

RHABDOSPHAERA HAECKEL, 1894 (COCCOLITHOPHORIDA):
PROPOSED VALIDATION UNDER THE PLENARY POWERS AND
DESIGNATION OF A LECTOTYPE FOR *COCCOLITHUS OCEANICUS*
SCHWARZ, 1894. Z.N.(S.) 1658

By Trygve Braarud (*Universitetet I Oslo, Blindern, Norway*)
M. N. Bramlette (*Scripps Institution of Oceanography, La Jolla,
California, U.S.A.*)

Georges Deflandre (*École Pratique des Hautes Études, Paris, France*)

Erwin Kamptner (*Naturhistorisches Museum, Wien, Austria*)

Alfred R. Loeblich, Jr. (*California Research Corp., La Habra,
California, U.S.A.*)

Erlend Martini (*Johann Wolfgang Goethe-Universität,
Frankfurt a.M., Germany*)

Helen Tappan (*University of California, Los Angeles, California, U.S.A.*)

1. The genus *Coccosphaera* was proposed by Wallich, 1877, p. 348, with two included species, *C. pelagica* and *C. carteri*, neither designated as type. Loeblich and Tappan (1963, p. 192) designated *C. pelagica* Wallich as type-species of *Coccosphaera*. In 1894, Haeckel (p. 111) used the name *Coccosphaera* for a different type of coccolith (a simple imperforate disk), and proposed the name *Cyathosphaera* for forms such as those included by Wallich in *Coccosphaera* (two imperforate disks connected by a short tube). Hay and Towe, 1962, p. 507, designated *Coccosphaera pelagica* Wallich as the type-species of *Cyathosphaera* Haeckel, 1894.

2. Also in 1894 (p. 346) Schwarz proposed "for all the forms hitherto described, recent and fossil, the one name *Coccolithus oceanicus*, mihi." He illustrated several specimens, of which two were referred to under this name, without citing the source of his material except to state that he had found abundant coccoliths in the Lias of the Dorset coast, but also used material from the Chalk of Taplow and the Gault of Folkestone. However, no type-specimen was designated by Schwarz nor by later workers for *C. oceanicus*. The recognition of this genus hinges upon the nature of the type-specimens, but as the source of those illustrated by Schwarz is questionable, selection of one of these as lectotype would leave the genus in doubt. As originally defined, all previously described coccolithophorids were expressly included, hence any of these is equally available for designation as type. Hence we here designate the specimen figured as *C. pelagica* by Wallich, 1877, pl. 17, fig. 1 as lectotype for *C. oceanicus* Schwarz, 1894.

3. The earliest generic name, *Coccosphaera* Wallich, 1877, was a junior homonym of *Coccosphaera* Perty, 1852, and Lohmann, 1902, p. 93, 136, 137, proposed the new name *Coccolithophora* for *Coccosphaera* Wallich, but this name is a junior synonym of both *Coccolithus* Schwarz, 1894, and *Cyathosphaera* Haeckel, 1894. The generic name *Cyathosphaera* Haeckel, 1894, and *Coccolithus* Schwarz, 1894, had equal status of priority (both November, 1894) and are

isotypic, their type-species both recognized on the basis of *Coccosphaera pelagica* Wallich, 1877. The first reviser to consider their relative status was Poche, 1913, p. 157, who noted that *Coccolithophora* Lohmann, 1902, p. 93, 136, 137 (proposed as a replacement name for *Coccosphaera* Wallich, 1877, *non* Perty, 1852) was itself a junior synonym of both *Coccolithus* Schwarz and *Cyathosphaera* Haeckel. Poche stated that as first reviser he recognized the name *Coccolithus* Schwarz for this taxon and based upon it the family COCCOLITHIDAE. *Coccolithus* thus has priority over *Cyathosphaera*, and on this basis Kamptner (1928, p. 23) and others have used *Coccolithus* for the generic taxon in question [Code Art. 23(e), 24(a)(i)].

4. Huxley (1868, p. 206) described and figured *Cyatholithus*, without including any named species. Loeblich and Tappan (1963, p. 192) designated *Coccosphaera pelagica* Wallich, 1877, as the type-species of *Cyatholithus*, thus making it a senior isotypic synonym of *Coccosphaera* Wallich, 1877, *Cyathosphaera* Haeckel, 1877, and *Coccolithophora* Lohmann, 1902. However, during nearly a century since its original proposal, the name *Cyatholithus* has not been used in combination with any specific name, hence [Code Art. 23(b)(ii)] should be regarded as a *nomen oblitum*. The next available name for this taxon (i.e. *Coccolithus*) has to date (early 1964) been used in 83 different specific combinations for the coccolithophorids, and in the interests of nomenclatural stability should be preserved.

