



An illustrated catalogue and revised classification of Paleozoic radiolarian genera

Martial Caridroit, Taniel Danelian, Luis O'Dogherty, Jessie Cuvelier,
Jonathan C Aitchison, Lauren Pouille, Paula Noble, Paulian Dumitrica,
Noritoshi Suzuki, Kiyoko Kuwahara, et al.

► To cite this version:

Martial Caridroit, Taniel Danelian, Luis O'Dogherty, Jessie Cuvelier, Jonathan C Aitchison, et al.. An illustrated catalogue and revised classification of Paleozoic radiolarian genera. *Geodiversitas*, 2017, 39 (363-417), 10.5252/g2017n3a3 . hal-02487217

HAL Id: hal-02487217

<https://hal.science/hal-02487217>

Submitted on 24 Feb 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

An illustrated catalogue and revised classification of Paleozoic radiolarian genera

Martial CARIDROIT
Taniel DANELIAN

Univ. Lille, CNRS, UMR 8198 – Évo-Éco-Paléo, F-59000 Lille (France)
martial.caridroit@univ-lille1.fr/taniel.danelian@univ-lille1.fr

Luis O'DOGHERTY

Facultad de Ciencias del Mar, Universidad de Cadiz, E-11510 Puerto Real (Spain)
luis.odogherty@uca.es

Jessie CUVELIER

Univ. Lille, CNRS, UMR 8198 – Évo-Éco-Paléo, F-59000 Lille (France)
jessie.cuvelier@univ-lille1.fr

Jonathan C. AITCHISON

School of Earth and Environmental Sciences, University of Queensland, St Lucia, Qld 4072 (Australia)
jona@uq.edu.au

Lauren POUILLE

Univ. Lille, CNRS, UMR 8198 – Évo-Éco-Paléo, F-59000 Lille (France)
elwing_59@hotmail.com

Paula NOBLE

University of Nevada, Department of Geological Sciences and Engineering, Reno, Nevada 89557-0138 (United States)
and Univ. Lille, CNRS, UMR 8198 – Évo-Éco-Paléo, F-59000 Lille (France)
noblepj@unr.edu

Paulian DUMITRICA

Dennigkofenweg 33, CH-3073 Gümliigen (Switzerland)
paulian.dumitrica@unil.ch

Noritoshi SUZUKI

Department of Earth Science, Graduate School of Science,
Tohoku University, 6-3 Aoba, Aramaki, Aoba-ku, Sendai 980-8578 (Japan)
norinori@m.tohoku.ac.jp

Kiyoko KUWAHARA

3-4-22 Rokujo, Nara 630-8043 (Japan)
permorads@kcn.jp

Jörg MALETZ

Institut für Geologische Wissenschaften, Freie Universität Berlin, Haus C, Raum 005, 12249 Berlin (Germany)
yorge@zedat.fu-berlin.de

Qinglai FENG

Laboratory of Geological and Mineral resources, China University of Geosciences, Wuhan, 430074 (China)
qinglaifeng@cug.edu.cn

Published on 29 September 2017

[urn:lsid:zoobank.org:pub:7CC17365-FC09-4D0D-9953-E47B333B6430](https://doi.org/10.21203/rs.3.rs-17365-FC09-4D0D-9953-E47B333B6430)

Caridroit M., Danelian T., O'Dogherty L., Cuvelier J., Aitchison J. C., Pouille L., Noble P., Dumitrica P., Suzuki N., Kuwahara K., Maletz J. & Feng Q. 2017. — An illustrated catalogue and revised classification of Paleozoic radiolarian genera, in Danelian T., Caridroit M., Noble P. & Aitchison J. C. (eds), Catalogue of Paleozoic radiolarian genera. *Geodiversitas* 39 (3): 363-417. <https://doi.org/10.5252/g2017n3a3>

KEY WORDS

Radiolaria,
Paleozoic,
catalogue,
taxonomic revision,
type species.

ABSTRACT

The purpose of this paper is to present a revised classification of Paleozoic radiolarians at the genus level in the form of a series of plates displaying the images of the type species of each genus. These photos are supplemented by an indication of the status of the genus decided by an international team of specialists in this fossil group (Chapter “The catalogue”). The catalogue itself is presented by orders and families. It is also possible to find a genus using the alphabetical list or the list according to the classification (Appendices 1 and 2). After some remarks that illustrate the complex task undertaken to reach a consensus, a “guide for users” is proposed.

RÉSUMÉ

Catalogue illustré et classification révisée des genres de radiolaires paléozoïques.

Le but du présent document est de présenter une classification révisée des radiolaires du Paléozoïque à l'échelle des genres, sous la forme d'une série de planches présentant les images des espèces types. Ces images sont complétées par l'indication du statut du genre décidé par une équipe internationale de spécialistes de ce groupe fossile (chapitre « The catalogue »). Le catalogue est organisé par ordres et par familles, mais il est également possible de trouver un genre en utilisant la liste alphabétique ou celle suivant la classification (Annexes 1 et 2). Après quelques remarques montrant le travail complexe effectué pour aboutir à un consensus, un « guide pour les utilisateurs » est proposé.

MOTS CLÉS

Radiolaria,
Paléozoïque,
catalogue,
révision taxonomique,
espèces types.

INTRODUCTION

As for many other microorganisms, the study of radiolarians started during the end of the 19th century. However, we had to wait until the 1950s for modern studies, which have been possible thanks to improvements in microscopy (Deflandre 1952; Foreman 1963; Holdsworth 1966). The use of the Paleozoic radiolarian skeletons as biostratigraphic tools started during the 1980s particularly in Japan (e.g. Ishiga & Imoto 1980; Takemura & Nakaseko 1981; Caridroit & De Wever 1984; see also Danelian *et al.* 2017 in this issue). The new biostratigraphic age constraints provided by radiolarians were foundational in reshaping tectonic reinterpretations of complex orogenic belts around the world.

In Japan and in Asia radiolarian skeletons have been mainly extracted from siliceous distal sedimentary rocks (radiolarites s.l.). Fossil preservation was commonly medium to poor and the extraction methods using HF destroyed some additional information. From limestones, radiolarian skeletons, where preserved, may be commonly well- to very well-preserved and the extraction methods have no destructive effect on their siliceous skeletons, given that the acids used are typically acetic or hydrochloric acid. Likewise, radiolarians recovered from phosphatic concretions may be exquisitely preserved and offer a myriad of characters and details that are missing in those specimens extracted from radiolarites.

The differential preservation of fossil radiolarians in limestone has a direct influence on taxonomic interpretation and, as such, in some of the challenges that we faced while preparing this catalogue. Taxa from radiolarites have been defined on the basis of simple characteristics, which for radiolarians

described from proximal deposits, taxonomic discrimination is sometimes based on minute details. In some instances, radiolarian skeletons are fragmentary and not all features are preserved. The significance of fragmentary type material cannot be evaluated if more complete specimens are not found or observed. This has occasionally resulted in the erroneous establishment of new taxa and increased the number of synonyms (e.g. *Follicucullus* sp. B which is the apical part of *Follicucullus monacanthus*, in Ishiga *et al.* 1982b).

Radiolaria are known from the Cambrian onwards (Won & Below 1999; Obut & Iwata 2000; Pouille *et al.* 2011) and remain an important component of the oceanic plankton. Unfortunately, it is currently impossible to culture radiolarians and very difficult to maintain them alive in laboratory conditions. Their reproduction, ontogeny and possible dimorphisms are aspects that are very poorly understood. Thus, taxonomists have to rely on observations and interpret data based on the fossil record.

As for many other microorganisms, observation techniques improved greatly since the end of the 19th century with the advent of scanning electron microscopy. Naturally, the taxonomic approaches for the classification of radiolarians took advantage of this new instrumentation. Comparing simple drawings and thin section photos from older taxonomic works with pictures of high definition obtained using scanning electron microscopy may be an important source of the lack of clarity in applying older taxonomic concepts.

The totality of preservational and observational challenges in describing radiolarians, combined with a wide array of radiolarists with different styles and approaches to taxonomy has necessitated this comprehensive review of radiolarian genera

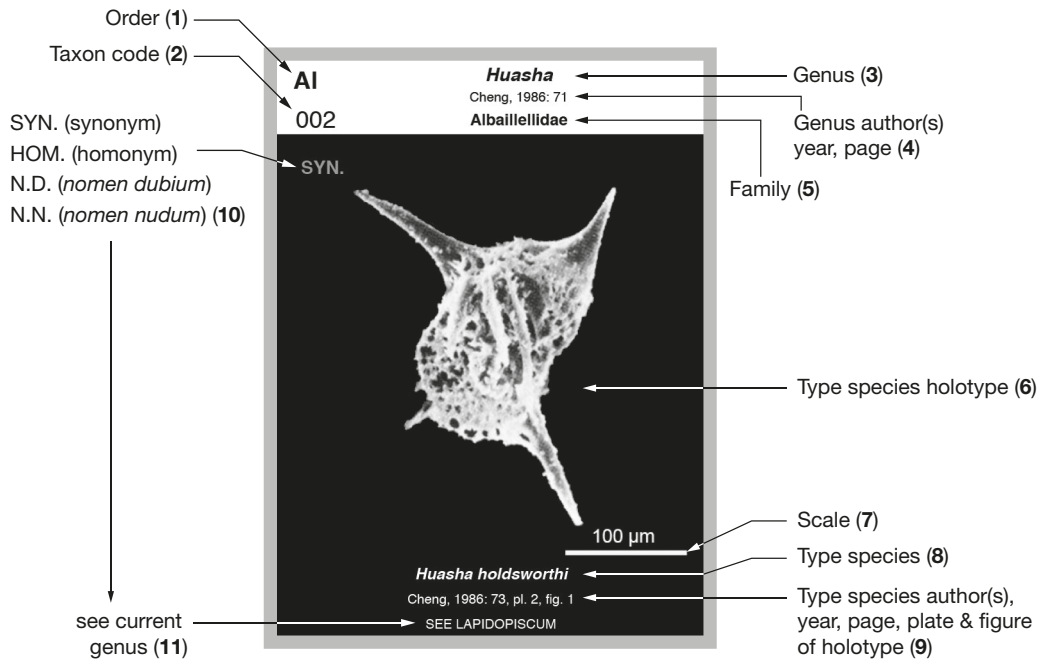


FIG. 1. — Key captions for images in the catalogue of Paleozoic radiolarian genera. 1, Order: Albalilellaria (Al), Archaeospicularia (Ar), Entactinaria (E), Latentifistularia (L), ?Nassellaria (N), Spumellaria (S). 2, Taxon code: this is the number of the genus in this publication; since the plates are arranged taxonomically, this number which is indicated in the alphabetic index (Appendix 1) allows a quick search of the plates. 3, Genus: nominal genus as in the original publication. 4, Genus authority: author of the nominal genus and page where it was described; usually only one page is cited, the page on which the main generic description begins (not necessarily the page on which the genus is first mentioned). 5, Family: this is the family position adopted in this revision. 6, Image: reillustration of the holotype of the type species. 7, Scale: the magnification is indicated by this graphic scale bar. 8, Type species: this is the nominal species fixed (see alphabetic index in Appendix 1) as type for the genus. 9, Type species authorship: author of the type species with indication of page description, year, plate and figure where the image of the holotype was first illustrated. 10, Status: when this field is not allocated the genus must be regarded as valid; **SYN.**, indicates that the genus is regarded as a synonym of a previously described genus; **HOM.**, indicates that the nominal genus is an homonym of a previously described taxon; **INV.**, is employed for invalid names; **N.D.**, indicates a name of questionable application; **N.N.**, indicates a name published without an accompanying description. If any of these abbreviations occur (or are utilized), the reader is referred to the bottom line for information on the current valid name for the genus. 11, Bottom line: this line links to the valid name for a homonym or synonym.

by our working group, as had been done for the Mesozoic forms (O'Dogherty *et al.* 2009). During two meetings with all members, several partial meetings and many exchanges over several years, we have come to a consensus on 344 genera of Paleozoic radiolarians. The aim of the discussions was to agree on the systematics and to achieve a taxonomic consensus of all contributors. The final result is this volume that is presented as a database of all described Paleozoic radiolarian genera with re-illustration of their type species. Although the main purpose was to stabilize the systematics at generic level, suprageneric classification at order and family level were also examined.

Since a sharply defined taxonomic framework is a prerequisite for the establishment and application of useful biostratigraphic schemes, it is our hope that this publication will be a useful tool for future research on Paleozoic radiolarian biostratigraphy. Presently, and particularly in the Lower Paleozoic, for most of the type species, more data are needed and more correlations are necessary in order to improve the reliability of estimated age ranges. For this reason, we were not able to provide greater resolution of the stratigraphic range of many Paleozoic radiolarian genera, as this has been done for the Mesozoic genera. Nevertheless, a chapter is devoted to Paleozoic radiolarian biostratigraphy (Aitchison *et al.* 2017a) demonstrating the potential of these fossils. Another part of this present volume (Noble *et al.* 2017) is a compilation of all the original descriptions of all genera illustrated in the present

paper, including English translations, and remarks regarding their present treatment. Finally an inventory of Paleozoic species described so far is given by Aitchison *et al.* (2017b).

SOURCE OF DATA AND DISCUSSION

Given the high diversity of Paleozoic radiolarians and their recurrent misclassification at the generic level, it has become increasingly difficult, especially for those new to this field, to find and digest all available taxonomic information and to evaluate the validity of all existing names of radiolarian taxa. Consequently, the primary goal of this publication was to present all the hitherto described Paleozoic radiolarian genera, and to revise their status and family assignment. Such a compilation will certainly facilitate everyday work for radiolarian researchers and will also serve to establish a taxonomic basis for on-going refinements of Paleozoic radiolarian stratigraphy.

The sources used to establish the list of Paleozoic genera were at first the databases personally built by Luis O'Dogherty with additions from the one of Noritoshi Suzuki, both co-authors of this catalogue. After discussion on a preliminary catalogue, all co-authors contributed with their own information to complete the list. Discussions on the status of each genus took place during two main meet-

ings: one in Lille University (September 2011) the other during the 13th InterRad meeting at Cadiz (March 2012). Several partial meetings were held in Lille University and many e-mail exchanges allowed this final consensus.

REMARK ON SPHERICAL RADIOLARIANS

The guiding principle in the classification of radiolarians at the suprageneric level is that the structure of the initial skeletal elements is the most conservative through evolution and represents the common element characterizing a family group. With ontogeny, new skeletal elements are placed progressively further away from the initial skeleton and this is the reason why some external differences are occasionally observed in a family group. The reader is referred to the general taxonomy in De Wever *et al.* (2001) for a more thorough explanation of this principle. Although the inventory of initial structures (especially in Entactinaria and Spumellaria) is still limited and their understanding fragmentary, this review fully agrees with the importance of such elements at higher systematic levels.

GUIDE FOR THE USER

Ideally, this image catalogue of genera can serve as a quick visual tool allowing the identification of genera. For this reason, each genus is labeled with the most basic information (see Fig. 1).

FIGURES

Each genus has an individual taxon code, or image number, arranged sequentially in the images on the plates. The taxon code is a number without taxonomic significance but is used as an internal indexing number used to find taxa on the plates. Since the genera follow a taxonomic arrangement, this number, which is also indicated in the alphabetic index, allows a quick search of the plates. We have scanned and reproduced images at the highest definition for each type species. These are accompanied by a scale bar made from the measurements indicated in the original publication.

ARRANGEMENT OF FIGURES

The figured genera are arranged on the plates taxonomically rather than alphabetically because, from a systematic point of view, we prefer to group taxa having taxonomically significant affinities. The genera are grouped first by order (Albaillellaria, Archaeospicularia, Entactinaria, Latentifistularia, ?Nassellaria, Spumellaria) and then arranged by family. We have followed the gross suprageneric framework presented in De Wever *et al.* (2001), which has been further improved as a consequence of this taxonomic review.

HOMONYMS AND SYNONYMS

When a case of homonymy was detected, or a taxon has been designed or suspected to be a synonym, this is indicated in the upper left part of the figure box (see Fig. 1). In such cases the line underneath the figure refers to the correct genus.

The taxa were carefully reviewed and re-examined and many genera (82) were declared to be synonyms. An interesting observation derived from this study is that many of these synonymous taxa were established on very few morphological characteristics leading in most cases to a monotypic genus.

NAMES OF DOUBTFUL APPLICATION

Those genera considered *nomina dubia* (35) are indicated beneath the figure (see Fig. 1) and the majority of these are presented at the end of the catalogue without family assignment. The only exceptions are those *nomina dubia* related to or classically attached to a specific family. Such forms are allocated beside the closer representatives of the corresponding family group. Most of the genera here considered *nomina dubia* are those taxa described from thin sections or using simple microscopes by the pioneers of the study of Mesozoic and Paleozoic radiolarians.

NOMINA NUDA

These names or nomenclatural acts are void of type-species which were never illustrated; two genera are involved.

AUTHORS

The general recommendations of the ICZN (Appendix B. 12) clearly state that in those cases where a name was published by more than two authors, the surname of the first author (as given in the original publication) may be cited alone in the text and followed by the term “*et al.*” However, we have preferred to give the surnames of all authors.

CONCLUSION

The main goal of this catalogue is to present a complete and reviewed set of all existing Paleozoic genera with illustration of their type species publishing until 2016. We hope that this catalogue of radiolarian type species will be a useful tool in future systematic and biostratigraphic studies.

Acknowledgements

All co-authors would like to thank their institution and colleagues who helped the realization of the present work, as well as Fabrice Cordey and Olga Obut for their review remarks. J. Aitchison acknowledges financial support towards investigation of Early Paleozoic radiolarian evolution in the form of a grant from the Australian Research Council (ARC DP 1501013325). The members of the Evolution-Ecology-Paleontology Laboratory in Lille (UMR CNRS/Lille 1 8198) thank the Région Hauts-de-France, and the Ministère de l'Enseignement Supérieur et de la Recherche (CPER Climibio), and the European Fund for Regional Economic Development for their financial support. The University of Lille – Science and Technology is acknowledged for sponsoring a visiting professorship to Paula Noble.

REFERENCES

- AFANASIEVA M. S. 1986. — Radiolarians of the family Pylentonemidae. *Paleontological Journal* 3: 22-34.
- AFANASIEVA M. S. 2000a. — New radiolarians of the orders Aculearia and Sphaerellaria from the Upper Devonian of the Timan-Pechora Province (Russia). *Paleontological Journal* 34 (4): 359-376.
- AFANASIEVA M. S. 2000b. — New radiolarians of the superfamily Entactinoidea from the Upper Devonian of Timan-Pechora Province, Russia. *Paleontological Journal* 34 (2): 131-146.
- AFANASIEVA M. S. 2000c. — *Atlas of Paleozoic Radiolaria of the Russian Platform*. Scientific World, Moscow, 477 p.
- AFANASIEVA M. S. 2008. — New replacement names for the Genus *Palaeodiscus* Afanasieva 2000 and the Family Palaeodiscidae Afanasieva 2000 (Radiolaria). *Paleontological Journal* 42 (4): 440. <https://doi.org/10.1134/S003103010804014X>
- AFANASIEVA M. S. 2009. — New replacement names for the genera *Adamus* Afanasieva, 2000 and *Wonella* Afanasieva, 2000. *Paleontological Journal* 43 (1): 115. <https://doi.org/10.1134/S0031030109010122>
- AFANASIEVA M. S. 2011. — Revision of the genus *Entactinosphaera* Foreman 1963 and the new genus *Retientactinosphaera* gen. nov. (Paleozoic radiolaria). *Paleontological Journal* 45 (2): 117-129. <https://doi.org/10.1134/S003103011102002X>
- AFANASIEVA M. S. & AMON E. O. 2016. — New radiolarian genera and species from the Lower Permian of the Southern Urals and Northern Mugodzhary. *Paleontological Journal* 50 (3): 209-221. <https://doi.org/10.1134/S0031030116020027>
- AITCHISON J. C. 1989. — Discussion: Radiolarian and conodont biostratigraphy of siliceous rocks from the New England Fold Belt. *Australian Journal of Earth Sciences* 36: 141-142.
- AITCHISON J. C. 1993a. — *Albaillellaria* from the New England orogen, Eastern NSW, Australia. *Marine Micropaleontology* 21: 353-367. [https://doi.org/10.1016/0377-8398\(93\)90026-T](https://doi.org/10.1016/0377-8398(93)90026-T)
- AITCHISON J. C. 1993b. — Devonian (Frasnian) Radiolarians from the Gogo Formation, Canning Basin, Western Australia. *Palaeontographica. Abteilung A: Palaeozoologie-Stratigraphie* 228: 105-128.
- AITCHISON J. C., FLOOD P. G. & MALPAS J. 1998. — Lowermost Ordovician (basal Tremadoc) radiolarians from the Little Port Complex, western Newfoundland (Lower Ordovician radiolarians, Newfoundland). *Geological Magazine* 135: 413-419. <https://doi.org/10.1017/S001675689800867X>
- AITCHISON J. C., SUZUKI N., CARIDROIT M., DANIELIAN T. & NOBLE P. 2017a. — Paleozoic radiolarian biostratigraphy, in DANIELIAN T., CARIDROIT M., NOBLE P. & AITCHISON J. C. (eds), Catalogue of Paleozoic radiolarian genera. *Geodiversitas* 39 (3): 503-531 (this volume). <https://doi.org/10.5252/g2017n3a5>
- AITCHISON J. C., SUZUKI N. & O'DOHERTY L. 2017b. — Inventory of Paleozoic radiolarian species (1880-2016), in DANIELIAN T., CARIDROIT M., NOBLE P. & AITCHISON J. C. (eds), Catalogue of Paleozoic radiolarian genera. *Geodiversitas* 39 (3): 533-637 (this volume). <https://doi.org/10.5252/g2017n3a6>
- AMON E. O., BRAUN A. & IVANOV K. S. 1995. — Upper Silurian radiolarians from the southern Urals. *Geologica et Paleontologica* 29: 1-18.
- BENGTSON S. 1986. — Siliceous microfossils from the Upper Cambrian of Queensland. *Alcheringa* 10 (3): 195-216. <https://doi.org/10.1080/03115518608619155>
- BOUNDY-SANDERS S. Q., SANDBERG C. A., MURCHEY B. L. & HARRIS A. G. 1999. — A late Frasnian (Late Devonian) radiolarian, sponge spicule, and conodont fauna from the Slaven Chert, northern Shoshone Range, Roberts Mountains allochthon, Nevada. *Micropaleontology* 45 (1): 62-68. <https://doi.org/10.2307/1486203>
- CARIDROIT M. & DE WEVER P. 1984. — Description de quelques nouvelles espèces de Follicucullidae et d'Entactinidae (Radiolaires polycystines) du Permien du Japon. *Geobios* 17 (5): 639-644. [https://doi.org/10.1016/S0016-6995\(84\)80035-2](https://doi.org/10.1016/S0016-6995(84)80035-2)
- CARIDROIT M. & DE WEVER P. 1986. — Some late Permian radiolarians from pelitic rocks of the Tatsuno formation (Hyogo Prefecture), southwest Japan. *Marine Micropaleontology* 11: 55-90. [https://doi.org/10.1016/0377-8398\(86\)90005-8](https://doi.org/10.1016/0377-8398(86)90005-8)
- CARIDROIT M., DE WEVER P. & DUMITRICA P. 1999. — Un nouvel ordre, une nouvelle famille et un nouveau genre de Radiolaires du Paléozoïque : Latentifistularia, Cauletellidae et Cauletella. *Comptes Rendus de l'Académie des Sciences de Paris, Série IIA - Sciences de la Terre et des Planètes* 329 (8): 603-608. [https://doi.org/10.1016/S1251-8050\(00\)87217-1](https://doi.org/10.1016/S1251-8050(00)87217-1)
- CHAPMAN F. 1923. — Report on fossils from an Upper Cambrian horizon at Loyola, near Mansfield. *Bulletin of the Geological Survey of Victoria* 46: 34-45.
- CHENG Y.-N. 1986. — *Taxonomic Studies on Upper Paleozoic Radiolaria*. National Museum of Natural Science, Taiwan, Special Publication, vol. 1, 310 p.
- CORDEY F. 1998. — Radiolaires des complexes d'accrétion de la Cordillère Canadienne (Colombie-Britannique). *Geological Survey of Canada, Bulletin* 509: 1-209.
- CORNELL W. C. & SIMPSON R. D. 1986. — *Nabespecha leonardii*, n. gen., n. sp.: An unusual radiolarian from the Permian of West Texas. *Micropaleontology* 32 (3): 286-288. <https://doi.org/10.2307/1485623>
- DANIELIAN T. & POPOV L. 2003. — Ordovician radiolarian biodiversity: insights based on new and revised data from Kazakhstan. *Bulletin de la Société Géologique de France* 174 (4): 325-335. <https://doi.org/10.2113/174.4.325>
- DANIELIAN T., AITCHISON J. C., NOBLE P., CARIDROIT M., SUZUKI N. & O'DOHERTY L. 2017. — Historical insights on nearly 130 years of research on Paleozoic radiolarians, in DANIELIAN T., CARIDROIT M., NOBLE P. & AITCHISON J. C. (eds), Catalogue of Paleozoic radiolarian genera. *Geodiversitas* 39 (3): 351-361 (this volume). <https://doi.org/10.5252/g2017n3a2>
- DE WEVER P. & CARIDROIT M. 1984. — Description de quelques nouveaux Latentifistulidae (radiolaires polycystines) Paléozoïques du Japon. *Revue de Micropaléontologie* 27: 98-106.
- DE WEVER P., DUMITRICA P., CAULET J. P., NIGRINI C. & CARIDROIT M. 2001. — *Radiolarians in the Sedimentary Record*. Gordon and Breach Science Publishers, Amsterdam, 533 p.
- DEFLANDRE G. 1952. — *Albaillella* nov. gen., radiolaire fossile du Carbonifère inférieur, type d'une lignée aberrante éteinte. *Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles* 234: 872-874. <http://gallica.bnf.fr/ark:/12148/bpt6k3186w>
- DEFLANDRE G. 1953. — Radiolaires fossiles, in GRASSÉ P. P. (ed.), *Traité de Zoologie*. Masson, Paris: 389-436.
- DEFLANDRE G. 1958. — *Lapidopiscum* nov. gen., type nouveau de Radiolaire viséen, famille des Lapidopiscidae fam. nov., de l'ordre des Albaillellidae Defl. 1953. *Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles* 246: 2278-2280. <http://gallica.bnf.fr/ark:/12148/bpt6k723q>
- DEFLANDRE G. 1960. — À propos du développement des recherches sur les Radiolaires fossiles. *Revue de Micropaléontologie* 2 (4): 212-218.
- DEFLANDRE G. 1963. — *Pylentonema*, nouveau genre de Radiolaire du Viséen: Sphaerellaire ou Nassellaire? *Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles* 257: 3981-3984. <http://gallica.bnf.fr/ark:/12148/bpt6k4009k>
- DEFLANDRE G. 1964. — La famille des Popofskyellidae fam. nov. et le genre *Popofskyellum* Defl., Radiolaires viséens de la Montagne Noire. *Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles* 259: 3055-3058. <http://gallica.bnf.fr/ark:/12148/bpt6k4015m>
- DEFLANDRE G. 1972a. — Le système trabéculaire interne chez les Pylentonemidés et les Popofskyellidés, Radiolaires du Paléozoïque. Phylogénèse des Nassellaires. *Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles* 274 (26): 3535-3540. <http://gallica.bnf.fr/ark:/12148/>

