application of diatom-based pollution indices in the Vaal catchment. Unpublished Master thesis, Potchefstroom Campus of the North-West University, Potchefstroom, South Africa.
- TAYLOR J.C. & COCQUYT C. Diatom research in southern and central Africa: Historical perspectives and current activities. *Mededelingen van de Zittingen van de Koninklijke Academie voor Overzeese Wetenschappen*: in press.
- TAYLOR J.C., JANSE VAN VUUREN M.S. & PIETERSE A.J.H. 2007a. The application and testing of diatom-based indices in the Vaal and Wilge rivers, South Africa. *Water SA* 33: 51-60.
- TAYLOR J.C., PRYGIEL J., VOSLOO A., DE LA REY P.A. & VAN RENSBURG L. 2007b. Can diatom based pollution indices be used for bio-monitoring in South

- Africa? A case study of the Crocodile West and Marico water management area. *Hydrobiologia* 592: 455-464.
- TAYLOR J.C., HARDING W.R. & ARCHIBALD C.G.M. 2007c. *A methods manual for the collection, preparation and analysis of diatom samples*. WRC Report TT 281/07. Water Research Commission, Petrolia, South Africa.
- THOMASSON K. 1925. Methoden zur Untersuchung der Mikrophyton der limnischen Litoral und Profundalzone. In: ABDERHALDEN, E. (ed.), *Handbuch der Biologischen Arbeitsmethoden*, Abt. IX, Teil 2, 1. Berlin.
- THOMASSON K. 1965. Notes on algal vegetation of Lake Kariba. *Nova Actae Regiae Societatis Scientiarum Upsaliensis* Ser. 4, 19: 1-34.
- UTETE B., MUTASA L., NDHLOVU N. & TENDAUPENYUT I.H. 2013. Impact of aquaculture on water quality in Lake Kariba, Zimbabwe. *International Journal of Aquaculture* 3 (4): 11-16 (doi: 10.5376/ija.2013.03.0004)
- VAN DAM H., MERTENS A. & SINKELDAM J. 1994. A coded checklist and ecological indicator values of freshwater diatoms from the Netherlands. *Netherlands Journal of Aquatic Ecology* 28: 177-133.
- VAN MEEL L. 1954. Le phytoplancton. In: *Résultats scientifiques de l'exploration hydrobiologique du lac Tanganyika (1946-1947)* 4(1) A : 681 pp, B. 76 pl. Bruxelles, Institut royal des Sciences naturelles de Belgique.
- VIRIEUX J. 1913. Plancton du lac Victoria Nyanza. In: *Voyage de Ch. Alluaud et R. Jeannel en Afrique Orientale (1911-1912)*. Résultats scientifiques: 20 pp. Paris.
- WEST G.S. 1907. Report on the freshwater algae, including phytoplankton of the Third Tanganyika Expedition, conducted by Dr. W.A. Cunningham 1904-1905. *Journal of the Linnean Society of London, Botany* 38: 81-197.
- WHITTAKER R.H. 1969. New concepts of kingdoms of organisms. *Science* 163: 150-160.
- WOESE C.R. & FOX G.E. 1977. Phylogenetic structure of the prokaryotic domain: The primary kingdoms. *Proceedings of the National Academy of Sciences of the United States of America* 74: 5088-5090.
- WOESE C.R. , KANDLER O. & WHEELIS M.L. 1990. Toward a natural system of organisms: Proposal for the domains Archae, Bacteria and Eucarya. *Proceedings of the National Academy of Sciences of the United States of America* 87: 4576-4579.

WOŁOSZYNSKA J. 1914. Zellpflanzen Ostafrikas. V. Studien über das Phytoplankton des Viktoriasees. *Hedwigia* 55: 184-223 + 8pl.

ZANON V. 1938. Diatomee della regione del Kivu (Congo Belga). *Commentationes Pontificia Academia Scientiarum* 2 (14): 535-668.

14. Acknowledgements

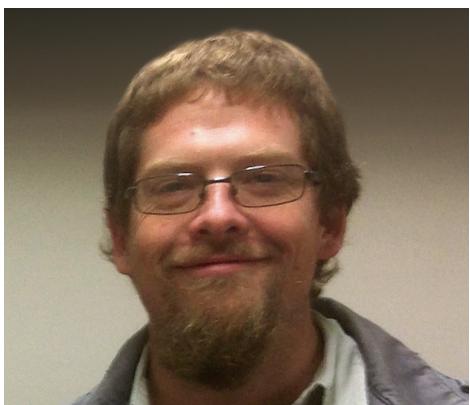
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16. Taxonomic index

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