5. Coccolithophorids were also found whose platelets have elongate tubular extensions. These were termed rhabdoliths ("Rhabdolithen") by Schmidt, and the generic name *Rhabdolithes* was proposed (Schmidt, 1870, p. 680) although no species were named. Voeltzkow later (1902, p. 493) placed two species in the genus, *Rhabdolithes tubifer* [formerly *Rhabdosphaera tubifer* Murray and Blackman, 1898] and *R. claviger* [formerly *Rhabdosphaera claviger* Murray and Blackman, 1898]. The latter, *Rhabdolithes claviger* (Murray and Blackman) Voeltzkow was designated as type-species of *Rhabdolithes* Schmidt by Loeblich and Tappan, 1963, p. 193.

6. *Rhabdosphaera* Haeckel, 1894 (p. 111), was also described for forms with rhabdolith skeletal elements, but without original included species, the first species to be there placed being *Rhabdosphaera tubifer* Murray and Blackman, 1898 (p. 438, 439, pl. 15, figs. 8-10) and *R. claviger* Murray and Blackman, 1898 (p. 438, 439, pl. 15, figs. 13, 14). Ostenfeld (1900, p. 200) removed *R. tubifer* to the genus *Discosphaera* Haeckel, 1894, leaving only *R. claviger* then remaining in *Rhabdosphaera*. *Rhabdosphaera claviger* Murray and Blackman, 1898, was cited as type-species by Hay and Towe, 1962, p. 504. The prior type-designation by Vekshina, 1959, p. 74, of *Rhabdosphaera elliptica* Vekshina, 1959, as type-species of *Rhabdosphaera* was invalid, as this species was not among the first included species [Code Art. 69(a)(ii)]. *Rhabdosphaera* Haeckel, 1894, is thus a junior isotypic synonym of *Rhabdolithes* Schmidt, 1870.

7. During the nearly 100 years since *Rhabdolithes* was originally proposed, only two species have been there referred (solely by Voeltzkow, 1902, as mentioned above), and none have been there placed, nor has the generic name been used (other than the citation in Neave, 1940, p. 27, where it was erroneously credited to Voeltzkow) for over 6 decades, hence *Rhabdolithes* should be regarded

as a *nomen oblitum* [Code Art. 23(b)(ii)]. In contrast, 42 specific combinations have been used with *Rhabdosphaera*. The similarity in spelling and pronunciation of *Rhabdolithes* Schmidt, 1870, and *Rhabdolithus* Kamptner ex Deflandre in Grassé, 1952, allows for additional nomenclatural confusion if this taxon were to replace *Rhabdosphaera*.

8. In the interests of nomenclatural stability, and in order to maintain current usage at the generic level and lessen the possibility of confusion of both generic and specific taxa, the International Commission on Zoological Nomenclature is requested:

- (1) to use its plenary powers to suppress the undermentioned generic names for the purposes of the Law of Priority but not for those of the Law of Homonymy: *Cyatholithus* Huxley, 1868 and *Rhabdolithes* Schmidt, 1870;
- (2) to place the undermentioned generic names on the Official List of Generic Names in Zoology:
 - (a) *Rhabdosphaera* Haeckel, 1894 (gender: feminine) (type-species, by subsequent designation by Hay and Towe, 1962, p. 504, *Rhabdosphaera claviger* Murray and Blackman, 1898);
 - (b) *Coccolithus* Schwarz, 1894 (gender: masculine) (type-species by original monotypy, *Coccolithus oceanicus* Schwarz, 1894 [= *Coccosphaera pelagica* Wallich, 1877]);
- (3) to place the undermentioned specific names on the Official List of Specific Names in Zoology:
 - (a) *claviger* Murray and Blackman, 1898, as published in the combination *Rhabdosphaera claviger* (specific name of type-species of *Rhabdosphaera* Haeckel, 1894);
 - (b) *pelagica* Wallich, 1877, as published in the combination *Coccosphaera pelagica*, [a senior synonym of *oceanicus* Schwarz, 1894, as published in the combination *Coccolithus oceanicus* and defined by the lectotype designated in the present application];
- (4) to place the undermentioned generic names on the Official Index of Rejected and Invalid Generic Names in Zoology:
Cyatholithus Huxley, 1868 and *Rhabdolithes* Schmidt, 1870, as suppressed under the plenary powers under (1) above; and
- (5) to place the family group name COCCOLITHIDAE Poche, 1913, (type-genus *Coccolithus* Schwarz, 1894), on the Official List of Family-Group Names in Zoology.