- p6t6k5682741m
-
- DEFLANDRE G. 1972b. — Remarques complémentaires sur la morphologie et la nomenclature de quelques genres de Radiolaires du Paléozoïque.
- Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles*
- 275 (1): 13-16.
- <http://gallica.bnf.fr/ark:/12148/bpt6k57786873>
-
- DEFLANDRE G. 1973a. — Sur quelques nouveaux types de radiolaires Polycystines viséens, d'attribution systématique ambiguë, certains évoquant à la fois des Plectellaires et des Spumellaires.
- Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles*
- 276: 289-293.
- <http://gallica.bnf.fr/ark:/12148/bpt6k5803214k>
-
- DEFLANDRE G. 1973b. — Compléments historiques et taxinomiques sur les Radiolaires viséens. Remarques critiques sur les Plectellaires.
- Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles*
- 276 (1): 497-500.
- <http://gallica.bnf.fr/ark:/12148/bpt6k5803214k>
-
- DEFLANDRE G. 1973c. — Observations et remarques sur les Radiolaires Sphaerellaires du Paléozoïque, à propos d'une nouvelle espèce, viséenne, du genre
- Foremaniella*
- Defl., parfait intermédiaire entre les Périaxoplastidiés et les Pylentonémidés.
- Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles*
- 276 (1): 1147-1151.
- <http://gallica.bnf.fr/ark:/12148/bpt6k5803214k>
-
- DEFLANDRE G. 1973d. — Sur quelques nouvelles espèces d'
- Archocyrtium*
- , radiolaires Pylentonemidae du Viséen de Cabrières.
- Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles*
- 277: 149-152.
- <http://gallica.bnf.fr/ark:/12148/bpt6k5474901n>
-
- DUMITRICA P., KOZUR H. & MOSTLER H. 1980. — Contribution to the radiolarian fauna of the Middle Triassic of the Southern Alps.
- Geologisch Paläontologische Mitteilungen Innsbruck*
- 10: 1-46.
-
- DUMITRICA P., CARIDROIT M. & DE WEVER P. 2000. — Archaeosporularia, ordre nouveau de radiolaires: une nouvelle étape pour la classification des radiolaires du Paléozoïque inférieur.
- Comptes Rendus de l'Académie des Sciences Paris, Sciences de la Terre et des planètes*
- 330 (8): 563-569.
- [https://doi.org/10.1016/S1251-8050\(00\)00168-3](https://doi.org/10.1016/S1251-8050(00)00168-3)
-
- EHRENBERG C. G. 1876. — Fortsetzung der mikrogeologischen Studien als Gesamt-Uebersicht der mikroskopischen Paläontologie gleichartig analysirter Gebirgsarten der Erde, mit specieller Rücksicht auf den Polycystinen-Mergel von Barbados.
- Abhandlungen der königlichen preussischen Akademie der Wissenschaften zu Berlin*
- 1875: 1-225.
- <http://biodiversitylibrary.org/page/30148696>
-
- FENG Q. L. 1992. — Permian and Triassic radiolarian biostratigraphy in south and southwest China.
- Journal of China University of Geosciences*
- 3 (1): 51-62.
-
- FENG Q. L. & LIU B. 1992. — A new Early Devonian radiolarian genus from west Yunnan.
- Science in China, Series D: Earth Sciences*
- 35: 549-553 (in Chinese with English abstract).
-
- FENG Q. L. & LIU B. 1993. — Radiolaria from Late Permian and Early-Middle Triassic in Southwest Yunnan.
- Earth Science, Journal of China University of Geosciences*
- 18 (5): 540-552.
-
- FENG Q. L. & GU S. 2002. — Uppermost Changxingian (Permian) radiolarian fauna from southern Guizhou, southwestern China.
- Journal of Paleontology*
- 76: 797-809.
- <https://doi.org/10.1017/S0022336000037483>
-
- FENG Q. L., GU S., HE W. & JIN Y. 2007. — Latest Permian Entactinaria (Radiolaria) from southern Guangxi, China.
- Journal of Micropaleontology*
- 26 (1): 19-40.
- <https://doi.org/10.1144/jm.26.1.19>
-
- FENG Q. L., GU S., JIANG M. & JIN Y. 2004. — Two new radiolarian genera from the uppermost Permian of southern China.
- Revue de Micropaléontologie*
- 47 (3): 135-143.
- [https://doi.org/10.1016/S0035-1598\(04\)00033-9](https://doi.org/10.1016/S0035-1598(04)00033-9)
-
- FENG Q. L., HE W., GU S., JIN Y. & MENG Y. 2006a. — Latest Permian Spumellaria and Entactinaria (Radiolaria) from South China.
- Revue de Micropaléontologie*
- 49: 21-43.
- <https://doi.org/10.1016/j.revmic.2005.11.003>
-
- FENG Q. L., HE W., ZHANG S. & GU S. 2006b. — Taxonomy of order Latentifistularia (Radiolaria) from the Latest Permian in Southern Guangxi, China.
- Journal of Paleontology*
- 80 (5): 826-848.
- [https://doi.org/10.1666/0022-3360\(2006\)80\[826:TOOLRF\]2.0.CO;2](https://doi.org/10.1666/0022-3360(2006)80[826:TOOLRF]2.0.CO;2)
-
- FENG Q. L., MENG Y., HE W. & GU S. 2006c. — A new genus of Entactiniidae (Radiolaria) from the Upper Permian of South China.
- Eclogae geologicae Helvetiae*
- 99 (Supplement 1): S67-S78.
- <https://doi.org/10.1007/s00015-006-0608-z>
-
- FOREMAN H. P. 1963. — Upper Devonian Radiolaria from the Huron member of the Ohio shale.
- Micropaleontology*
- 9 (3): 267-304.
- <https://doi.org/10.2307/1484751>
-
- FURUTANI H. 1983. — Middle Palaeozoic Palaeoscenediidae (Radiolaria) from Mt. Yokokura, Shikoku, Japan. Part 1.
- Transactions and Proceedings of the Palaeontological Society of Japan, New Series*
- 130: 96-116.
- https://doi.org/10.14825/prpsj1951.1983.130_96
-
- FURUTANI H. 1990. — Middle Paleozoic radiolarians from Fukui Area, Gifu Prefecture, central Japan.
- Journal of Earth Sciences Nagoya University*
- 37: 1-56.
-
- GOODBODY Q. H. 1986. — Wenlock Palaeoscenediidae and Entactiniidae (Radiolaria) from the Cape Phillips Formation of the Canadian Arctic Archipelago.
- Micropaleontology*
- 32 (2): 129-157.
- <https://doi.org/10.2307/1485627>
-
- GOTO H., UMEDA M. & ISHIGA H. 1992. — Late Ordovician Radiolarians from the Lachlan Fold Belt, Southeastern Australia.
- Memoirs of the Faculty of Science, Shimane University*
- 26: 145-170.
-
- HAO & SHU 1987. — The oldest known well-preserved Phaeodaria (Radiolaria) from southern Shansi.
- Geosciences (Beijing)*
- 1 (3-4): 301-310.
-
- HINDE G. J. 1890. — Notes on Radiolaria from the Lower Palaeozoic rocks (Llandeilo-Caradoc) of the south of Scotland.
- Annals and Magazine of Natural History*
- 6 (31): 40-59.
- <https://doi.org/10.1080/00222939008693993>
-
- HINDE G. J. 1899a. — On the Radiolaria in the Devonian rocks of New South Wales.
- Quarterly Journal of the Geological Society of London*
- 55: 38-64.
- <https://doi.org/10.1144/GSL.JGS.1899.055.01-04.06>
-
- HINDE G. J. 1899b. — On Radiolaria in chert from Chypons Farm, Mullion Parish (Cornwall).
- Quarterly Journal of the Geological Society of London*
- 55: 214-219.
- <https://doi.org/10.1144/GSL.JGS.1899.055.01-04.14>
-
- HOLDSWORTH B. K. 1966. — Radiolaria and sponges in Namurian "bullion" limestones.
- Proceedings of the Geological Society of London*
- 1630: 34-35.
-
- HOLDSWORTH B. K. 1969. — Namurian Radiolaria of the genus
- Ceratoikiscus*
- from Staffordshire and Derbyshire, England.
- Micropaleontology*
- 15 (2): 221-229.
-
- HOLDSWORTH B. K. 1977. — Paleozoic Radiolaria: Stratigraphic distribution in Atlantic Borderlands, in SWAIN F. M. (ed.),
- Stratigraphic Micropaleontology of Atlantic Basin and Borderlands*
- . Elsevier, Amsterdam, The Netherlands: 167-184.
- [https://doi.org/10.1016/S0920-5446\(08\)70351-0](https://doi.org/10.1016/S0920-5446(08)70351-0)
-
- HOLDSWORTH B. K. & JONES D. L. 1980. — Preliminary radiolarian zonation for late Devonian through Permian time.
- Geology*
- 8 (6): 281-285.
- [https://doi.org/10.1130/0091-7613\(1980\)8<281:PRZFLD>2.0.CO;2](https://doi.org/10.1130/0091-7613(1980)8<281:PRZFLD>2.0.CO;2)
-
- ISAKOVA T. N. & NAZAROV B. B. 1986. — Late Carboniferous-Early Permian stratigraphy and microfauna of the Southern Urals.
- Doklady Akademii Nauk SSSR*
- 402: 1-183, 32 pl.
-
- ISHIGA H. & IMOTO N. 1980. — Some Permian radiolarians in the Tamba District, Southwest Japan.
- Earth Science. Journal of the Association for the Geological Collaboration in Japan*
- 34 (6): 333-345.
-
- ISHIGA H., KITO T. & IMOTO N. 1982a. — Late Permian radiolarian assemblages in the Tamba District and an adjacent area, Southwest Japan.
- Earth Science. Journal of the Association for the Geological*

- Collaboration in Japan* 36 (1): 10-22.
- ISHIGA H., KITO T. & IMOTO N. 1982b. — Middle Permian radiolarian assemblages in the Tamba district and adjacent area, Southwest Japan. *Earth Science. Journal of the Association for the Geological Collaboration in Japan* 36 (1): 272-281.
- ISHIGA H., LEITCH E. C., NAKA T., WATANABE T. & IWASAKI M. 1987. — Late Devonian Palaeoscenediidae from the Hastings Block, New England Fold Belt, N.S.W., Australia. *Earth Science (Chikyū Kagaku)* 41 (6): 297-302.
- JONES M. K. & NOBLE P. J. 2006. — Sheinwoodian (uppermost Lower Silurian) Radiolaria from the Cape Phillips Formation, Nunavut, Canada. *Micropaleontology* 52: 289-315. <https://doi.org/10.2113/gsmicropal.52.4.289>
- KOZUR H. 1980. — Ruzhencevispongidae, eine neue Spumellaria Familie aus dem oberen Kungurien (Leonardian) und Sakmarian des Vorurals. *Geologisch Paläontologische Mitteilungen Innsbruck* 10 (6): 235-242.
- KOZUR H. 1981. — Albaillellidea (Radiolaria) aus dem Unterperm des Vorurals. *Geologisch Paläontologische Mitteilungen Innsbruck* 10 (8): 263-274.
- KOZUR H. 1993. — Upper Permian Radiolarians from the Sosio Valley Area, Western Sicily (Italy) and from the Uppermost Lamar Limestone of West Texas. *Jahrbuch der geologischen Bundesanstalt* 136 (1): 99-123.
- KOZUR H. & MOSTLER H. 1972. — Beiträge zur Erforschung der mesozoischen Radiolarien. Teil I: Revision der Oberfamilie Coccodiscacea HAECKEL 1862 emend. und Beschreibung ihrer triassischen Vertreter. *Geologisch Paläontologische Mitteilungen Innsbruck* 2: 1-60.
- KOZUR H. & MOSTLER H. 1978. — Beiträge zur Erforschung der mesozoischen Radiolarien Teil II: Oberfamilie Trematodiscacea HAECKEL 1862 emend. und Beschreibung ihrer triassischen Vertreter. *Geologisch Paläontologische Mitteilungen Innsbruck* 8: 123-182.
- KOZUR H. & MOSTLER H. 1979. — Beiträge zur Erforschung der mesozoischen Radiolarien. Teil III: Die Oberfamilien Actinommacea HAECKEL 1862 emend., Artiscacea HAECKEL 1882, Multiaarcusellacea nov. der Spumellaria und triassische Nassellaria. *Geologisch Paläontologische Mitteilungen Innsbruck* 9 (1/2): 1-132.
- KOZUR H. & MOSTLER H. 1981. — Beiträge zur Erforschung der mesozoischen Radiolarien. Teil IV: Thalassosphaeracea HAECKEL 1862, Hexastylacea HAECKEL 1862 emend. PETRUŠEVSKAJA 1979, Sponguracea HAECKEL 1862 emend. und weitere triassische Lithocycliacea, Trematodiscacea, Actinommacea und Nassellaria. *Geologisch Paläontologische Mitteilungen Innsbruck, Sonderband 1*: 1-208.
- KOZUR H. & MOSTLER H. 1982. — Entactinaria subordo nov., a new radiolarian suborder. *Geologisch Paläontologische Mitteilungen Innsbruck* 11 (1): 399-414.
- KOZUR H. & MOSTLER H. 1989. — Radiolarien und schwammskleren aus dem Unterperm des Vorurals. *Geologisch Paläontologische Mitteilungen Innsbruck, Sonderband 2*: 147-275.
- KOZUR H. & MOSTLER H. 1994. — Anisian to middle Carnian radiolarian zonation and description of some stratigraphically important radiolarians. *Geologisch Paläontologische Mitteilungen Innsbruck, Sonderband 3*: 39-255.
- KOZUR H. & REPETSKI J. E. 2002. — *Paulanoblella*, nomen novum (Radiolaria) replaces *Noblella* Kozur, Mostler and Repetski 1996, a homonym of *Noblella* Barbour 1930 (Amphibia). *Journal of Micropaleontology* 21 (1): 28. <https://doi.org/10.1144/jm.21.1.28>
- KOZUR H., MOSTLER H. & REPETSKI J. E. 1996. — Well-preserved Tremadocian primitive Radiolaria from the Windfall Formation of the Antelope Range, Eureka County, Nevada, U.S.A. *Geologisch Paläontologische Mitteilungen Innsbruck* 21: 245-271.
- LI H. S. 1994. — Middle Silurian radiolarians from Keerhada, Xinjiang. *Acta Micropaleontologica Sinica* 11: 259-272.
- LI H. S. 1995. — New genera and species of middle Ordovician Nassellaria and Albaillellaria from Baijingsi, Quilian Mountains, China. *Scientia geologica sinica* 4 (3): 331-346.
- LI Y. X. & WANG Y. 1991. — Upper Devonian (Frasnian) radiolarian fauna from the Liukiang Formation, eastern and southeastern Guangxi. *Acta Micropaleontologica Sinica* 8 (4): 395-404.
- LIU 1992. — Fossil radiolarians from the turbidite of the Middle Carboniferous east Tianshan Mountain, Xinjiang. *Journal of Northwest University, Natural Science Education* 22: 123-130, 169-170.
- MACDONALD E. W. 1998. — Llandovery Secuicollactinae and Rotasphaeridae (Radiolaria) from the Cape Phillips Formation, Cornwallis Island, Arctic Canada. *Journal of Paleontology* 72: 585-604. <https://doi.org/10.1017/S0022336000040324>
- MACDONALD E. W. 1999. — *Insolitignum* n.gen. and *Palaeocephippium* Goodbody 1986 (Radiolaria) from the Lower Silurian of the Cape Phillips Formation, Arctic Canada. *Canadian Journal of Earth Science* 36 (12): 2051-2057. <https://doi.org/10.1139/c99-101>
- MACDONALD E. W. 2006a. — Haplotaeniatumidae and Inaniguttidae (Radiolaria) from the Lower Silurian of the Cape Phillips Formation, Cornwallis Island, Nunavut, Canada. *Journal of Paleontology* 80: 19-37. [https://doi.org/10.1666/0022-3360\(2006\)080\[0019:HAIRFT\]2.0.CO;2](https://doi.org/10.1666/0022-3360(2006)080[0019:HAIRFT]2.0.CO;2)
- MALETZ J. & BRUTON D. L. 2005. — The *Beothuka terranova* (Radiolaria) assemblage and its importance for the understanding of early Ordovician radiolarian evolution. *Geological Magazine* 142: 711-721. <https://doi.org/10.1017/S0016756805001391>
- MALETZ J. & BRUTON D. L. 2007. — Lower Ordovician (Chewtonian to Castlemainian) radiolarians of Spitsbergen. *Journal of Systematic Palaeontology* 5: 245-288. <https://doi.org/10.1017/S1477201907002039>
- NAZAROV B. B. 1973. — Radiolaria from the lower horizons of the Cambrian of Bazhenov Ridge, in Problems of paleontology and biostratigraphy of the Lower Cambrian of Siberia and the Far Eastern USSR. *Transactions of the Institute of Geology and Geophysics, Siberian Branch of the Academy of Sciences* 49: 5-13.
- NAZAROV B. B. 1974. — Albaillellidae and Palaeoscenediidae from the Upper Devonian deposits of the Southern Urals, in ZHAMOIDA A. I. (ed.), *Biostratigraphy and Paleontology of the Lower Cambrian of Europe and Middle Asia*. Publication of the All-Union Institute of Geology, new series, Leningrad, vol. 226: 41-47.
- NAZAROV B. B. 1975. — Lower and Middle Paleozoic radiolarians of Kazakhstan (methods of investigation, systematics and stratigraphic significance), in RAABEN M. E. (ed.), *Transactions of the Academy of Sciences of the USSR, Geological Institute. Izdatel'stvo Nauka, Moscow*, vol. 275: 1-203.
- NAZAROV B. B. 1977. — A new radiolarian family from the Ordovician of Kazakhstan. *Paleontological Journal* 11 (2): 165-171.
- NAZAROV B. B. 1988. — Paleozoic radiolaria, in ZHAMOIDA A. I. (ed.), *Practical Manual of Microfauna of the USSR*. Nedra, Leningrad, vol. 2, 232 p.
- NAZAROV B. B. & POPOV L. Y. 1976. — Radiolarians, ecardine brachiopods and organisms of uncertain systematic position from the Middle Ordovician of eastern Kazakhstan. *Paleontological Journal* 4: 407-416.
- NAZAROV B. B. & POPOV L. Y. 1980. — Stratigraphy and fauna of the siliceous-carbonate sequence of the Ordovician of Kazakhstan (Radiolaria and inarticulate brachiopods). *Transactions of the Geological Institute of the Soviet Academy of Sciences* 331: 1-192.
- NAZAROV B. B. & RUDENKO V. S. 1981. — Some radiolarians with bilateral symmetry of the upper Paleozoic of the Southern Urals, Systematics and Morphology of Microorganisms: Problems of Micropaleontology. *Akademiya Nauk SSSR, Seriya Geologicheskaya*, Moscow: 129-139.
- NAZAROV B. B. & ORMISTON A. 1983a. — Upper Devonian (Frasnian) radiolarian fauna from the Gogo Formation, Western Australia. *Micropaleontology* 29 (4): 454-466. <https://doi.org/10.2307/1485519>
- NAZAROV B. B. & ORMISTON A. 1983b. — A new superfamily of

- stauraxon polycystine Radiolaria from the Late Paleozoic of the Soviet Union and North America. *Senckenbergiana Lethaea* 64 (2-4): 363-379.
- NAZAROV B. B. & ORMISTON A. 1984. — Tentative system of Paleozoic Radiolaria, in PETRUSHEVSKAYA M. G. & STEPANJANTS S. D. (eds), *Morphology, Ecology and Evolution of Radiolarians. Material from the IV Symposium of European Radiolarists EURO-RAD IV*. Academiya Nauk SSSR, Zoological Institute, Leningrad, USSR: 64-87.
- NAZAROV B. B. & ORMISTON A. R. 1985. — Radiolaria from the Late Paleozoic of the Southern Urals, USSR and West Texas, USA. *Micropaleontology* 31 (1): 1-54. <https://doi.org/10.2307/1485579>
- NAZAROV B. B. & ORMISTON A. R. 1987. — A new Carboniferous radiolarian genus and its relation to the multishelled entactinids. *Micropaleontology* 33 (1): 66-73. <https://doi.org/10.2307/1485527>
- NAZAROV B. B. & ORMISTON A. R. 1990. — The biostratigraphic potential of radiolarians from the Palaeozoic, in CHUVASHOV B. I., ZHAMOIDA A. I. & AMON E. O. (eds), *Radiolaria in Biostratigraphy: Collected Proceedings*. Ural'skoe otdelenie AN SSSR; Sverdlovsk: 3-25, 121, 125, 126.
- NAZAROV B. B., TKACHENKO V. I. & SHULGINA V. S. 1981. — Radiolaria and age of terrigenous siliceous beds of the Kolyma region. *Izvestiya Akademii Nauk SSSR, seriya geologicheskaja* 10: 79-89.
- NESTELL G. P. & NESTELL M. K. 2010. — Late Capitanian (latest Guadalupian, Middle Permian) radiolarians from the Apache Mountains, West Texas. *Micropaleontology* 56 (1-2): 7-68. <https://www.jstor.org/stable/40607076>
- NOBLE P. J. 1994. — Silurian Radiolarian Zonation for the Caballos Novaculite, Marathon Uplift, West Texas. *Bulletins of American Paleontology* 106: 1-55.
- NOBLE P. J. 2014. — *Maletzella nomen novum*, a replacement name for the junior homonym *Franklinia* Jones and Noble 2006. *Revue de Micropaléontologie* 57: 35. <https://doi.org/10.1016/j.revmic.2014.01.001>
- NOBLE P. J. & LENZ A. C. 2007. — Upper Wenlock Ceratoliscidae (Radiolaria) from the Cape Phillips Formation, Arctic Canada. *Journal of Paleontology* 81 (5): 1044-1052. <https://doi.org/10.1666/pleo05-053.1>
- NOBLE P. & RENNE P. 1990. — Paleoenvironmental and biostratigraphic significance of siliceous microfossils of the Permian-Triassic Redding Section, Eastern Klamath Mountains, California. *Marine Micropaleontology* 15 (3-4): 379-391. [https://doi.org/10.1016/0377-8398\(90\)90021-D](https://doi.org/10.1016/0377-8398(90)90021-D)
- NOBLE P. J., BRAUN A. & MC CLELLAN W. 1998. — *Haplotaeniatum* faunas (Radiolaria) from the Llandoveryan (Silurian) of Nevada and Germany. *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte* 12: 705-726.
- NOBLE P., AITCHISON J. C., DANIELIAN T., DUMITRICA P., MALETZ Y., SUZUKI N., CUVELIER J., CARIDROIT M. & O'DOHERTY L. 2017. — Taxonomy of Paleozoic radiolarian genera, in DANIELIAN T., CARIDROIT M., NOBLE P. & AITCHISON J. C. (eds), *Catalogue of Paleozoic radiolarian genera*. *Geodiversitas* 39 (3): 419-502 (this volume). <https://doi.org/10.5252/g2017n3a4>
- OBUT O. T. & IWATA K. 2000. — Lower Cambrian Radiolaria from the Gorny Altai (southern West Siberia). *Novosti Paleontologii i Stratigrafii* 2-3: 33-37.
- OBUT O. T. & SHCHERBANENKO T. A. 2008. — Late Devonian radiolarians from the Rudny Altai (SW Siberia). *Bulletin of Geosciences* 83 (4): 371-382. <https://doi.org/10.3140/bull.geosci.2008.04.371>
- O'DOHERTY L., CARTER E. S., DUMITRICA P., GORICAN S. & DE WEVER P. 2009. — An illustrated and revised catalogue of Mesozoic radiolarian genera – objectives, concepts and guide for users. *Geodiversitas* 31: 191-212. <https://doi.org/10.5252/g2009n2a2>
- ORMISTON A. R. & LANE H. R. 1976. — A unique radiolarian fauna from the Sycamore Limestone (Mississippian) and its biostratigraphic significance. *Palaeontographica. Abteilung A: Paläozoologie-Stratigraphie* 154: 158-180.
- ORMISTON A. & BABCOCK L. 1979. — *Follicucullus*, new radiolarian genus from the Guadalupian (Permian) Lamar limestone of the Delaware Basin. *Journal of Paleontology* 53 (2): 328-334. <http://www.jstor.org/stable/1303874>
- ÖZDIKMEH H. 2009. — Substitute names for some unicellular animal taxa (Protozoa). *Munis Entomology and Zoology* 4 (1): 233-256.
- PARK I.-Y. & WON M.-Z. 2012. — Tropical radiolarian assemblages from the Lower Carboniferous Delle Phosphatic Member of the Woodman Formation of Utah, USA. *Journal of the Paleontological Society of Korea* 28 (1-2): 29-101.
- POUILLE L., OBUT O., DANIELIAN T. & SENNIKOV N.-Z. 2011. — Lower Cambrian (Botomian) polycystine Radiolaria from the Altai Mountains (southern Siberia, Russia). *Comptes Rendus Palevol* 10 (8): 627-633. <https://doi.org/10.1016/j.crpv.2011.05.004>
- RENZ G. W. 1990. — Late Ordovician (Caradocian) radiolarians from Nevada. *Micropaleontology* 36 (4): 367-377. <https://doi.org/10.2307/1485476>
- RIEDEL W. R. 1967. — Some new families of Radiolaria. *Proceedings of the Geological Society of London* 1640: 148-149.
- RÜST D. 1892. — Beiträge zur Kenntnis der fossilen Radiolaren aus Gesteinen der Trias und der palaeozoischen Schichten. *Palaeontographica* 38: 107-192, 30 pls.
- SASHIDA K. & TONISHI K. 1985. — Permian radiolarians from the Kanto Mountains, central Japan; some Upper Permian Spumellaria from Itsukaichi, western part of Tokyo Prefecture. *Science Reports of the Institute of Geoscience, University of Tsukuba, Section B: Geological Sciences* 6: 1-19.
- SASHIDA K. & TONISHI K. 1988. — Additional note on the Upper Permian radiolarian fauna from Itsukaichi, western part of Tokyo Prefecture, central Japan. *Transactions and Proceedings of the paleontological Society of Japan, New Series* 151: 523-542. https://doi.org/10.14825/prpsj1951.1988.151_523
- SASHIDA K. & TONISHI K. 1991. — An Upper Permian coiled radiolarian from Itsukaichi, central Japan. *Micropaleontology* 37 (1): 86-94. <https://doi.org/10.2307/1485747>
- SASHIDA K., SALLYAPONGSE S. & NAKORNTRI N. 2000. — Latest Permian radiolarian fauna from Klaeng, eastern Thailand. *Micropaleontology* 46: 245-263. <https://doi.org/10.2113/46.3.245>
- SASHIDA K., ADACHI S., IGO H., NAKORNTRI N. & AMPORNMAHA A. 1997. — Middle to Upper Permian and Middle Triassic radiolarians from Eastern Thailand. *Science Reports of the Institute of Geoscience, University of Tsukuba, section B: Geological Sciences* 18: 1-17.
- SCHWARTZAPFEL J. A. & HOLDSWORTH B. K. 1996. — Upper Devonian and Mississippian radiolarian zonation and biostratigraphy of the Woodford, Sycamore, Caney and Goddard Formations, Oklahoma. *Cushman Foundation for Foraminiferal Research, Special Publication* 33: 1-275.
- SEO E.-H. & WON M.-Z. 2009. — Review of the genus *Polyentactinia* and the family Polyentactiniidae. *Micropaleontology* 55 (1): 61-74. <http://www.jstor.org/stable/20627972>
- SHENG J. Z. & WANG Y. J. 1985. — Fossil Radiolaria from Kufeng Formation at Longtan, Nanjing. *Acta Palaeontologica Sinica* 24 (2): 171-183.
- SUGIYAMA K. 2000. — Replacement names for Permian stauraxon radiolarians. *Paleontological Research* 4 (3): 227, 228. <https://doi.org/10.2517/prpsj.4.227>
- TAKEMURA A. & NAKASEKO K. 1981. — A new Permian radiolarian genus from the Tamba Belt, Southwest Japan. *Transactions and Proceedings of the Palaeontological Society of Japan, New Series* 124: 208-214. https://doi.org/10.14825/prpsj1951.1981.124_208
- TERS M. & DEFLANDRE G. 1966. — Sur l'âge cambro-silurien des terrains anciens de la Vendée Littorale (ex-Briovérien). *Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences (Paris), Série D: Sciences naturelles* 262 (3): 339-342. <http://gallica.bnf.fr/ark:/12148/bpt6k5489696x>
- WAKAMATSU H., SUGIYAMA K. & FURUTANI H. 1990. — Silurian and Devonian radiolarians from the Kurosegawa Tectonic Zone, southwest Japan. *Journal of Earth Sciences Nagoya University* 37: 157-192.

- WANG R. 1995. — Radiolarian fauna from Gufeng Formation (Lower Permian) in Hushan area of Nanjing, Jiangsu province. *Scientia Geologica Sinica* 30 (2): 139-148.
- WANG Y. J. 1997. — An Upper Devonian (Famennian) radiolarian fauna from carbonate rocks, northern Xinjiang. *Acta Micropalaeontologica Sinica* 14 (2): 149-160.
- WANG Y. J. & KUANG 1993. — Early Carboniferous radiolarians from Qinzhou, southeastern Guangxi. *Acta Micropalaeontologica Sinica* 10 (2): 275-287.
- WANG Y. J. & SHANG Q. 2001. — Discovery of the *Neoalbaillella* radiolarian fauna in the Shaiwa Group of Ziyun District, Guizhou. *Acta Micropalaeontologica Sinica* 18 (2): 111-121.
- WANG Y. J., CHENG J. F. & ZHANG Y. D. 2008. — New radiolarian genera and species of Heituao Formation (Ordovician) in the Kuruktag Region, Xinjiang. *Acta Palaeontologica Sinica* 47: 393-404.
- WANG Y. J., CHENG J. F. & ZHANG Y. D. 2010. — Fossil preservation modes and functional discussion of the basic structures of a new radiolarian genus *Gansuceroikiscum* Wang gen. nov. *Acta Palaeontologica Sinica* 49 (4): 472-476.
- WEBBY B. D. & BLOM W. 1986. — The first well-preserved radiolarians from the Ordovician of Australia. *Journal of Paleontology* 60: 145-157. <https://doi.org/10.1017/S0022336000021594>
- WON M. Z. 1983. — Radiolarien aus dem Unterkarbon des Rheinischen Schiefergebirges (Deutschland). *Palaeontographica. Abteilung A: Palaeozoologie-Stratigraphie* 182: 116-175.
- WON M. Z. 1991. — Lower Carboniferous radiolarians from siliceous boulders in Western Germany. *Journal of the Paleontological Society of Korea* 7 (2): 77-106.
- WON M. Z. 1997a. — Review of family Entactiniidae (Radiolaria), and taxonomy and morphology of Entactiniidae in the late Devonian (Frasnian) Gogo Formation, Australia. *Micropaleontology* 43 (4): 333-369. <https://doi.org/10.2307/1485930>
- WON M. Z. 1997b. — The proposed new radiolarian subfamily Retentactiniinae (Entactiniidae) from the late Devonian (Frasnian) Gogo Formation, Australia. *Micropaleontology* 43 (4): 371-418. <https://doi.org/10.2307/1485931>
- WON M. Z. 1998. — A Tournaisian (Lower Carboniferous) radiolarian zonation and radiolarians of the *A. pseudoparadoxa* Zone from Oese (Reinische Schiefergebirge), Germany. *Journal of Korean Earth Science Society* 19 (2): 216-259.
- WON M. Z. & BELOW R. 1999. — Cambrian Radiolaria from the Georgina Basin, Queensland, Australia. *Micropaleontology* 45: 325-363. <https://doi.org/10.2307/1486119>
- WON M. Z., BLODGETT R. B. & NESTOR V. 2002. — Llandoveryan (Early Silurian) radiolarians from the Road River Formation of East-Central Alaska and the new family Haplotaeniatiidae. *Journal of Paleontology* 76: 941-964. <https://doi.org/10.1017/S0022336000057796>
- WON M. Z. & IAMS W. J. 2002. — Late Cambrian radiolarian faunas and biostratigraphy of the Cow Head Group, western Newfoundland. *Journal of Paleontology* 76 (1): 1-33. <https://doi.org/10.1017/S0022336000017315>
- WON M. Z. & IAMS W. J. 2011. — Earliest Arenig Radiolarians from the Cow Head Group, Western Newfoundland. *Journal of Paleontology* 85 (1): 156-177. <https://doi.org/10.1666/10-102.1>
- WON M. Z. & IAMS W. J. 2015. — Early/Middle Arenig (Late Floian) Radiolarian Faunal Assemblages from Cow Head Group, Western Newfoundland. *Palaeontographica Abteilung A*: 1-63.
- WON M. Z., IAMS W. J. & REED K. 2005. — Earliest Ordovician (Early to Middle Tremadocian) radiolarian faunas of the Cow Head Group, Western Newfoundland. *Journal of Paleontology* 79 (3): 433-459. [https://doi.org/10.1666/0022-3360\(2005\)079<0433:EOETMT>2.0.CO;2](https://doi.org/10.1666/0022-3360(2005)079<0433:EOETMT>2.0.CO;2)
- WON M. Z., IAMS W. J. & REED K. 2007. — Late Tremadocian Radiolarian Faunas and Biostratigraphy of the Cow Head Group, Western Newfoundland, Canada. *Journal of the Korean Earth Science Society* 28 (4): 497-540. <https://doi.org/10.5467/JKESS.2007.28.4.497>
- WU J., FENG Q., GUI B. & LIU G. 2010. — Some New Radiolarian Species and Genus from Upper Permian in Guangxi Province, South China. *Journal of Paleontology* 84 (5): 879-894. <https://doi.org/10.1666/09-057.1>

Submitted on 11 May 2017;
accepted on 9 July 2017;
published on 29 September 2017.

APPENDICES

APPENDIX 1. — Index of Paleozoic genera sorted alphabetically. The number refers to the image number in the corresponding part of this catalogue named “The catalogue”.

<i>Aciferopylorum</i> (syn.).....	254	<i>Cornum</i>	278
<i>Adamas</i> (hom.)	289	<i>Corythoecia</i>	279
<i>Adamasirad</i>	290	<i>Costaentactinia</i>	86
<i>Afanasievella</i>	76	<i>Cowheadia</i>	281
<i>Aitchisonellum</i> (syn.).....	48	<i>Curvalbaillella</i> (syn.).....	30
<i>Albaillella</i>	1	<i>Curvechidnina</i>	52
<i>Allocyrtium</i> (syn.).....	218	<i>Cyclocarpus</i> (n.d.).....	87
<i>Altaiesphaera</i>	49	<i>Cyrtentactinia</i>	229
<i>Anakrusa</i>	335	<i>Cyrtisphaeractenium</i>	222
<i>Antygopora</i>	234	<i>Cyrtisphaeronemium</i>	223
<i>Apophysactinia</i>	77	<i>Deflandrella</i> (hom.)	171
<i>Apophysisphaera</i> (syn.).....	78	<i>Deflandrellium</i>	224
<i>Archaeocenosphaera</i> (syn.).....	50	<i>Deflantrica</i>	142
<i>Archaeopyramisa</i> (syn.).....	203	<i>Devoniglansus</i>	242
<i>Archeoentactinia</i>	43	<i>Diparvavipila</i>	69
<i>Archeoproventocitum</i>	280	<i>Diploplegma</i> (n.d.).....	308
<i>Archocyrtium</i>	219	<i>Dorydictyum</i> (n.d.).....	309
<i>Arcoclathrata</i>	131	<i>Doryplegma</i> (n.d.).....	310
<i>Areolicaudatus</i>	181	<i>Dorysphaera</i> (n.d.)	311
<i>Arrectoalatus</i>	276	<i>Druppalonche</i> (syn.)	88
<i>Arrhiniella</i> (syn.).....	132	<i>Duodecimentactinia</i>	89
<i>Aspiculum</i>	284	<i>Duosphaera</i> (syn.)	90
<i>Astroentactinia</i> (syn.)	79	<i>Duplexia</i> (n.d.)	312
<i>Auliela</i>	336	<i>Durahelenifore</i> (syn.).....	13
<i>Azyrtalia</i>	337	<i>Echidnina</i>	53
<i>Batoballa</i>	338	<i>Ectoactinia</i> (n.d.)	313
<i>Belowea</i> (syn.).....	80	<i>Ehrenbergia</i> (n.d.).....	314
<i>Beothuka</i>	235	<i>Ellipsocopicyntra</i> (syn.)	243
<i>Bientactinosphaera</i> (syn.)	81	<i>Ellipsostigma</i> (n.d.).....	163
<i>Bipyllospongia</i>	238	<i>Entactinia</i> (syn.)	91
<i>Bisphaera</i> (hom., syn.)	82	<i>Entactinosphaera</i>	92
<i>Bissylentactinia</i>	133	<i>Eoalbaillella</i>	14
<i>Borisella</i>	83	<i>Eoconcharium</i>	339
<i>Brianellium</i>	182	<i>Eostylodictya</i> (syn.)	136
<i>Callala</i>	84	<i>Etymbalbaillella</i>	294
<i>Campanulithus</i>	9	<i>Follicucullus</i>	31
<i>Camptoalatus</i>	277	<i>Foremanconus</i> (syn.).....	32
<i>Cancellientactinia</i>	291	<i>Foremanhelena</i>	172
<i>Cancellisphaera</i>	51	<i>Foremaniella</i>	225
<i>Cancellosphaera</i>	85	<i>Franklinia</i> (hom.)	268
<i>Cangyuanella</i> (syn.)	10	<i>Fukujius</i> (n.d.).....	143
<i>Cariver</i> (syn.).....	29	<i>Fungomacula</i>	295
<i>Carposphaeridium</i> (n.d.)	307	<i>Fusalfanus</i>	257
<i>Caspiaza</i>	292	<i>Fusuconcharium</i>	340
<i>Caulotella</i>	170	<i>Futobari</i>	258
<i>Cavasphaera</i>	285	<i>Gansuceroitokiscum</i>	15
<i>Cerarchocyrtium</i>	220	<i>Gedauia</i> (syn.)	137
<i>Ceratoclathrum</i> (n.n.).....	221	<i>Gigantospiculum</i>	54
<i>Ceratoikiscum</i>	11	<i>Glanta</i>	16
<i>Cessipylarum</i> (syn.)	255	<i>Goodbodium</i> (syn.).....	144
<i>Cessipylorum</i> (syn.).....	256	<i>Gracilentactinia</i>	93
<i>Circulaforma</i>	12	<i>Grandetortura</i>	200
<i>Copiconulus</i>	293	<i>Grosmorneus</i>	55
<i>Copicyntra</i>	239	<i>Guangxitrisphaera</i> (n.d.)	315
<i>Copicyntroides</i>	240	<i>Gustefana</i> (n.d.).....	316
<i>Copiellintra</i>	241	<i>Gyrosphaera</i>	250
<i>Cornellus</i> (syn.).....	189	<i>Haplentactinia</i>	134

APPENDIX 1. — Continuation.

<i>Haploaxxon</i>	190	<i>Neoechidnina</i>	56
<i>Haplodiacanthus</i> (syn.)	33	<i>Neoholoeciscus</i>	22
<i>Haplopolus</i> (syn.)	269	<i>Neopalaeospiculum</i>	65
<i>Haplotaeniatum</i>	251	<i>Noblella</i> (hom., syn.)	61
<i>Hegleria</i>	270	<i>Novormistonina</i>	298
<i>Helenifore</i>	17	<i>Nyfrieslandia</i>	287
<i>Helioentactinia</i> (n.d.)	94	<i>Octatormentum</i>	201
<i>Helminentactinia</i> (syn.)	259	<i>Orbiculopylorum</i>	253
<i>Holdisphaera</i>	95	<i>Oriundogutta</i>	264
<i>Holdsworthella</i> (syn.)	34	<i>Ormistonella</i>	193
<i>Holdsworthum</i>	145	<i>Ormistonina</i> (hom.)	299
<i>Holoeciscus</i>	18	<i>Ornatoentactinia</i> (syn.)	106
<i>Huasha</i> (syn.)	2	<i>Ouaka</i> (syn.)	185
<i>Imotoella</i> (syn.)	3	<i>Pactarentinia</i>	147
<i>Inaequalientactinia</i> (syn.)	96	<i>Palacantholithus</i>	40
<i>Inanibigutta</i>	260	<i>Palaeoactinosphaera</i>	300
<i>Inanigutta</i>	261	<i>Palaeoastrocyclia</i> (syn.)	138
<i>Inanihella</i>	262	<i>Palaeodecaradium</i>	148
<i>Induropilarius</i> (n.d.)	317	<i>Palaeodiscalsus</i> (n.d.)	333
<i>Insolitignum</i>	146	<i>Palaeodiscus</i> (n.d.)	334
<i>Intracarpus</i>	271	<i>Palaeoephippium</i>	149
<i>Involutentactinia</i>	97	<i>Palaeolithochytris</i> (n.d.)	318
<i>Ishigaconus</i>	35	<i>Palaeolithocyelia</i>	139
<i>Ishigaum</i>	173	<i>Palaeopentactinorbis</i> (syn.)	107
<i>Kalimnasphaera</i>	263	<i>Palaeopyramidium</i>	150
<i>Kantollum</i>	230	<i>Palaeorubus</i>	343
<i>Kappaforma</i>	19	<i>Palaeoscenidium</i>	151
<i>Kashiwara</i>	98	<i>Palaeosphaera</i> (syn.)	70
<i>Kimagior</i> (syn.)	174	<i>Palaeospiculum</i>	66
<i>Klaengspongius</i>	244	<i>Palaeothalomnus</i>	152
<i>Konyrium</i>	341	<i>Palaeotridus</i> (syn.)	153
<i>Labyrinthia</i> (syn.)	236	<i>Palaeotripus</i> (syn.)	154
<i>Labyrinthosphaera</i>	252	<i>Palaeoumbraclum</i> (syn.)	155
<i>Lacisus</i>	342	<i>Palaeoxyphostylus</i> (syn.)	108
<i>Lapidopiscum</i>	4	<i>Palamphimorphium</i> (n.d.)	319
<i>Latentibifistula</i>	183	<i>Paleocenosphera</i> (n.d.)	320
<i>Latentidiota</i>	210	<i>Paleoxiphosphaera</i> (n.d.)	109
<i>Latentifistula</i>	184	<i>Palhindeolithus</i> (n.d.)	321
<i>Lithocannosphaeropsis</i>	296	<i>Papinochium</i> (n.d.)	322
<i>Lithosphaera</i> (hom.)	44	<i>Parabeothuka</i>	237
<i>Longtanella</i> (syn.)	36	<i>Paracopicyntra</i>	245
<i>Magnentactinia</i>	99	<i>Parafollicucullus</i>	37
<i>Magnisphaera</i>	100	<i>Paraholoeciscus</i> (syn.)	23
<i>Maletzella</i>	272	<i>Paramphibrachium</i>	140
<i>Megaporus</i>	297	<i>Pararcheoentactinia</i>	45
<i>Meschedea</i> (syn.)	101	<i>Pararchocyrtium</i>	227
<i>Microporosa</i>	102	<i>Parasecuicollacta</i> (syn.)	71
<i>Moskovistella</i>	103	<i>Paratriposphaera</i>	110
<i>Mostlerispongius</i>	204	<i>Parechidnina</i>	57
<i>Mostlerium</i> (syn.)	226	<i>Parvalanapila</i> (syn.)	72
<i>Multientactinia</i>	104	<i>Patrickella</i> (syn.)	212
<i>Multisphaera</i>	164	<i>Paulanoblella</i> (syn.)	62
<i>Munzuwonella</i>	105	<i>Paulianella</i> (syn.)	194
<i>Nabespecha</i> (syn.)	191	<i>Paurinella</i>	246
<i>Nazaromistonella</i> (syn.)	20	<i>Perforentactinia</i>	111
<i>Nazarovella</i> (hom., syn.)	192	<i>Plenoentactinia</i>	112
<i>Nazarovispongius</i> (syn.)	211	<i>Plenosphaera</i>	113
<i>Nazarovites</i>	21	<i>Pluristratoentactinia</i>	114
<i>Nealbaillella</i>	5	<i>Plussatispila</i>	265
<i>Neaspiculum</i>	286	<i>Polydroentactinia</i>	115

APPENDIX 1. — Continuation.