REFERENCES

- DEFLANDRE, GEORGES. 1952. Classe des Coccolithophoridés in Grassé, P.P., *Traité de zoologie, anatomie, systématique, biologie. Tome I, fasc. I, Phylogénie, protozoaires, généralités, flagellés*. Masson et Cie, Paris, pp. 439–470.
- HAECKEL, ERNST. 1894. *Systematische Phylogenie der Protisten und Pflanzen*. Georg Reimer, Berlin, v. 1, pp. 1–400.
- HAY, W. W. and TOWE, K. M. 1962. Electron microscope examination of some coccoliths from Donzacq (France), *Eclogae Geol. Helvet.*, v. 55, no. 2, pp. 497–517, pls. 1–10.
- HUXLEY, T. H. 1868. On some organisms living at great depths in the North Atlantic Ocean, *Roy. Micros. Soc., Trans.*, n. ser., v. 15, pp. 203–212, pl. 4.

- KAMPTNER, ERWIN. 1928. Über das System und die Phylogenie der Kalkflagellten, *Arch. Protistenk.*, v. 64, p. 19-43.
- LOEBLICH, A. R., JR. and TAPPAN, H. 1963. Type fixation and validation of certain calcareous nannoplankton genera, *Biol. Soc. Washington, Proc.*, v. 76, pp. 191-196.
- LOHMANN, H. 1902. Die Coccolithophoridae, eine Monographie der Coccolithen bildenden Flagellaten, zugleich ein Beitrag zur Kenntnis des Mittelmeerauftriebs, *Arch. Protistensk.*, v. 1, pp. 89-165, pls. 4-6.
- MURRAY, GEORGE, and BLACKMAN, V. H. 1898. On the nature of the coccospheres and rhabdospheres, *Roy. Soc. London, Philos. Trans.*, ser. B. Biol. ser., v. 190, pp. 427-441, pls. 15, 16.
- NEAVE, S. A. 1940. *Nomenclator zoologicus*. Zoological Society London, v. 4, pp. 1-758.
- OSTENFELD, C. H. 1900. Über *Coccosphaera*, *Zool. Anz.*, v. 23, no. 612, pp. 198-200.
- POCHE, FRANZ. 1913. Das System der Protozoa, *Arch. Protistenk.*, v. 30, pp. 125-321.
- SCHMIDT, O. 1870. Über Coccolithen und Rhabdolithen, *K. Akad. Wiss. Wien, Math-Nat. Kl., Sitzungsber.*, Abt. 1, v. 62, Heft 10, pp. 669-682, pls. 1, 2.
- SCHWARZ, E. H. L. 1894. Coccoliths, *Ann. Mag. nat. Hist.*, ser. 6, v. 14, pp. 341-346.
- VEKSHINA, V. N. 1959. Kokkolitoforidy maastrikskikh otlozheniy zapadno-sibirskoy nizmennosti [Coccolithophoridae of the Maastrichtian deposits of the west Siberian lowland], *Sibirskogo Nauchno-Issledov. Inst. Geol., Geofiz. i Mineral. Syr'ya (SNIIGGIMS), Trudy*, vyp. 2, pp. 56-77, pls. 1, 2.
- VOELTZKOW, A. 1902. Über Coccolithen und Rhabdolithen nebst Bemerkungen über den Aufbau und die Entstehung der Aldabra-Inseln, *Senckenb. naturforsch. Gesell., Abh.*, v. 26, pp. 467-537.
- WALLICH, G. C. 1877. Observations on the coccosphere, *Ann. Mag. nat. Hist.*, ser. 4, v. 19, pp. 342-350, pl. 17.





<https://www.biodiversitylibrary.org/>

The Bulletin of zoological nomenclature

London, International Trust for Zoological Nomenclature,
<https://www.biodiversitylibrary.org/bibliography/51603>

v.21:pt.1-6 (1964:Mar.-Dec.):

<https://www.biodiversitylibrary.org/item/44463>

Article/Chapter Title: Braarud 1964

Author(s): Braarud

Subject(s): Coccolithophores

Page(s): Page 397, Page 398, Page 399, Page 400

Holding Institution: Natural History Museum Library, London

Sponsored by: Natural History Museum Library, London

Generated 10 July 2022 7:07 AM

<https://www.biodiversitylibrary.org/pdf4/1487876i00044463.pdf>