<i>Polyentactinia</i>	161	<i>Spongentactinella</i> (syn.)	166
<i>Polyfistula</i>	195	<i>Spongentactinia</i>	121
<i>Popofskyellum</i>	231	<i>Spongocoelia</i> (n.d.)	326
<i>Praedeflandrella</i>	175	<i>Spongomassa</i>	47
<i>Praeholdsworthella</i> (syn.)	38	<i>Spongosphaera</i> (hom.)	122
<i>Praesaturnalis</i>	156	<i>Spongosphaeradiscus</i> (syn.)	247
<i>Praespongocoelia</i>	301	<i>Srakaeosphaera</i> (n.d.)	327
<i>Primaritripus</i> (n.d.)	323	<i>Staurentactinia</i>	186
<i>Procyrtis</i>	157	<i>Staurodruppa</i> (syn.)	123
<i>Proholoeciscus</i> (n.d.)	24	<i>Stauroplegma</i> (n.d.)	328
<i>Protoalbaillella</i>	6	<i>Stigmatosphaerostylus</i>	124
<i>Protobiramus</i>	302	<i>Stolbergia</i> (syn.)	125
<i>Protoceratoikiscum</i>	25	<i>Stylactinosphaera</i>	305
<i>Protoentactinia</i>	63	<i>Subechidnina</i>	58
<i>Protoholoeciscus</i>	26	<i>Svalbardospiculum</i>	68
<i>Protoproventocitum</i>	282	<i>Syntagentactinia</i>	135
<i>Protosegmentum</i> (n.d.)	324	<i>Tamonella</i>	248
<i>Protospongentactinia</i>	64	<i>Tetracircinata</i> (syn.)	206
<i>Proventocitum</i>	283	<i>Tetraedroclathrum</i> (n.n.)	158
<i>Provisocyntra</i>	116	<i>Tetragregnon</i>	207
<i>Pseudoalbaillella</i> (syn.)	39	<i>Tetrapaurinella</i>	249
<i>Pseudolithelius</i> (syn.)	202	<i>Tetrasphaera</i> (n.d.)	329
<i>Pseudorotasphaera</i>	73	<i>Tetraspongoactinia</i> (syn.)	208
<i>Pseudospongoprimum</i>	273	<i>Tetratormentum</i>	209
<i>Pseudostigmatosphaera</i> (n.d.)	325	<i>Tetrentactinia</i>	167
<i>Pseudotormentus</i>	176	<i>Thecentactinia</i> (syn.)	126
<i>Pylentonema</i>	160	<i>Tlecerina</i>	159
<i>Quadrupes</i>	162	<i>Tormentum</i>	216
<i>Quadratapora</i>	344	<i>Totollum</i>	232
<i>Quadricaulis</i>	196	<i>Triactofenestrella</i> (syn.)	178
<i>Quadrilobata</i>	205	<i>Triaoentactinosphaera</i> (syn.)	169
<i>Quadriremis</i> (syn.)	197	<i>Trianosphaera</i>	168
<i>Quasibeothuka</i> (n.d.)	274	<i>Trifidospongia</i> (syn.)	179
<i>Quinqueremis</i>	198	<i>Trigonosphaera</i>	306
<i>Raciditor</i> (syn.)	199	<i>Trilacertus</i> (syn.)	187
<i>Radiobisphaera</i>	117	<i>Trilonche</i>	127
<i>Ramuspiculum</i>	67	<i>Triplanospongos</i>	180
<i>Raphidocyclicus</i>	27	<i>Triplococcus</i>	266
<i>Rectotormentum</i>	213	<i>Triplosphaera</i> (n.d.)	330
<i>Retentactinia</i>	118	<i>Tuscaritellum</i>	233
<i>Retientactinosphaera</i>	303	<i>Uberinterna</i>	128
<i>Retisphaera</i>	119	<i>Ulcundia</i> (n.d.)	331
<i>Robotium</i> (syn.)	228	<i>Varispiculum</i>	59
<i>Rotasphaera</i> (syn.)	74	<i>Wangia</i> (n.d.)	332
<i>Russirad</i>	304	<i>Westernbrookia</i>	60
<i>Ruzhencevispongia</i>	214	<i>Wonella</i> (hom.)	129
<i>Sanctipaulellum</i>	288	<i>Wonella</i> (syn.)	188
<i>Saturnalbaillella</i> (syn.)	7	<i>Wonia</i>	217
<i>Scharfenbergia</i> (hom.)	215	<i>Wuyia</i>	130
<i>Secuicollata</i>	75	<i>Xiphachistrella</i> (syn.)	28
<i>Shangella</i>	177	<i>Xiphocabrium</i>	41
<i>Sinosphaera</i>	120	<i>Xiphocladia</i>	42
<i>Somphoentactinia</i> (syn.)	165	<i>Zadrappolus</i>	267
<i>Sphaerodiscus</i> (syn.)	141	<i>Zhuangodiscus</i>	275
<i>Sphaeroentactinia</i>	46		
<i>Spinodeflandrella</i> (syn.)	8		

APPENDIX 2. — Index of Paleozoic genera sorted using the classification (Orders, Families) with their status. The number refers to the position in the corresponding part of this catalogue named “The catalogue”.

ALBAILLELLARIA Deflandre, 1953

ALBAILLELLIDAE

Deflandre, 1953 *sensu* Holdsworth (1977)

- 1 *Albaillella*
- 2 *Huasha* (syn.)
- 3 *Imotoella* (syn.)
- 4 *Lapidopiscum*
- 5 *Neoalbaillella*
- 6 *Protoalbaillella*
- 7 *Saturnalbaillella* (syn.)
- 8 *Spinodeflandrella* (syn.)

CERATOIKISCIDAE Holdsworth, 1969

- 9 *Campanulithus*
- 10 *Cangyuanella* (syn.)
- 11 *Ceratoikiscum*
- 12 *Circulaforma*
- 13 *Durahelenifore* (syn.)
- 14 *Eoalbaillella*
- 15 *Gansucercatoikiscum*
- 16 *Glanta*
- 17 *Helenifore*
- 18 *Holoeciscus*
- 19 *Kappaforma*
- 20 *Nazaromistonella* (syn.)
- 21 *Nazarovites*
- 22 *Neoholoeciscus*
- 23 *Paraholoeciscus* (syn.)
- 24 *Proholoeciscus* (n.d.)
- 25 *Protoceratoikiscum*
- 26 *Protoholoeciscus*
- 27 *Raphidociclicus*
- 28 *Xiphachistrella* (syn.)

FOLLICUCULLIDAE Ormiston & Babcock, 1979

- 29 *Cariver* (syn.)
- 30 *Curvalbaillella* (syn.)
- 31 *Follicucullus*
- 32 *Foremanconus* (syn.)
- 33 *Haplodiacanthus* (syn.)
- 34 *Holdsworthella* (syn.)
- 35 *Ishigaconus*
- 36 *Longtanella* (syn.)
- 37 *Parafollicucullus*
- 38 *Praeholdsworthella* (syn.)
- 39 *Pseudoalbaillella* (syn.)

ALBAILLELLARIA incertae sedis

- 40 *Palacantholithus*
- 41 *Xiphocabrium*
- 42 *Xiphocladia*

ARCHAEOSPICULARIA Dumitrica, Caridroit & De Wever, 2000

ARCHEOENTACTINIIDAE Won & Below, 1999

- 43 *Archeoentactinia*
- 44 *Lithosphaera* (hom.)
- 45 *Pararchoentactinia*
- 46 *Sphaeroentactinia*
- 47 *Spongomassa*

ECHIDNINIDAE Kozur, Mostler & Repetski, 1996

- 48 *Aitchisonellum* (syn.)
- 49 *Altaiesphaera*
- 50 *Archaeocenospaera* (syn.)
- 51 *Cancellisphaera*
- 52 *Curvechidnina*
- 53 *Echidnina*
- 54 *Gigantospiculum*
- 55 *Grosmoreneus*
- 56 *Neoechidnina*
- 57 *Parechidnina*
- 58 *Subechidnina*
- 59 *Varispiculum*
- 60 *Westernbrookia*

PROTOENTACTINIIDAE

Kozur, Mostler & Repetski, 1996

- 61 *Noblella* (hom., syn.)
- 62 *Paulanoblella* (syn.)
- 63 *Protoentactinia*
- 64 *Protospongentactinia*

PALAEOSPICULIDAE Won *in* Won & Below, 1999

- 65 *Neopalaeospiculum*
- 66 *Palaeospiculum*
- 67 *Ramuspiculum*
- 68 *Svalbardospiculum*

SECUCOLLACTIDAE Nazarov & Ormiston, 1984

- 69 *Diparvavila*
- 70 *Palaeosphaera* (syn.)
- 71 *Parasecuicollacta* (syn.)
- 72 *Parvalanapila* (syn.)
- 73 *Pseudorotasphaera*
- 74 *Rotasphaera* (syn.)
- 75 *Secuicollacta*

ENTACTINARIA Kozur & Mostler, 1982

ENTACTINIIDAE Riedel, 1967

- 76 *Afanasievella*
- 77 *Apophysactinia*
- 78 *Apophysisphaera* (syn.)
- 79 *Astroentactinia* (syn.)
- 80 *Belowea* (syn.)
- 81 *Bientactinosphaera* (syn.)
- 82 *Bisphaera* (hom., syn.)
- 83 *Borisella*
- 84 *Callela*

APPENDIX 2. — Continuation.

- | | | | |
|---|------------------------------------|-----|---|
| 85 | <i>Cancellospaera</i> | | |
| 86 | <i>Costaentactinia</i> | | |
| 87 | <i>Cyclocarpus</i> (n.d.) | | |
| 88 | <i>Druppalonche</i> (syn.) | | |
| 89 | <i>Duodecimentactinia</i> | | |
| 90 | <i>Duosphaera</i> (syn.) | | |
| 91 | <i>Entactinia</i> (syn.) | | |
| 92 | <i>Entactinosphaera</i> | | |
| 93 | <i>Gracilentactinia</i> | | |
| 94 | <i>Helioentactinia</i> (n.d.) | | |
| 95 | <i>Holdisphaera</i> | | |
| 96 | <i>Inaequalientactinia</i> (syn.) | | |
| 97 | <i>Involuentactinia</i> | | |
| 98 | <i>Kashiwara</i> | | |
| 99 | <i>Magnentactinia</i> | | |
| 100 | <i>Magnisphaera</i> | | |
| 101 | <i>Meschedea</i> (syn.) | | |
| 102 | <i>Microporosa</i> | | |
| 103 | <i>Moskovistella</i> | | |
| 104 | <i>Multientactinia</i> | | |
| 105 | <i>Munzuwonella</i> | | |
| 106 | <i>Ornatoentactinia</i> (syn.) | | |
| 107 | <i>Palaeopentactinorbis</i> (syn.) | | |
| 108 | <i>Palaeoxyphostylus</i> (syn.) | | |
| 109 | <i>Paleoxiphosphaera</i> (n.d.) | | |
| 110 | <i>Paratriposphaera</i> | | |
| 111 | <i>Perforentactinia</i> | | |
| 112 | <i>Plenoentactinia</i> | | |
| 113 | <i>Plenosphaera</i> | | |
| 114 | <i>Pluristratoentactinia</i> | | |
| 115 | <i>Polyedroentactinia</i> | | |
| 116 | <i>Provisocyntra</i> | | |
| 117 | <i>Radiobisphaera</i> | | |
| 118 | <i>Retentactinia</i> | | |
| 119 | <i>Retisphaera</i> | | |
| 120 | <i>Sinosphaera</i> | | |
| 121 | <i>Spongentactinia</i> | | |
| 122 | <i>Spongospaera</i> (hom.) | | |
| 123 | <i>Staurodruppa</i> (syn.) | | |
| 124 | <i>Stigmosphaerostylus</i> | | |
| 125 | <i>Stolbergia</i> (syn.) | | |
| 126 | <i>Thecentactinia</i> (syn.) | | |
| 127 | <i>Trilonche</i> | | |
| 128 | <i>Uberinterna</i> | | |
| 129 | <i>Wonella</i> (hom.) | | |
| 130 | <i>Wuyia</i> | | |
| HAPLENTACTINIIDAE Nazarov <i>in</i> Nazarov & Popov, 1980 | | | |
| 131 | <i>Arcoclathrata</i> | | |
| 132 | <i>Arrhiniella</i> (syn.) | | |
| 133 | <i>Bissylentactinia</i> | | |
| 134 | <i>Haplentactinia</i> | | |
| 135 | <i>Syntagentactinia</i> | | |
| | | | PALAEOLITHOCYCLIIDAE Kozur & Mostler, 1989 |
| | | 136 | <i>Eostylodictya</i> (syn.) |
| | | 137 | <i>Gedauiia</i> (syn.) |
| | | 138 | <i>Palaeoastrocyclia</i> (syn.) |
| | | 139 | <i>Palaeolithocyclia</i> |
| | | 140 | <i>Paramphibrachium</i> |
| | | 141 | <i>Sphaerodiscus</i> (syn.) |
| | | | PALAEOSCENIDIIDAE Riedel, 1967 |
| | | 142 | <i>Deflantrica</i> |
| | | 143 | <i>Fukujius</i> (n.d.) |
| | | 144 | <i>Goodbodium</i> (syn.) |
| | | 145 | <i>Holdsworthum</i> |
| | | 146 | <i>Insolitignum</i> |
| | | 147 | <i>Pactarentinia</i> |
| | | 148 | <i>Palaeodecaradium</i> |
| | | 149 | <i>Palaeoephippium</i> |
| | | 150 | <i>Palaeopyramidium</i> |
| | | 151 | <i>Palaeoscenidium</i> |
| | | 152 | <i>Palaeothalomnus</i> |
| | | 153 | <i>Palaeotrifidus</i> (syn.) |
| | | 154 | <i>Palaeotripus</i> (syn.) |
| | | 155 | <i>Palaeoumbaculum</i> (syn.) |
| | | 156 | <i>Praesaturnalis</i> |
| | | 157 | <i>Procyrtis</i> |
| | | 158 | <i>Tetraedroclathrum</i> (n.n.) |
| | | 159 | <i>Tlecerina</i> |
| | | | PYLENTONEMIDAE Deflandre, 1963 |
| | | 160 | <i>Pylentonema</i> |
| | | 161 | <i>Polyentactinia</i> |
| | | 162 | <i>Quadrapesus</i> |
| | | | TETRENTACTINIIDAE Kozur & Mostler, 1979 |
| | | 163 | <i>Ellipsostigma</i> (n.d.) |
| | | 164 | <i>Multisphaera</i> |
| | | 165 | <i>Somphoentactinia</i> (syn.) |
| | | 166 | <i>Spongentactinella</i> (syn.) |
| | | 167 | <i>Tetrentactinia</i> |
| | | 168 | <i>Trienosphaera</i> |
| | | 169 | <i>Trienoentactinosphaera</i> (syn.) |
| | | | LATENTIFISTULARIA Caridroit, De Wever & Dumitrica, 1999 |
| | | | CAULETELLIDAE Caridroit, De Wever & Dumitrica, 1999 |
| | | 170 | <i>Cauletella</i> |
| | | 171 | <i>Deflandrella</i> (hom.) |
| | | 172 | <i>Foremanhelenia</i> |
| | | 173 | <i>Ishigaum</i> |
| | | 174 | <i>Kimagior</i> (syn.) |
| | | 175 | <i>Praedeflandrella</i> |
| | | 176 | <i>Pseudotormentus</i> |
| | | 177 | <i>Shangella</i> |
| | | 178 | <i>Triactofenestrella</i> (syn.) |
| | | 179 | <i>Trifidospongos</i> (syn.) |
| | | 180 | <i>Triplanospongos</i> |

APPENDIX 2. — Continuation.

LATENTIFISTULIDAE Nazarov & Ormiston, 1983

- 181 *Areolicaudatus*
- 182 *Brianellium*
- 183 *Latentibifistula*
- 184 *Latentifistula*
- 185 *Ouaka* (syn.)
- 186 *Staurentactinia*
- 187 *Trilacertus* (syn.)
- 188 *Wonella* (syn.)

ORMISTONELLIDAE De Wever & Caridroit, 1984
sensu Dumitrica *in* De Wever *et al.* (2001)

- 189 *Cornellus* (syn.)
- 190 *Haploaxon*
- 191 *Nabespecha* (syn.)
- 192 *Nazarovella* (hom., syn.)
- 193 *Ormistonella*
- 194 *Paulianella* (syn.)
- 195 *Polyfistula*
- 196 *Quadricaulis*
- 197 *Quadriremis* (syn.)
- 198 *Quinqueremis*
- 199 *Raciditor* (syn.)

PSEUDOLITHELIIDAE

Kozur & Mostler, 1989 *sensu* De Wever *et al.* (2001)

- 200 *Grandetortura*
- 201 *Octatortementum*
- 202 *Pseudolithelius* (syn.)

TETRATORMENTIDAE Nestell & Nestell, 2010

- 203 *Archaeopyramisa* (syn.)
- 204 *Mostlerispongus*
- 205 *Quadrilobata*
- 206 *Tetracircinata* (syn.)
- 207 *Tetragegnon*
- 208 *Tetraspongoactinia* (syn.)
- 209 *Tetratortementum*

RUZHENCEVISPONGIDAE Kozur, 1980

- 210 *Latentidiota*
- 211 *Nazarovispongus* (syn.)
- 212 *Patrickella* (syn.)
- 213 *Rectotortementum*
- 214 *Ruzhencevispongus*
- 215 *Scharfenbergia* (hom.)
- 216 *Tortementum*
- 217 *Wonia*

?NASSELLARIA Ehrenberg, 1876

ARCHOCYRTIIDAE Kozur & Mostler, 1981 emend.
Cheng (1986)

- 218 *Allocyrtium* (syn.)
- 219 *Archocyrtium*
- 220 *Cerarchocyrtium*
- 221 *Ceratoclathrum* (n.n.)

- 222 *Cyrtisphaeractenium*
- 223 *Cyrtisphaeronemium*
- 224 *Deflandrellium*
- 225 *Foremaniella*
- 226 *Mostlerium* (syn.)
- 227 *Pararchocyrtium*
- 228 *Robotium* (syn.)

POPOFSKYELLIDAE Kozur & Mostler, 1981 emend.
Cheng (1986)

- 229 *Cyrtentactinia*
- 230 *Kantollum*
- 231 *Popofskyellum*
- 232 *Totollum*
- 233 *Tuscaritellum*

SPUMELLARIA Ehrenberg, 1876

ANTYGOPORIDAE Maletz & Bruton, 2007

- 234 *Antygopora*
- 235 *Beothuka*
- 236 *Labyrinthia* (syn.)
- 237 *Parabeothuka*

COPICYNTRIDAE Kozur & Mostler, 1989

- 238 *Bipylospongia*
- 239 *Copicyntra*
- 240 *Copicyntroides*
- 241 *Copiellintra*
- 242 *Devoniglansus*
- 243 *Ellipsocopicyntra* (syn.)
- 244 *Klaengspongos*
- 245 *Paracopicyntra*
- 246 *Paurinella*
- 247 *Spongosphaeradiscus* (syn.)
- 248 *Tamonella*
- 249 *Tetrapaurinella*

HAPLOTAENIATIDAE Won, Blodgett & Nestor, 2002

- 250 *Gyrosphaera*
- 251 *Haplotaeniatum*
- 252 *Labyrinthosphaera*
- 253 *Orbiculopylorum*

INANIGUTTIDAE Nazarov & Ormiston, 1984 *sensu*
Danelian & Popov (2003)

- 254 *Aciferopylorum* (syn.)
- 255 *Cessipylarum* (syn.)
- 256 *Cessipylorum* (syn.)
- 257 *Fusalfanus*
- 258 *Futobari*
- 259 *Helminentactinia* (syn.)
- 260 *Inanibigutta*
- 261 *Inanigutta*
- 262 *Inanihella*
- 263 *Kalimnasphaera*
- 264 *Oriundogutta*

APPENDIX 2. — Continuation.

- 265 *Plussatispila*
266 *Triplococcus*
267 *Zadrappolus*

SPUMELLARIA INCERTAE SEDIS

- 268 *Franklinia* (hom.)
269 *Haplopolus* (syn.)
270 *Hegleria*
271 *Intracarpus*
272 *Maletzella*
273 *Pseudospongoprimum*
274 *Quasibeothuka* (n.d.)
275 *Zhuangodiscus*

ORDER INCERTAE SEDIS

CORYTHOECIDAE Nazarov *in* Nazarov & Rudenko, 1981

- 276 *Arrectoalatus*
277 *Camptoalatus*
278 *Cornum*
279 *Corythoecia*

PROVENTOCITIDAE Aitchison, 1998

- 280 *Archeoproventocitum*
281 *Cowheadia*
282 *Protoproventocitum*
283 *Proventocitum*

ASPICULIDAE Won, Iams & Reed, 2005

- 284 *Aspiculum*
285 *Cavasphaera*
286 *Neoaspiculum*
287 *Nyfrieslandia*
288 *Sanctipaulelum*

ORDER & FAMILY INCERTAE SEDIS

- 289 *Adamas* (hom.)
290 *Adamasirad*
291 *Cancellientactinia*
292 *Caspiaza*
293 *Copiconulus*
294 *Etymalbaillella*
295 *Fungomacula*
296 *Lithocannosphaeropsis*
297 *Megaporus*
298 *Novormistonina*
299 *Ormistonina* (hom.)
300 *Palaeoactinosphaera*
301 *Praespongocoelia*

- 302 *Protobiramus*
303 *Retientactinosphaera*
304 *Russirad*
305 *Stylactinosphaera*
306 *Trigonosphaera*

NOMINA DUBIA

- 307 *Carposphaeridium* (n.d.)
308 *Diploplegma* (n.d.)
309 *Dorydictyum* (n.d.)
310 *Doryplegma* (n.d.)
311 *Dorysphaera* (n.d.)
312 *Duplexia* (n.d.)
313 *Ectoactinia* (n.d.)
314 *Ehrenbergia* (n.d.)
315 *Guangxitrisphaera* (n.d.)
316 *Gustefana* (n.d.)
317 *Induropilarius* (n.d.)
318 *Palaeolithochytris* (n.d.)
319 *Palamphimorphium* (n.d.)
320 *Paleocenosphaera* (n.d.)
321 *Palhindeolithus* (n.d.)
322 *Papinochium* (n.d.)
323 *Primaritripus* (n.d.)
324 *Protosegmentum* (n.d.)
325 *Pseudostigmatosphaera* (n.d.)
326 *Spongocoelia* (n.d.)
327 *Srakaesphaera* (n.d.)
328 *Stauroplegma* (n.d.)
329 *Tetrasphaera* (n.d.)
330 *Triplosphaera* (n.d.)
331 *Ulcundia* (n.d.)
332 *Wangia* (n.d.)
333 *Palaeodiscaleksus* (n.d.)
334 *Palaeodiscus* (n.d.)

NOT RADIOLARIA

- 335 *Anakrusa*
336 *Auliela*
337 *Azyrtalia*
338 *Batoballa*
339 *Eoconcharium*
340 *Fusuconcharium*
341 *Konyrium*
342 *Lacisus*
343 *Palaeorubus*
344 *Quadratapora*

APPENDIX 3. — Illustrated catalogue of Paleozoic radiolarian genera.

AI
001

Albaillella
Deflandre, 1952: 873
Albaillellidae



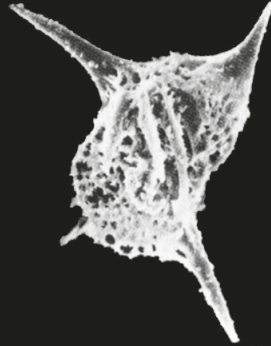
100 µm

Albaillella paradoxa
Deflandre, 1952: 873, fig. 1

AI
002

Huasha
Cheng, 1986: 71
Albaillellidae

SYN.



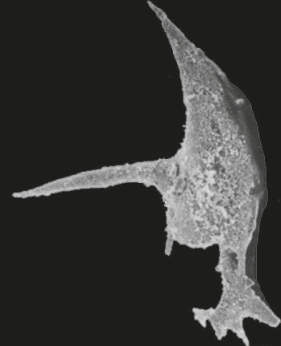
100 µm

Huasha holdsworthi
Cheng, 1986: 73, pl. 2, fig. 1
SEE LAPIDOPISCUM

AI
003

Imotoella
Kozur & Mostler, 1989: 163
Albaillellidae

SYN.

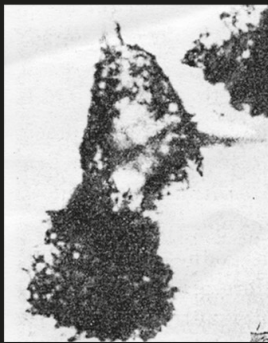


100 µm

Albaillella levis
Ishiga, Kito & Imoto, 1982a: 17, pl. 3, fig. 1
SEE ALBAILLELLA

AI
004

Lapidopiscum
Deflandre, 1958: 2280
Albaillellidae



100 µm

Lapidopiscum piveteaui
Deflandre, 1958: 2278, fig. 2

AI
005

Neoalbaillella
Takemura & Nakaseko, 1981: 210
Albaillellidae



100 µm

Neoalbaillella ornithoformis
Takemura & Nakaseko, 1981: 211, pl. 33, fig. 1

AI
006

Protoalbaillella
Cheng, 1986: 67
Albaillellidae



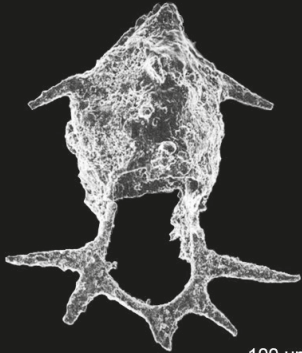
100 µm

Protoalbaillella deflandrei
Cheng, 1986: 68, pl. 6, fig. 1

AI
007

Saturnalbaillella
Kozur & Mostler, 1989: 162
Albaillellidae

SYN.



100 µm

Albaillella cartalla
Ormiston & Lane, 1976: 171, pl. 5, fig. 10
SEE ALBAILLELLA

AI
008

Spinodeflandrella
Kozur, 1981: 267
Albaillellidae

SYN.



100 µm

Spinodeflandrella tetraspinosa
Kozur, 1981: 267, pl. 2, fig. 1
SEE ALBAILLELLA

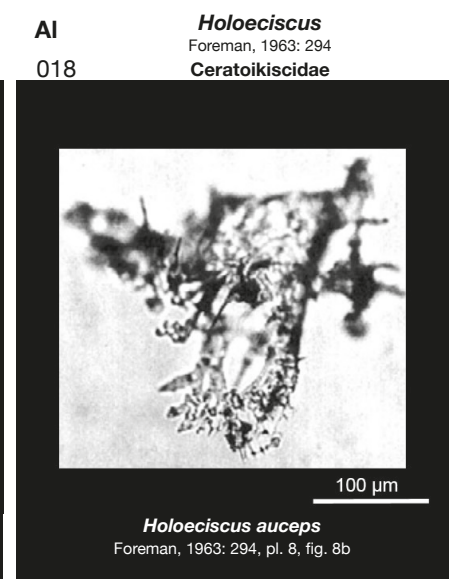
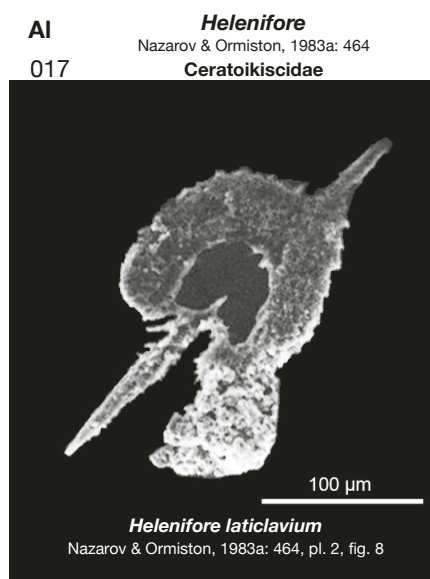
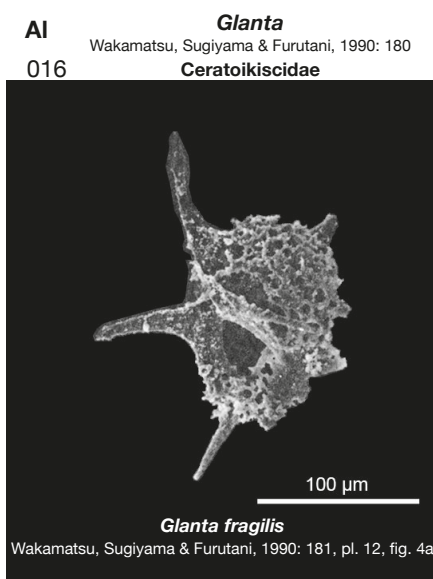
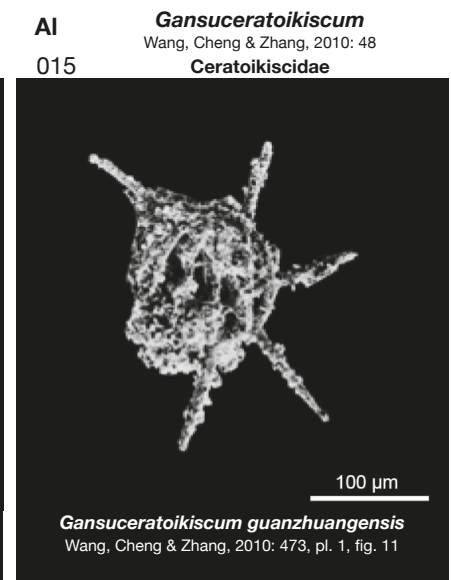
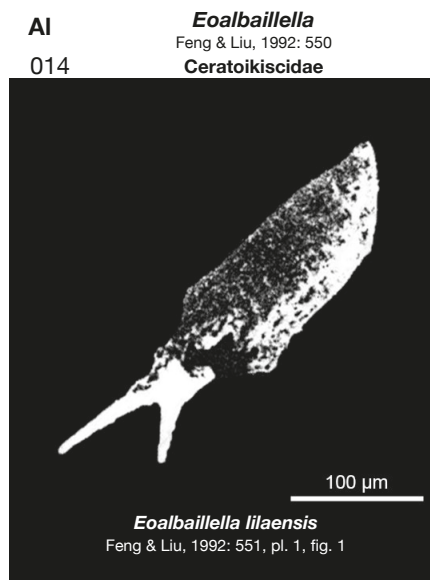
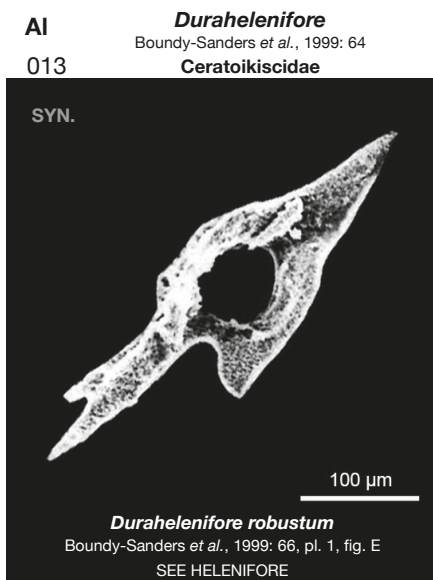
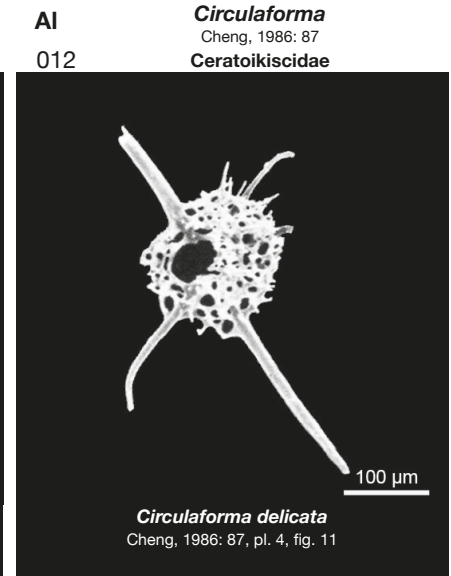
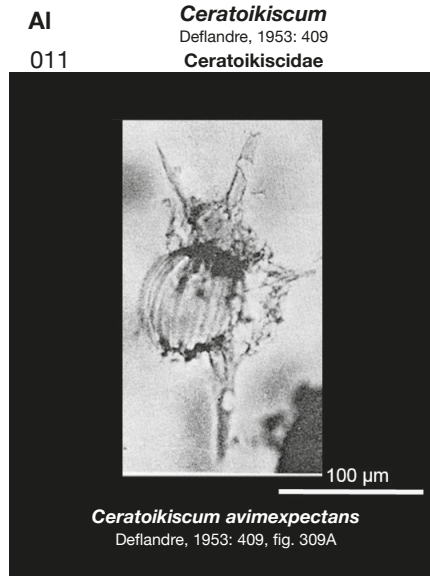
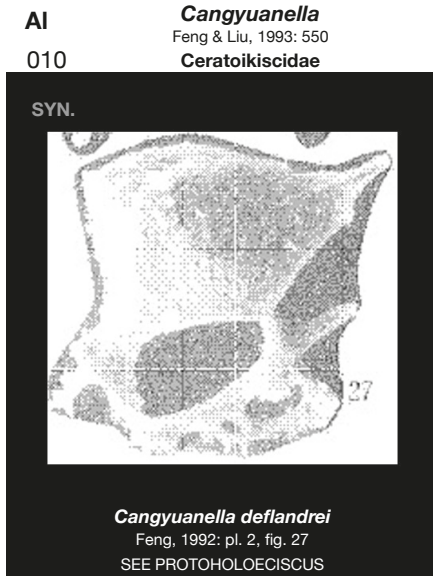
AI
009

Campanulithus
Nazarov & Rudenko, 1981: 137
Ceratoikiscidae



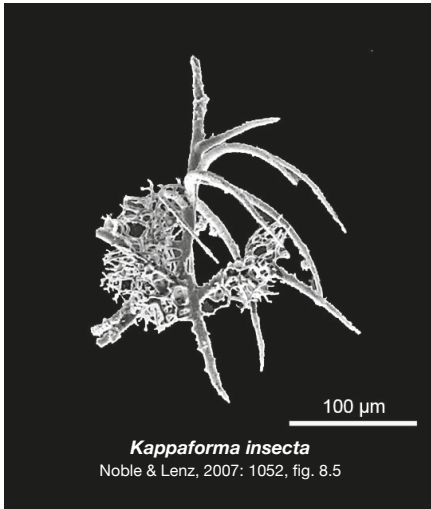
100 µm

Campanulithus falcatus
Nazarov & Rudenko, 1981: 137, pl. 1, fig. 8



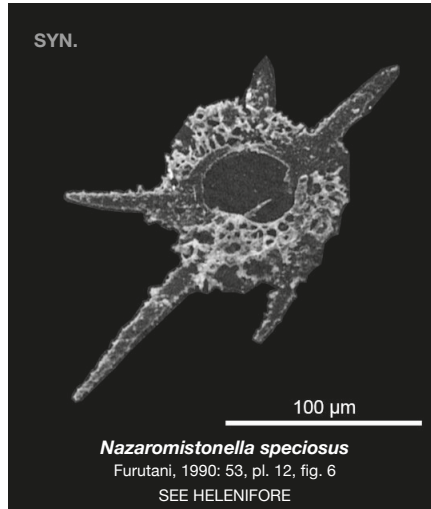
AI
019

Kappaforma
Noble & Lenz, 2007: 1050
Ceratoikiscidae



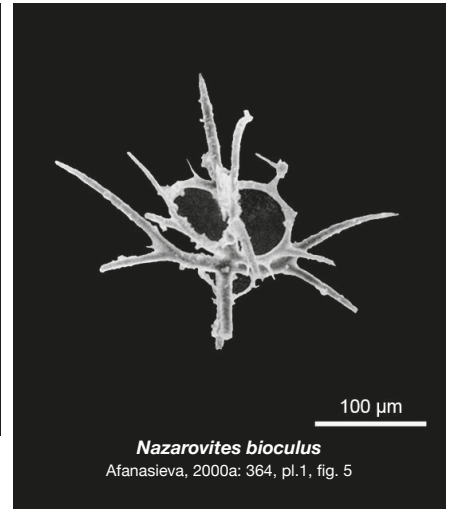
AI
020

Nazaromistonella
Furutani, 1990: 52
Ceratoikiscidae



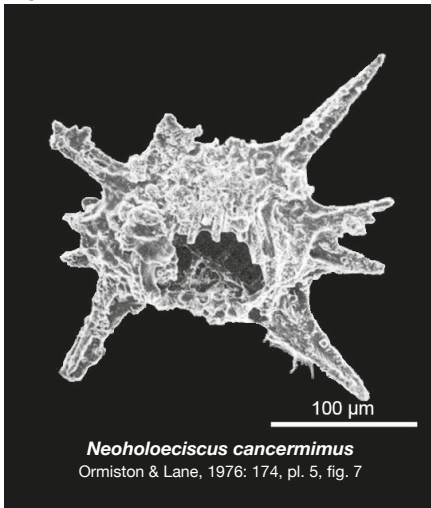
AI
021

Nazarovites
Afanasieva, 2000a: 360
Ceratoikiscidae



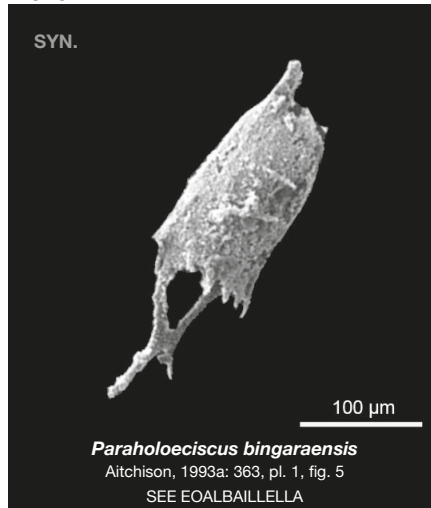
AI
022

Neoholoeciscus
Ormiston & Lane, 1976: 173
Ceratoikiscidae



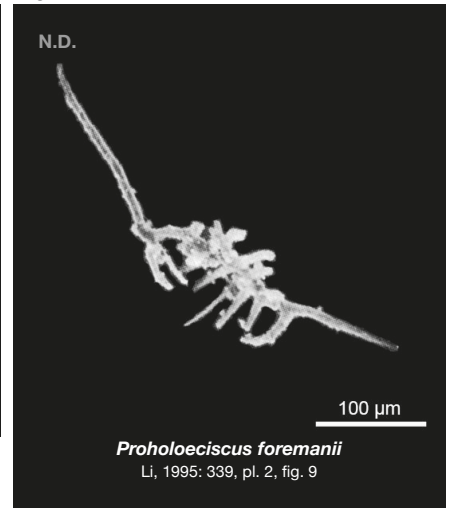
AI
023

Paraholoeciscus
Aitchison, 1993a: 363
Ceratoikiscidae



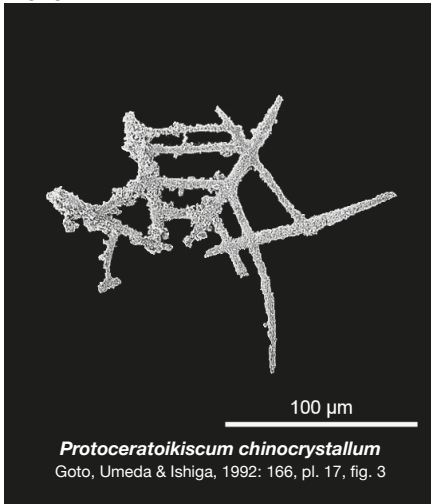
AI
024

Proholoeciscus
Li, 1995: 338
Ceratoikiscidae



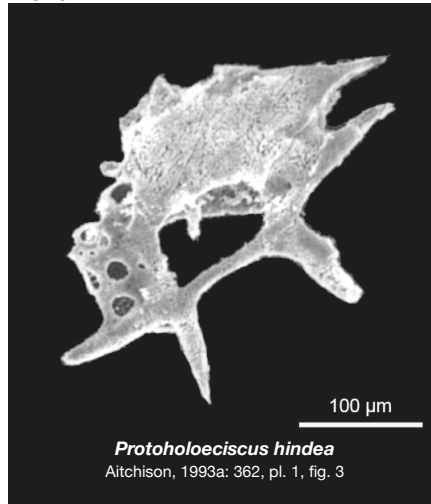
AI
025

Protoceratoikiscum
Goto, Umeda & Ishiga, 1992: 165
Ceratoikiscidae



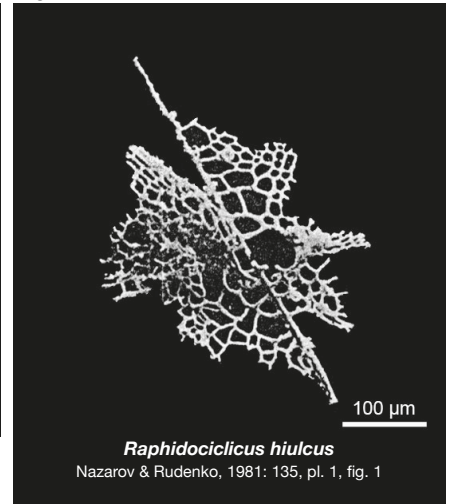
AI
026

Protoholoeciscus
Aitchison, 1993a: 362
Ceratoikiscidae



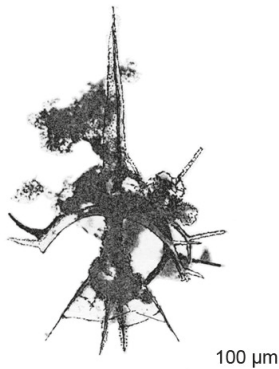
AI
027

Raphidociclicus
Nazarov & Rudenko, 1981: 135
Ceratoikiscidae



AI
028
SYN.

Xiphachistrella
Deflandre, 1973b: 499
Ceratoikiscidae

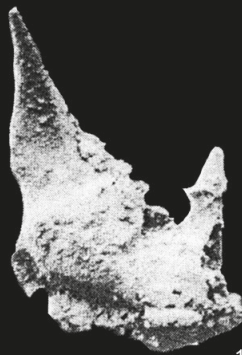


100 µm

Xiphachistrella acipensis
Deflandre, 1973a: 292, pl. 4, fig. 4
SEE CERATOIKISCUM

AI
029
SYN.

Cariver
Kozur, 1993: 108
Follicucullidae

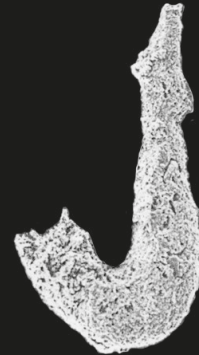


100 µm

Follicucullus orthogonus
Caridroit & De Wever, 1984: 642, pl. 1, fig. 28
SEE FOLLICUCULLUS

AI
030
SYN.

Curvalbaillella
Kozur & Mostler, 1989: 179
Follicucullidae

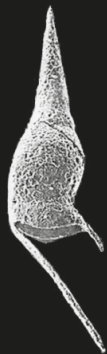


100 µm

Pseudoalbaillella U-forma
Holdsworth & Jones, 1980: 285, app. fig. 1C
SEE PARAFOLLICUCULLUS

AI
031

Follicucullus
Ormiston & Babcock, 1979: 332
Follicucullidae

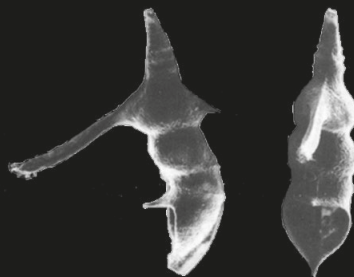


100 µm

Follicucullus ventricosus
Ormiston & Babcock, 1979: 332, pl. 1, fig. 7

AI
032
SYN.

Foremanconus
Kozur & Mostler, 1989: 180
Follicucullidae



100 µm

Parafollicucullus sakmarensis
Kozur, 1981: 266, pl. 1, fig. 1
SEE PARAFOLLICUCULLUS

AI
033
SYN.

Haplodiacanthus
Nazarov & Rudenko, 1981: 133
Follicucullidae

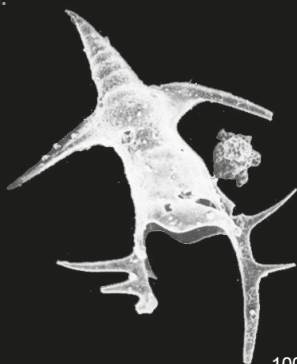


100 µm

Haplodiacanthus anfractus
Nazarov & Rudenko, 1981: 133, pl. 1, fig. 5
SEE PARAFOLLICUCULLUS

AI
034
SYN.

Holdsworthella
Kozur, 1981: 268
Follicucullidae



100 µm

Holdsworthella permica
Kozur, 1981: 268, pl. 3, fig. 2
SEE PARAFOLLICUCULLUS

AI
035

Ishigaconus
Kozur & Mostler, 1989: 181
Follicucullidae

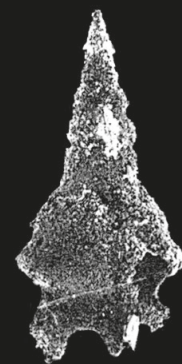


100 µm

Follicucullus scholasticus
Ormiston & Babcock, 1979: 333, pl. 1, fig. 1

AI
036
SYN.

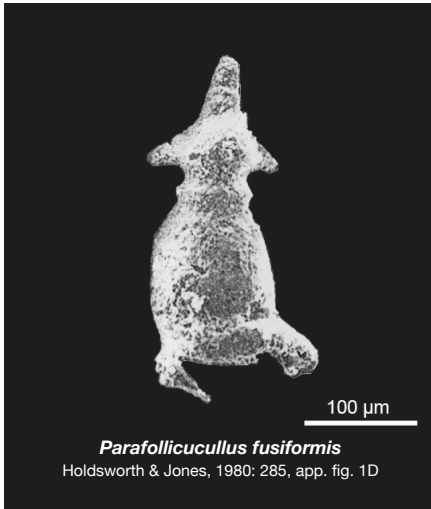
Longtanella
Sheng & Wang, 1985: 179
Follicucullidae



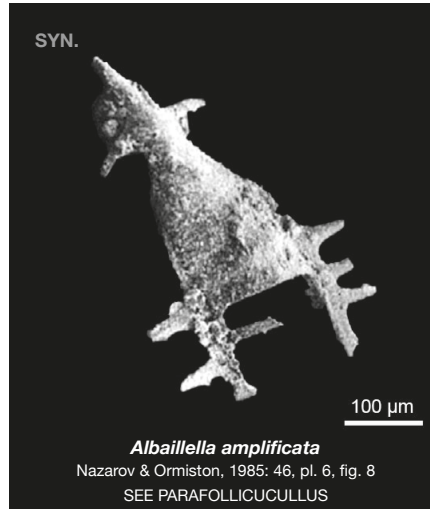
100 µm

Longtanella zhengpanshanensis
Sheng & Wang, 1985: 179, pl. 3, fig. 11
SEE PARAFOLLICUCULLUS

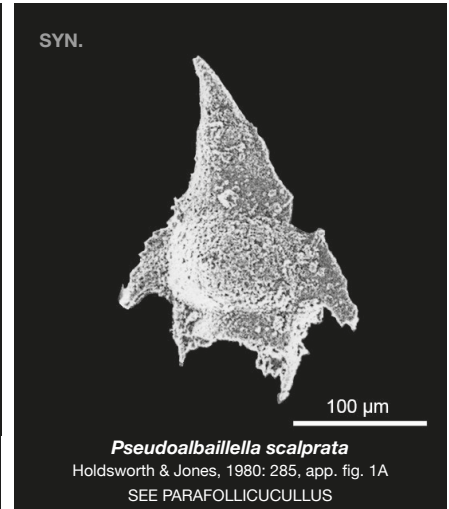
AI
037
Parafollicucullus
Holdsworth & Jones, 1980: 285
Follicucullidae



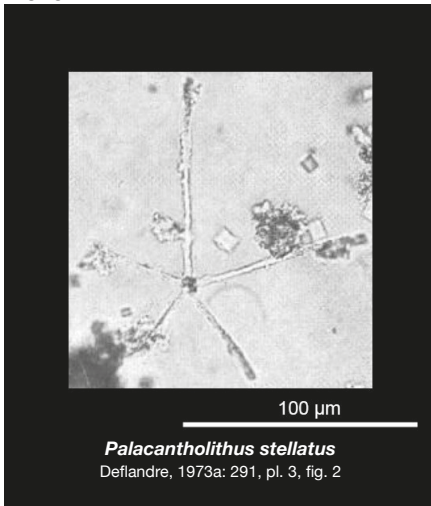
AI
038
Praeholdsworthella
Kozur & Mostler, 1989: 184
Follicucullidae



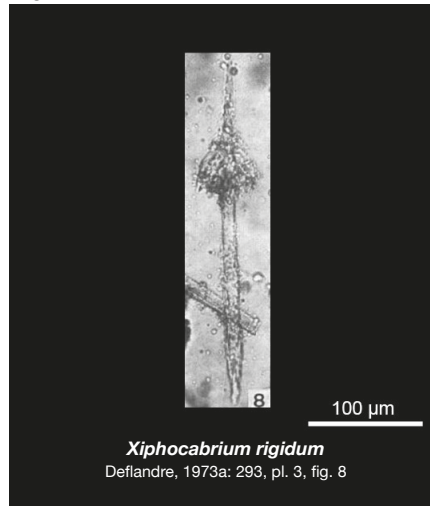
AI
039
Pseudoalbaillella
Holdsworth & Jones, 1980: 285
Follicucullidae



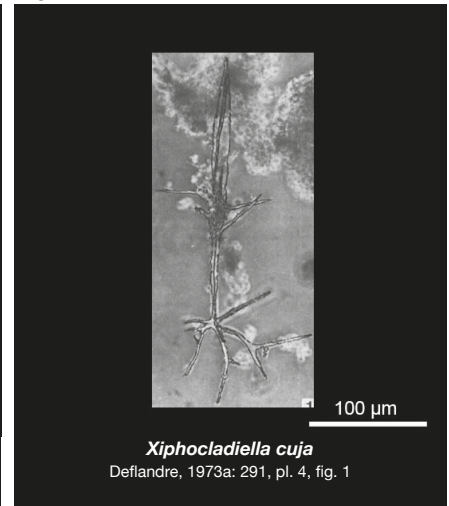
AI
040
Palacantholithus
Deflandre, 1973b: 499
Albaillellaria incertae sedis



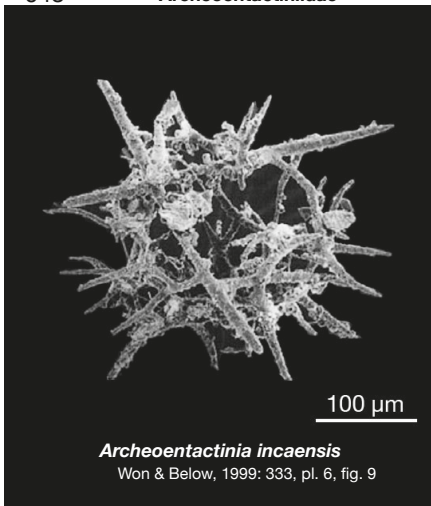
AI
041
Xiphocabrium
Deflandre, 1973b: 500
Albaillellaria incertae sedis



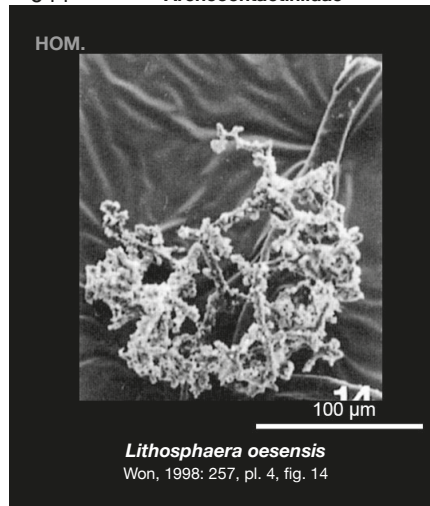
AI
042
Xiphoclaadiella
Deflandre, 1973b: 499
Albaillellaria incertae sedis



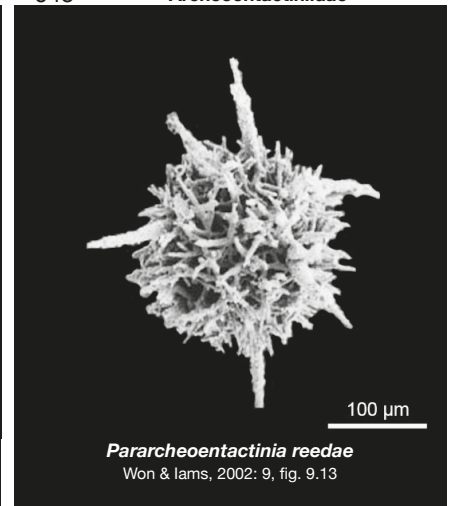
Ar
043
Archeoentactinia
Won in Won & Below, 1999: 332
Archeoentactiniidae



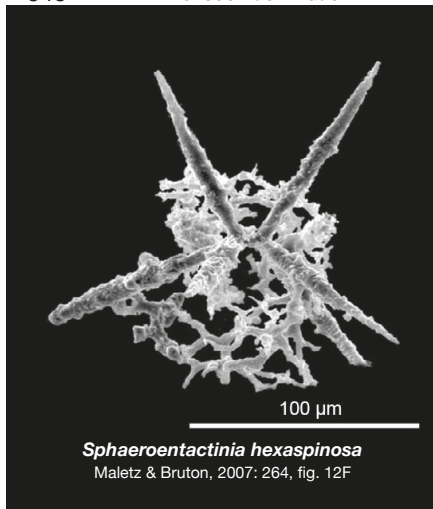
Ar
044
Lithosphaera
Won, 1998: 256
Archeoentactiniidae



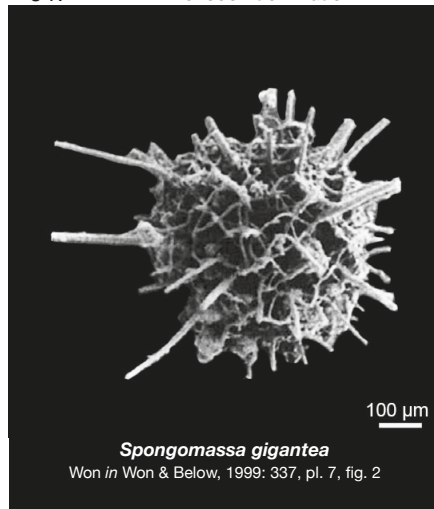
Ar
045
Pararchoentactinia
Won & Iams, 2002: 9
Archeoentactiniidae



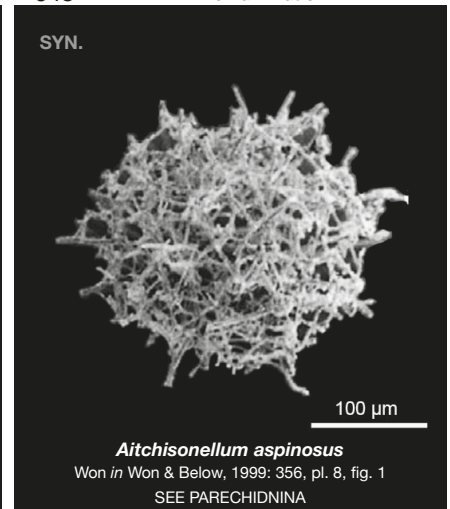
Ar
046
Sphaeroentactinia
Maletz & Bruton, 2007: 263
Archeoentactiniidae



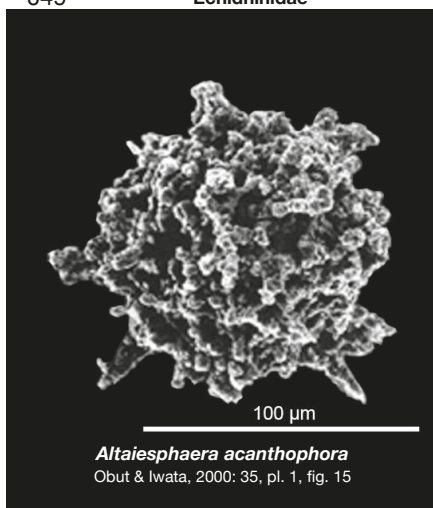
Ar
047
Spongomassa
Won in Won & Below, 1999: 337
Archeoentactiniidae



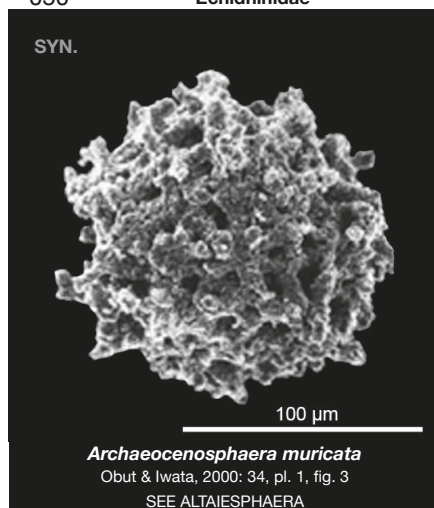
Ar
048
Aitchisonellum
Won in Won & Below, 1999: 352
Echininidae



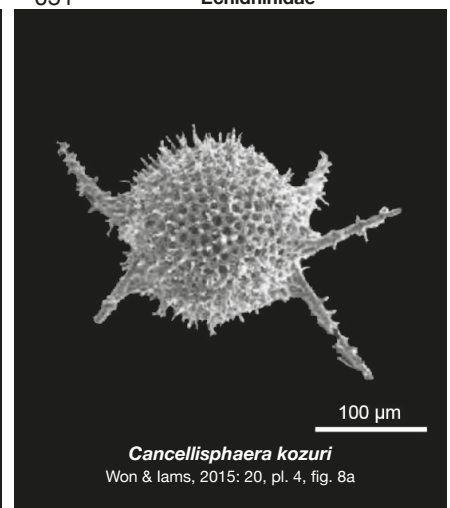
Ar
049
Altaesphaera
Obut & Iwata, 2000: 34
Echininidae



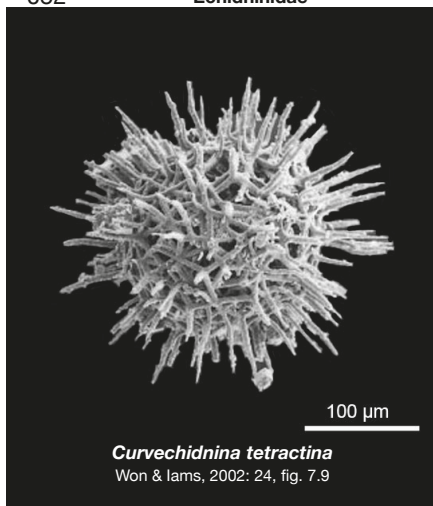
Ar
050
Archaeocenosphaera
Obut & Iwata, 2000: 33
Echininidae



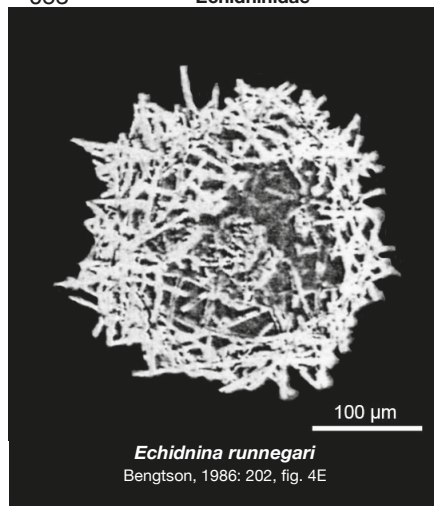
Ar
051
Cancellisphaera
Won & Iams, 2015: 19
Echininidae



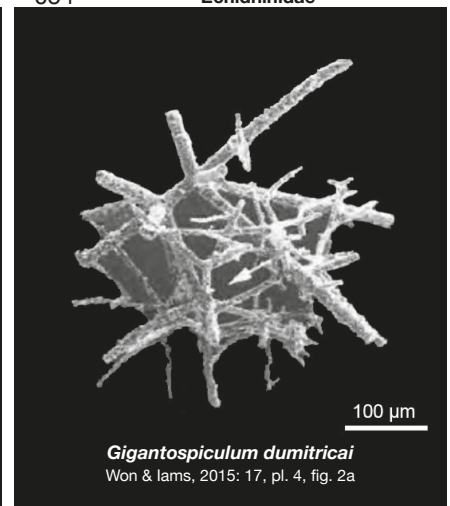
Ar
052
Curvechidnina
Won & Iams, 2002: 23
Echininidae



Ar
053
Echidnina
Bengtson, 1986: 202
Echininidae

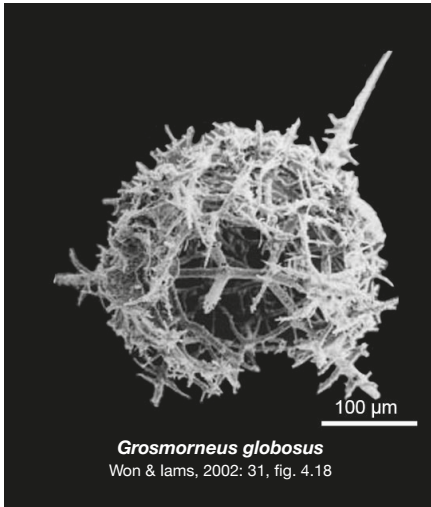


Ar
054
Gigantospiculum
Won & Iams, 2015: 16
Echininidae



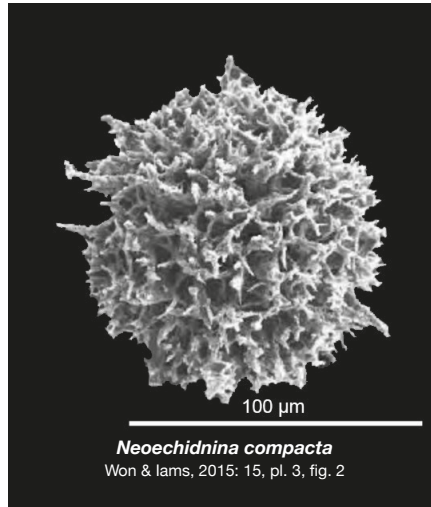
Ar
055

Grosmorneus
Won & Iams, 2002: 31
Echidninae



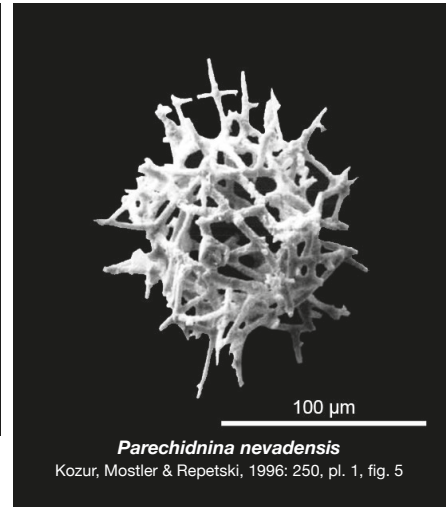
Ar
056

Neoechidnina
Won & Iams, 2015: 15
Echidninae



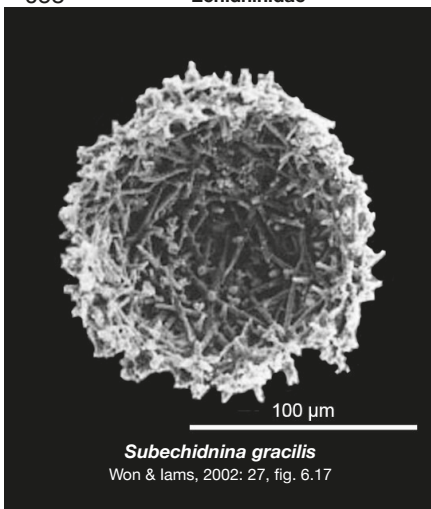
Ar
057

Parechidnina
Kozur, Mostler & Repetski, 1996: 249
Echidninae



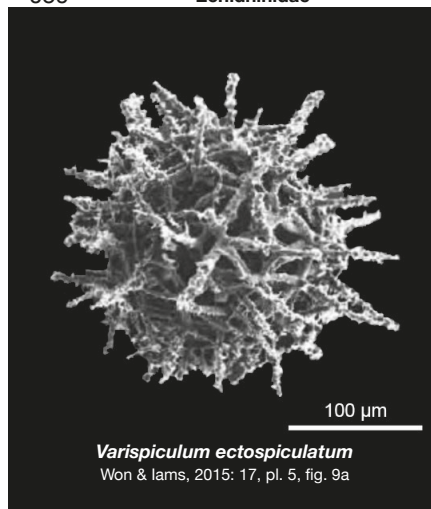
Ar
058

Subechidnina
Won & Iams, 2002: 26
Echidninae



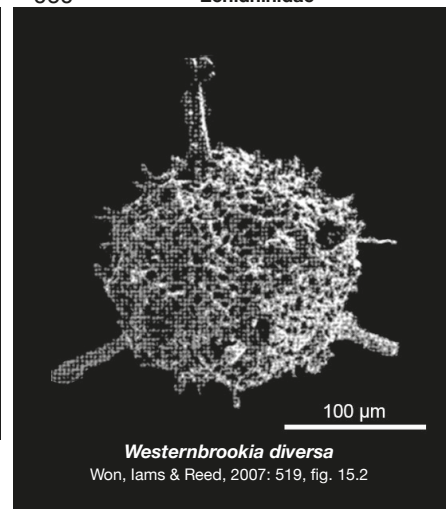
Ar
059

Varispiculum
Won & Iams, 2015: 17
Echidninae



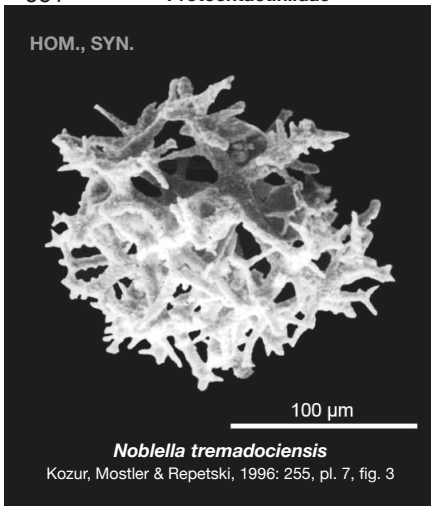
Ar
060

Westernbrookia
Won, Iams & Reed, 2007: 517
Echidninae



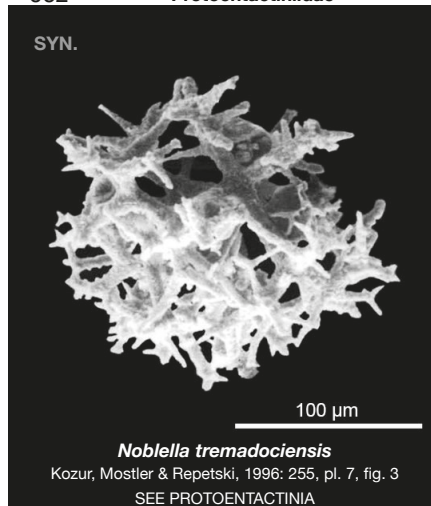
Ar
061

Noblella
Kozur, Mostler & Repetski, 1996: 255
Protoentactiniidae



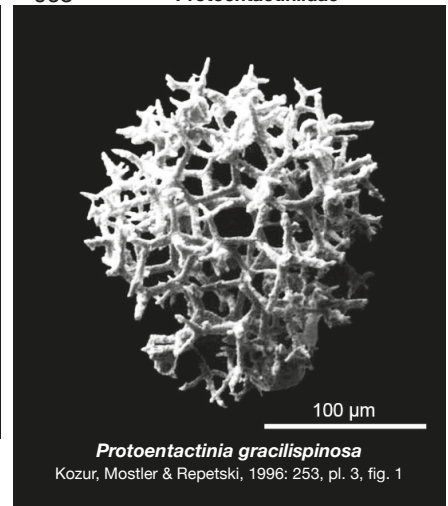
Ar
062

Paulanoblella
Kozur & Repetski, 2002: 28
Protoentactiniidae

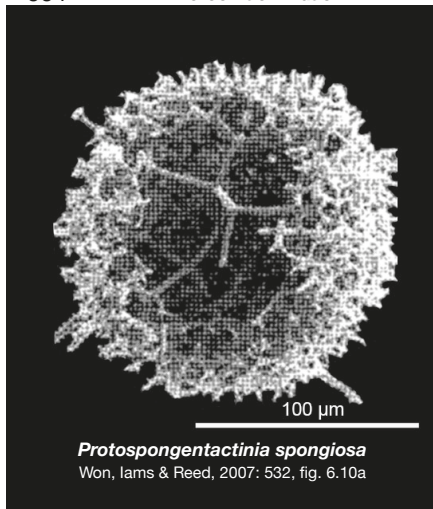


Ar
063

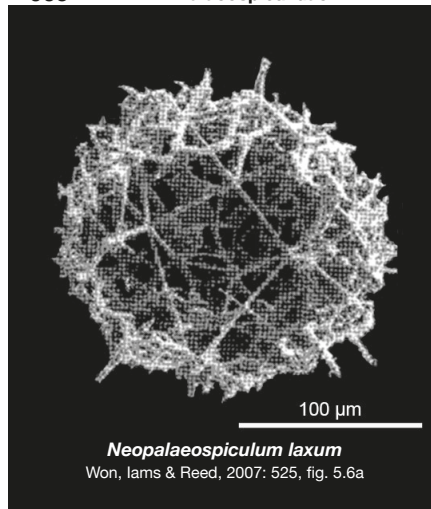
Protoentactinia
Kozur, Mostler & Repetski, 1996: 253
Protoentactiniidae



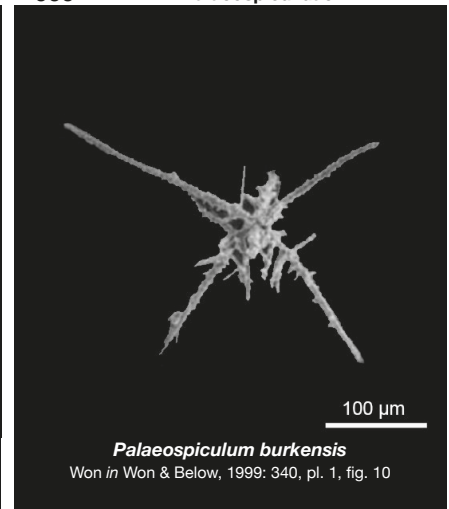
Ar
064
Protospongectinia
Won, Iams & Reed, 2007: 531
Protoentactiniidae



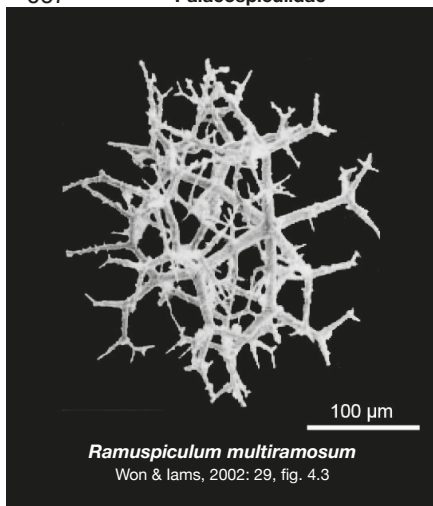
Ar
065
Neopalaeospiculum
Won, Iams & Reed, 2007: 525
Palaeospiculidae



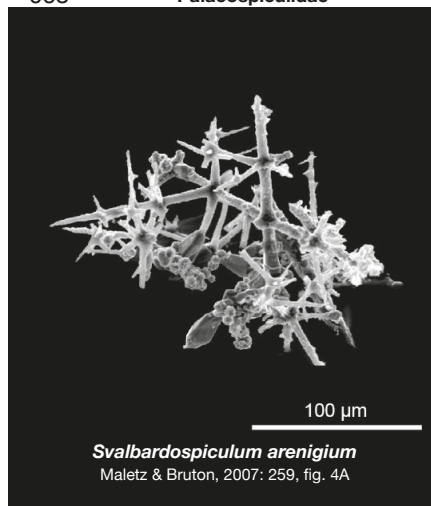
Ar
066
Palaeospiculum
Won in Won & Below, 1999: 339
Palaeospiculidae



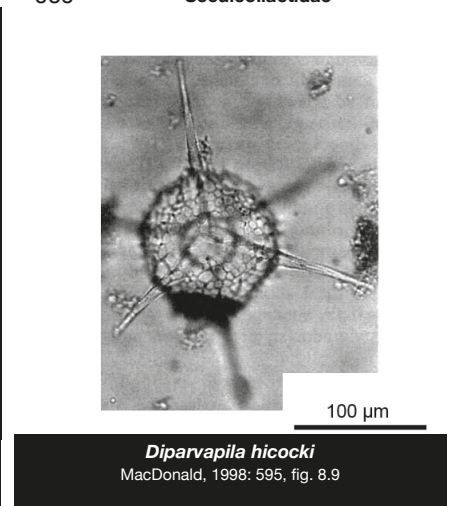
Ar
067
Ramuspiculum
Won & Iams, 2002: 29
Palaeospiculidae



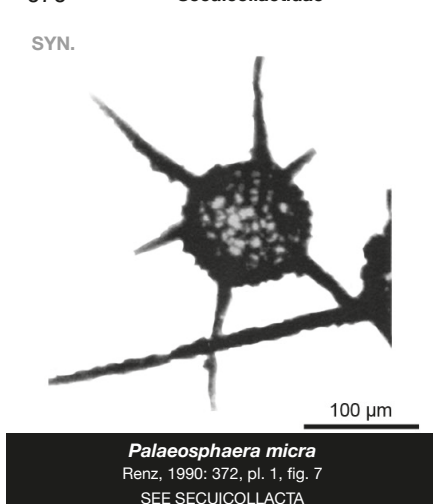
Ar
068
Svalbardospiculum
Maletz & Bruton, 2007: 259
Palaeospiculidae



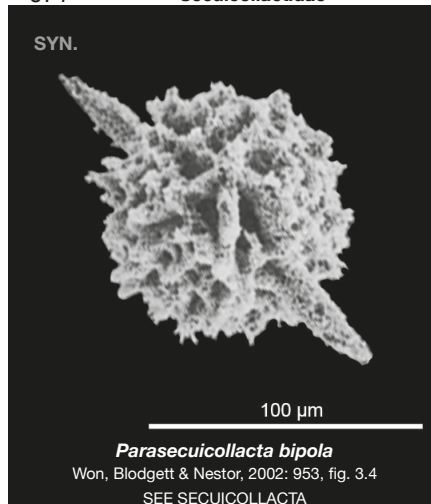
Ar
069
Diparvapila
MacDonald, 1998: 594
Secuicollactidae



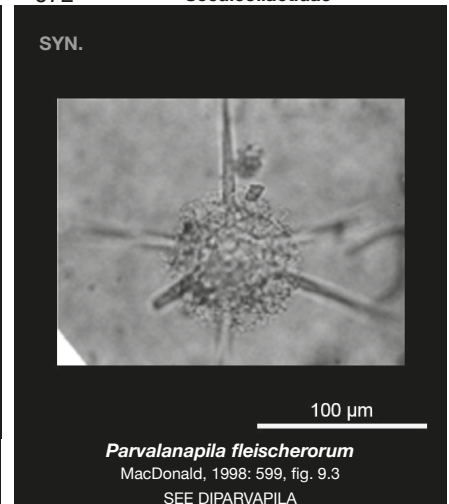
Ar
070
Palaeosphaera
Renz, 1990: 372
Secuicollactidae

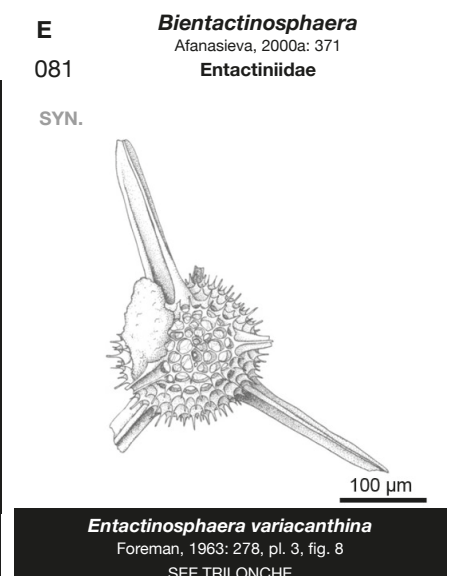
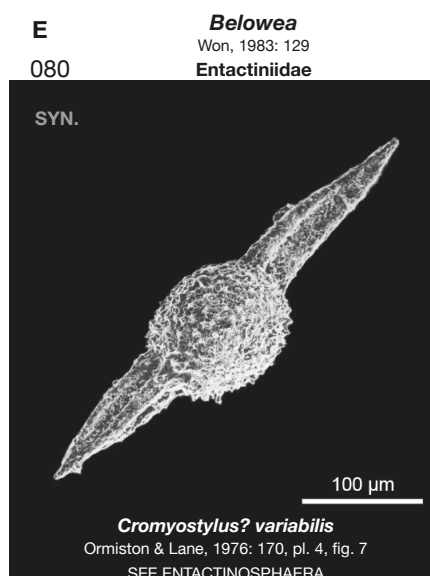
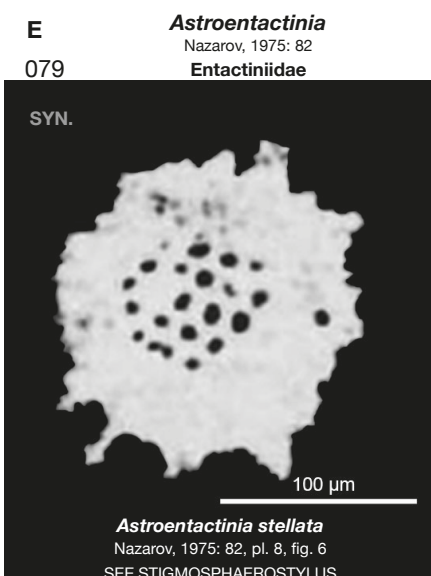
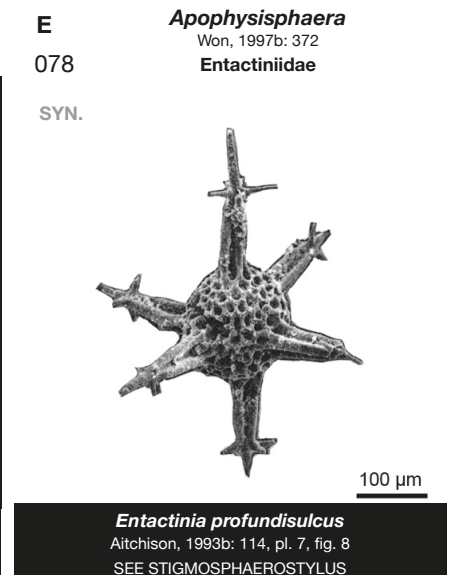
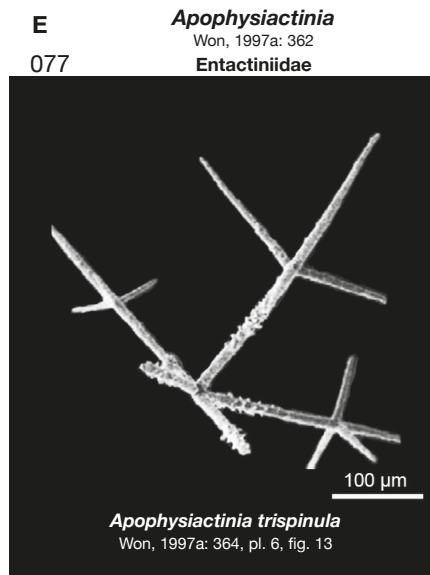
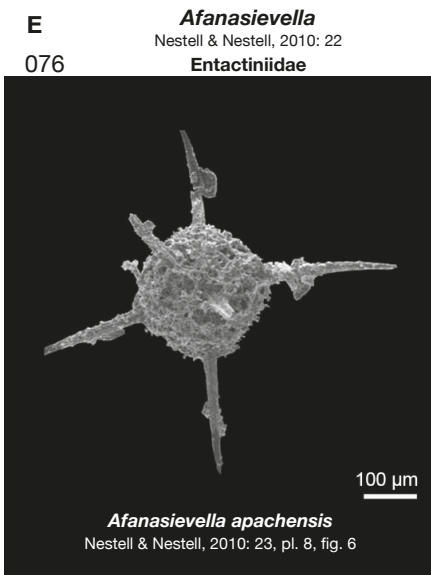
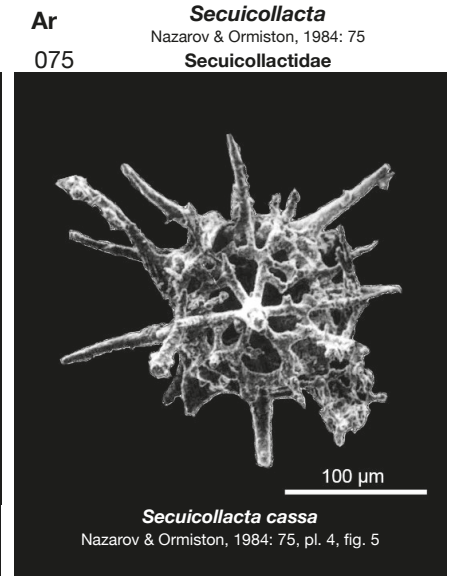
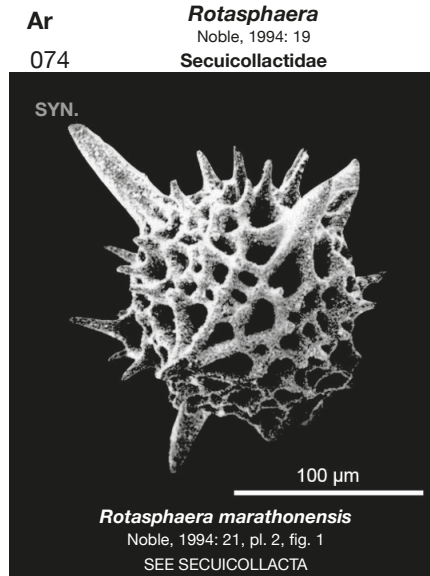
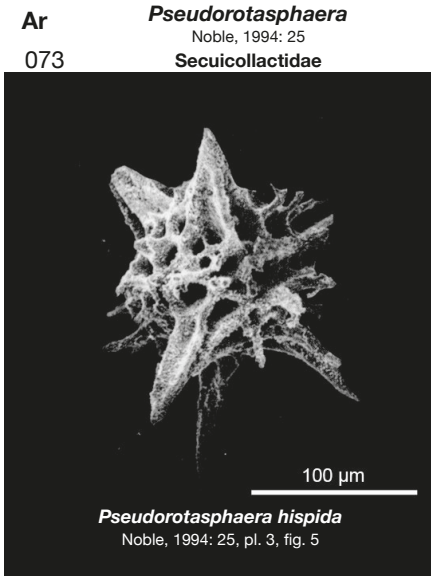


Ar
071
Parasecuicollacta
Won, Blodgett & Nestor, 2002: 953
Secuicollactidae



Ar
072
Parvalanapila
MacDonald, 1998: 597
Secuicollactidae





E
082

Bisphaera
Won, 1997a: 344
Entactiniidae

HOM., SYN.

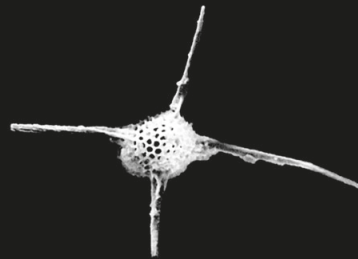


100 µm

Bisphaera solidispinosa
Won, 1997a: 346, pl. 3, fig. 9
SEE TRILONCHE

E
083

Borisella
Afanasieva, 2000b: 143
Entactiniidae

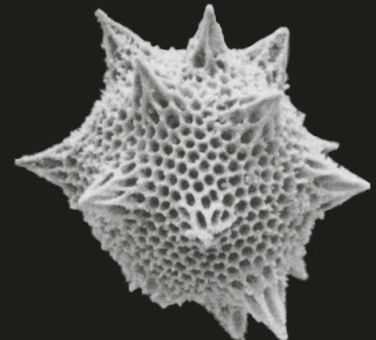


100 µm

Borisella maksimovae
Afanasieva, 2000b: 144, pl. 2, fig. 10

E
084

Callela
Won, 1983: 133
Entactiniidae

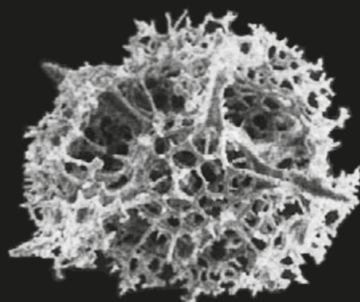


100 µm

Callela stellaesimilis
Won, 1983: 135, pl. 2, fig. 10

F
085

Cancellospaera
Afanasieva, 2000c: 34
Entactiniidae

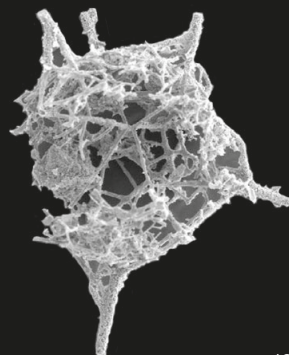


50 µm

Spongosphaera varia
Won, 1997b: 412, pl. 9, fig. 3

E
086

Costaentactinia
Seo & Won, 2009: 67
Entactiniidae



100 µm

Costaentactinia foremanae
Seo & Won, 2009: 67, pl. 2, fig. 13

E
087

Cyclocarpus
Li & Wang, 1991: 403
Entactiniidae

N.D.



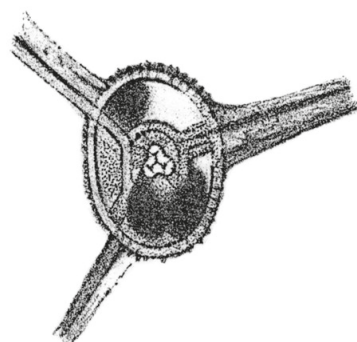
50 µm

Cyclocarpus tubiformis
Li & Wang, 1991: 403, pl. 1, fig. 2

E
088

Druppalonche
Hinde, 1899b: 217
Entactiniidae

SYN.



100 µm

Druppalonche clavigera
Hinde, 1899b: 217, pl. 16, fig. 14
SEE TRILONCHE

E
089

Duodecimentactinia
Won, 1997b: 377
Entactiniidae



100 µm

Duodecimentactinia aranea
Won, 1997b: 378, pl. 10, fig. 2

E
090

Duosphaera
Won, 1998: 235
Entactiniidae

SYN.



100 µm

Bisphaera solidispinosa
Won, 1997a: 346, pl. 3, fig. 9
SEE TRILONCHE

E
091
SYN.

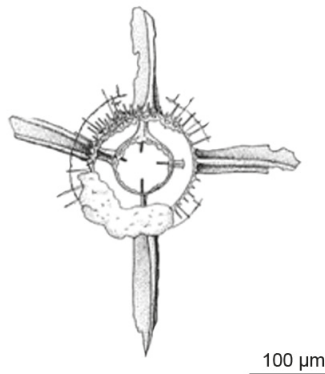
Entactinia
Foreman, 1963: 271
Entactiniidae



Entactinia herculea
Foreman, 1963: 271, pl. 1, fig. 3b
SEE STIGMOSPHAEROSTYLUS

E
092

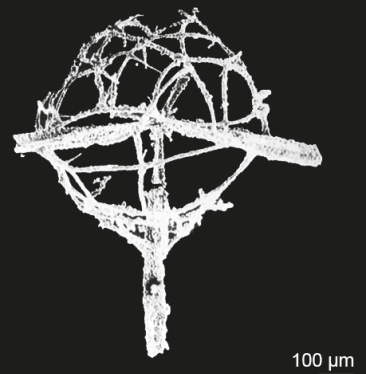
Entactinosphaera
Foreman, 1963: 274
Entactiniidae



Entactinosphaera esostrongyla
Foreman, 1963: 274, pl. 6, fig. 1a

E
093

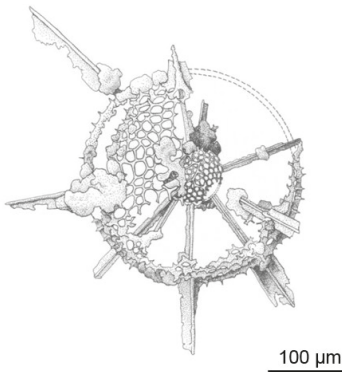
Gracilentactinia
Kozur & Mostler, 1989: 192
Entactiniidae



Gracilentactinia gracilis
Kozur & Mostler, 1989: 192, pl. 8, fig. 5

E
094
N.D.

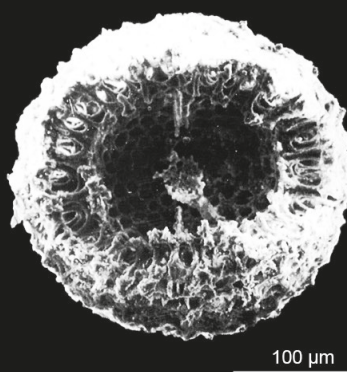
Helioentactinia
Nazarov, 1975: 88
Entactiniidae



Entactinosphaera ? polyacanthina
Foreman, 1963: 280, pl. 6, fig. 11

E
095

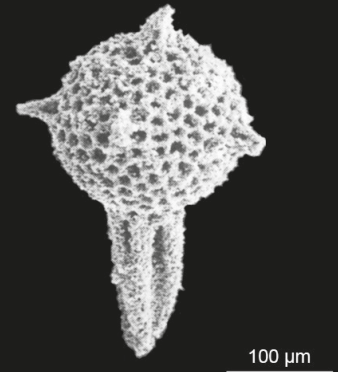
Holdisphaera
Kozur & Mostler, 1989: 186
Entactiniidae



Holdisphaera furutanii
Kozur & Mostler, 1989: 187, pl. 10, fig. 10

E
096
SYN.

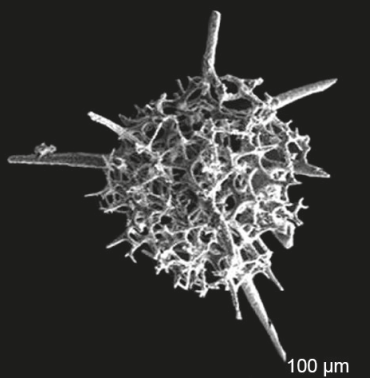
Inaequalientactinia
Won, 1991: 100
Entactiniidae



Inaequalientactinia typica
Won, 1991: 103, pl. 1, fig. 2
SEE STIGMOSPHAEROSTYLUS

E
097

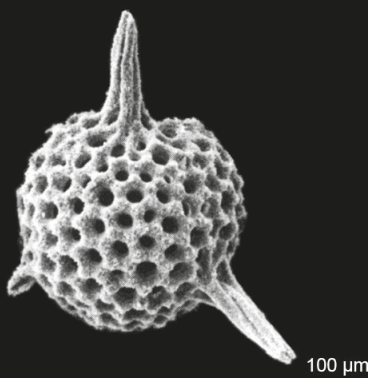
Involuentactinia
Jones & Noble, 2006: 296
Entactiniidae



Involuentactinia eccentrica
Jones & Noble, 2006: 297, pl. 1, fig. 8

E
098

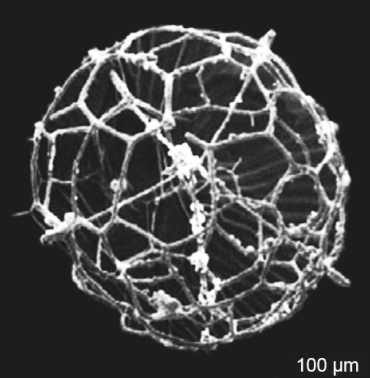
Kashiwara
Sashida & Tonishi, 1985: 14
Entactiniidae



Kashiwara magna
Sashida & Tonishi, 1985: 15, pl. 5, fig. 6

E
099

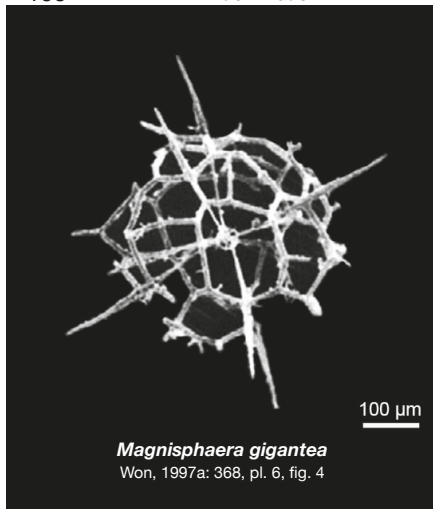
Magentactinia
Won, 1997a: 366
Entactiniidae



Magentactinia fragilis
Won, 1997a: 366, pl. 6, fig. 1

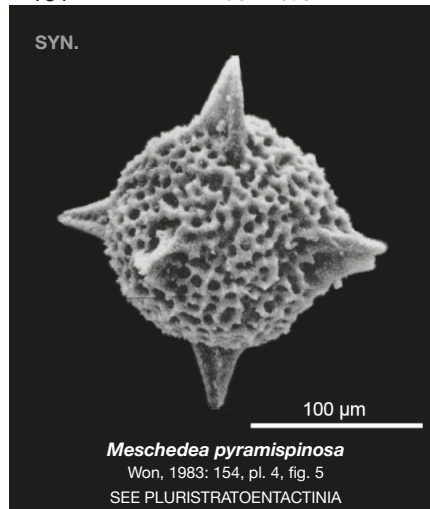
E
100

Magnisphaera
Won, 1997a: 366
Entactiniidae



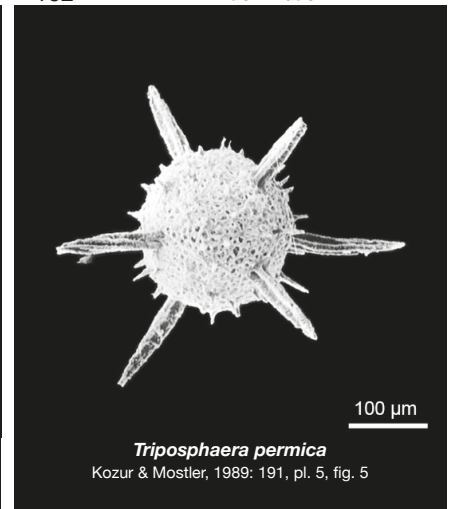
E
101

Meschedea
Won, 1983: 154
Entactiniidae



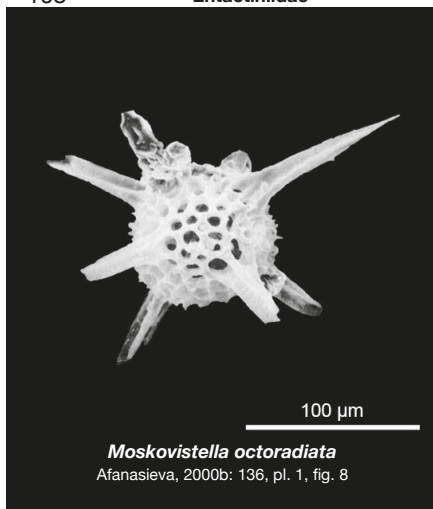
E
102

Microporosa
Afanasieva & Amon, 2016: 211
Entactiniidae



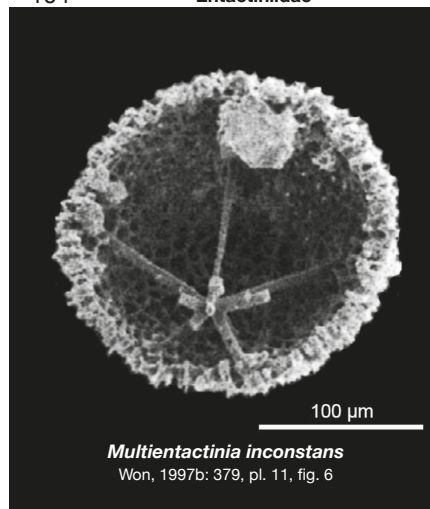
E
103

Moskovistella
Afanasieva, 2000b: 135
Entactiniidae



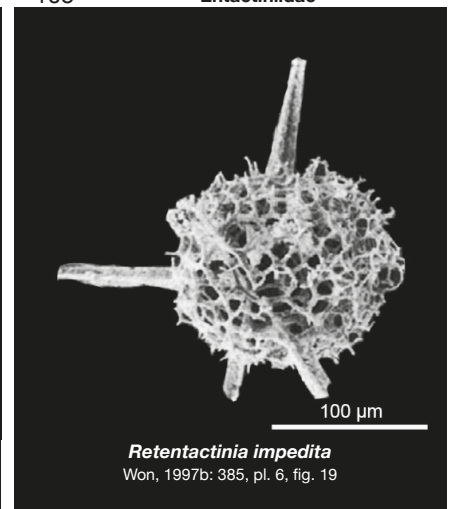
E
104

Multientactinia
Won, 1997b: 378
Entactiniidae



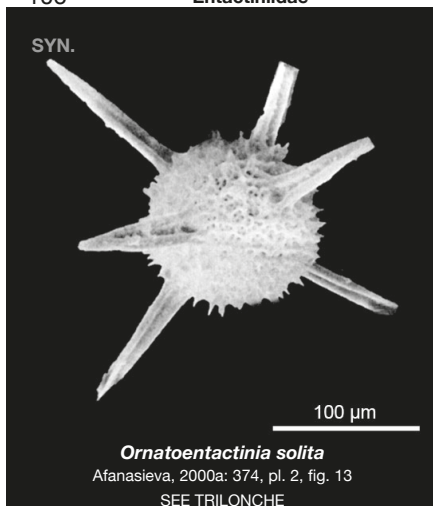
E
105

Munzuwonella
Afanasieva, 2009: 115
Entactiniidae



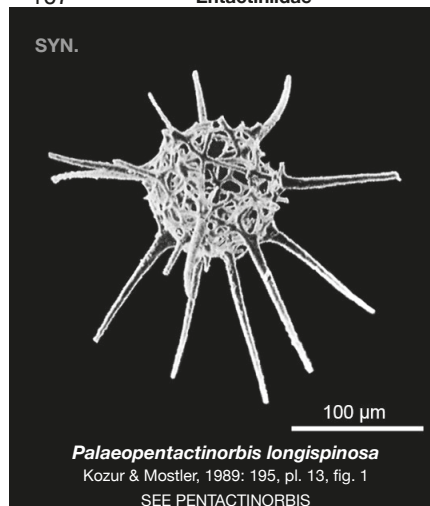
E
106

Ornatoentactinia
Afanasieva, 2000a: 373
Entactiniidae



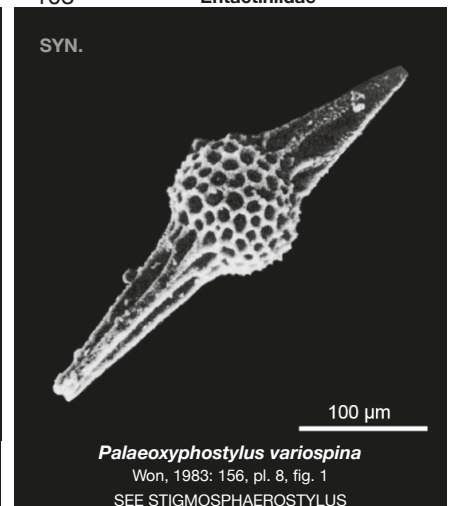
E
107

Palaeopentactinorbis
Kozur & Mostler, 1989: 195
Entactiniidae

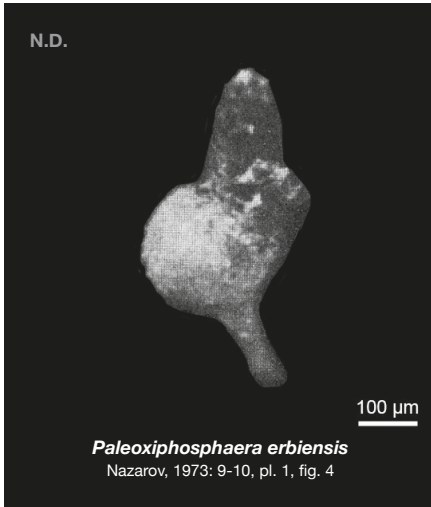


E
108

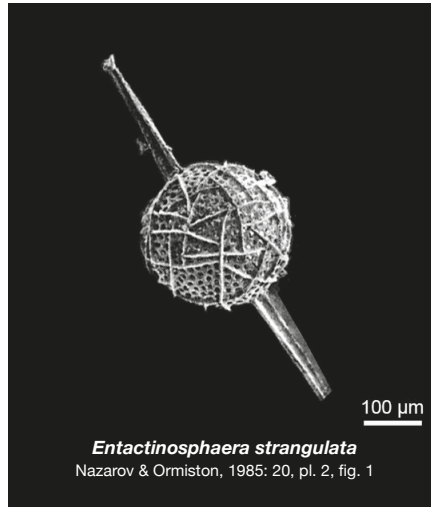
Palaeoxyphostylus
Won, 1983: 155
Entactiniidae



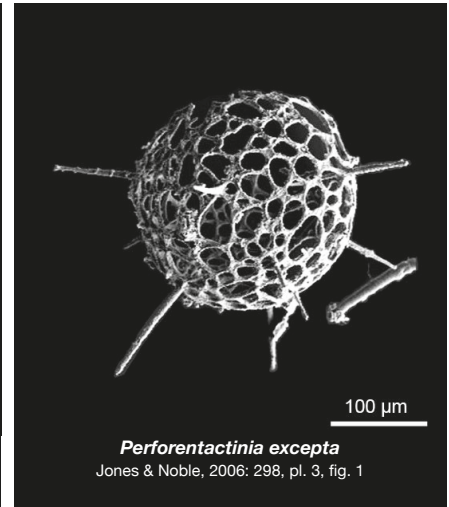
E
109 *Paleoxiphosphaera*
Nazarov, 1973: 9
Entactiniidae



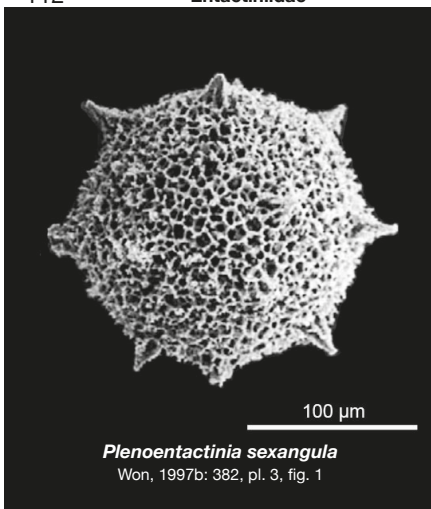
E
110 *Paratriposphaera*
Kozur & Mostler, 1989: 187
Entactiniidae



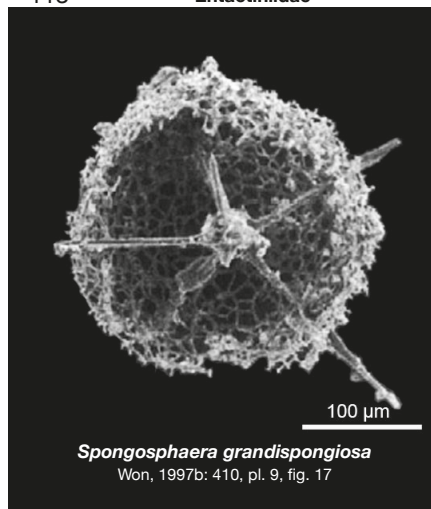
E
111 *Perforentactinia*
Jones & Noble, 2006: 298
Entactiniidae



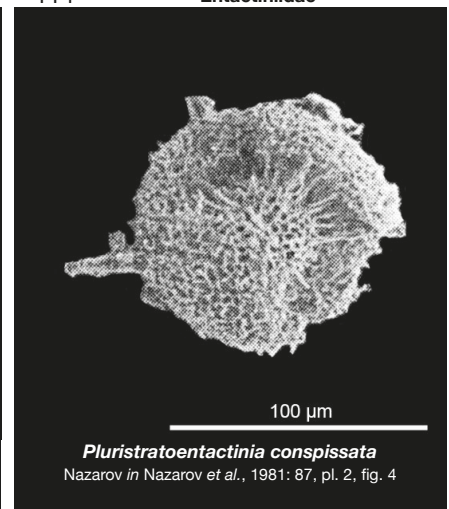
E
112 *Plenoentactinia*
Won, 1997b: 381
Entactiniidae



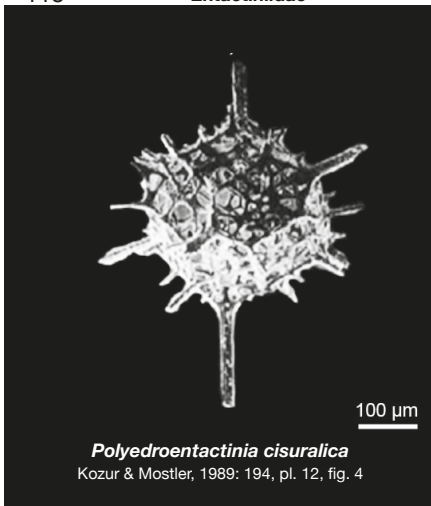
E
113 *Plenosphaera*
Park & Won, 2012: 56
Entactiniidae



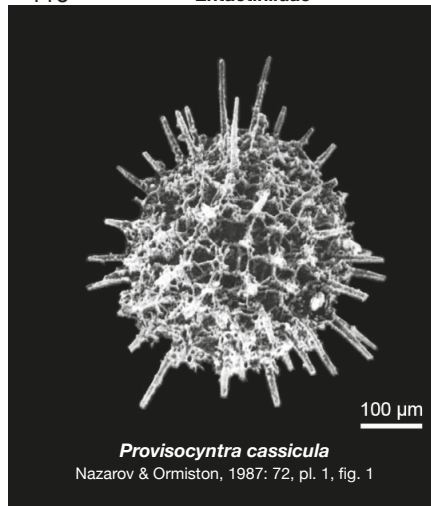
E
114 *Pluristratoentactinia*
Nazarov in Nazarov et al., 1981: 86
Entactiniidae



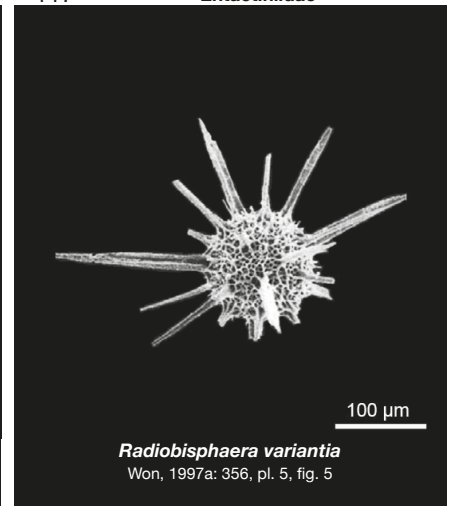
E
115 *Polyedroentactinia*
Kozur & Mostler, 1989: 194
Entactiniidae



E
116 *Provisocyntra*
Nazarov & Ormiston, 1987: 68
Entactiniidae

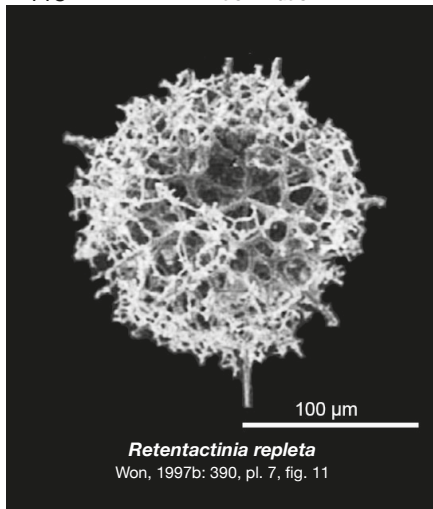


E
117 *Radiobisphaera*
Won, 1997a: 350
Entactiniidae



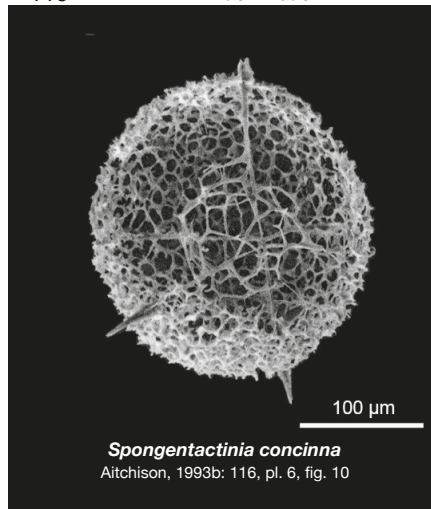
E
118

Retentactinia
Won, 1997b: 383
Entactiniidae



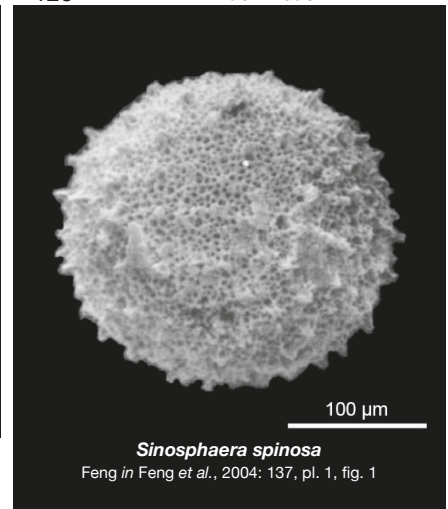
E
119

Retisphaera
Won, 1997b: 390
Entactiniidae



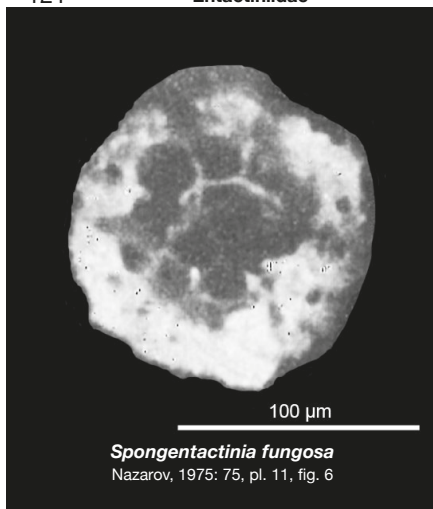
E
120

Sinosphaera
Feng in Feng *et al.*, 2004: 137
Entactiniidae



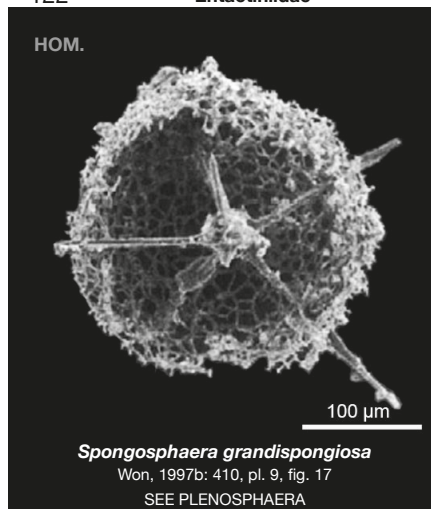
E
121

Spongactinia
Nazarov, 1975: 75
Entactiniidae



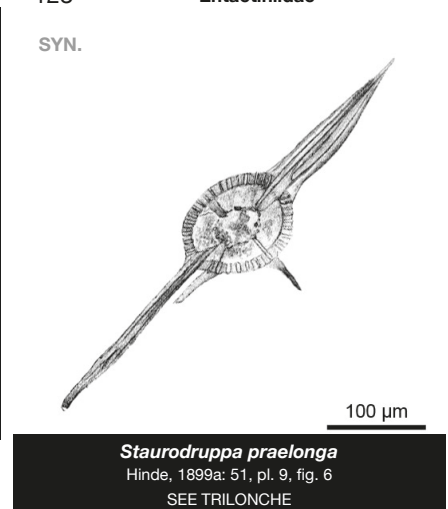
E
122

Spongosphaera
Won, 1997b: 410
Entactiniidae



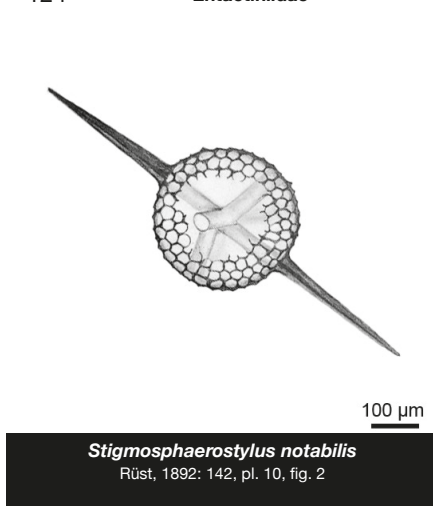
E
123

Staurodruppa
Hinde, 1899a: 51
Entactiniidae



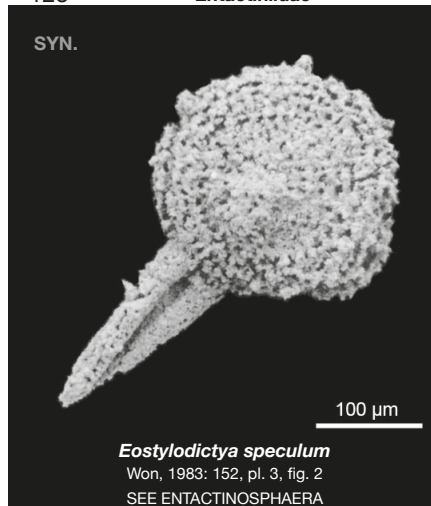
E
124

Stigmosphaerostylus
Rüst, 1892: 142
Entactiniidae



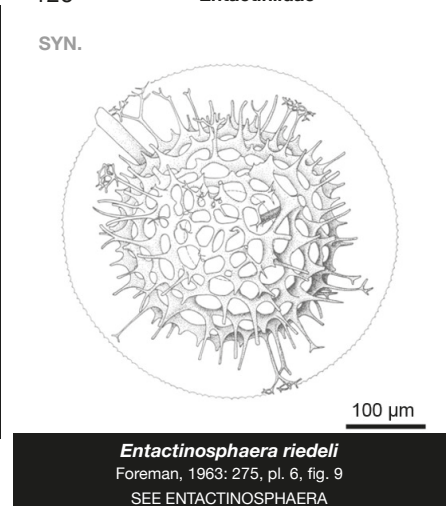
E
125

Stolbergia
Kozur & Mostler, 1989: 198
Entactiniidae



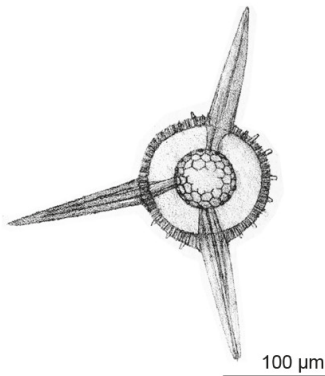
E
126

Thecentactinia
Nazarov, 1975: 71
Entactiniidae



E
127

Trilonche
Hinde, 1899a: 47
Entactiniidae



Trilonche vetusta
Hinde, 1899a: 48, pl. 8, fig. 18

E
128

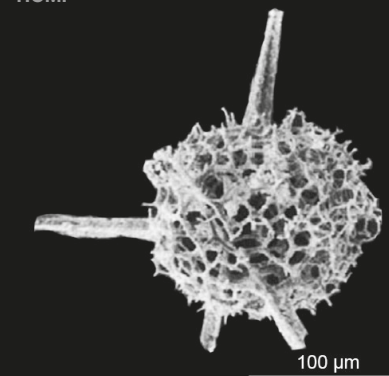
Uberinterna
Sashida & Tonishi, 1988: 531
Entactiniidae



Uberinterna virgispinosum
Sashida & Tonishi, 1988: 531, fig. 8.7

E
129

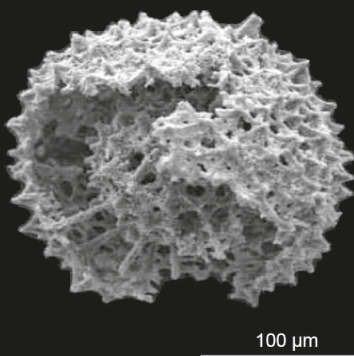
Wonella
Afanasieva, 2000c: 34
Entactiniidae



Retentactinia impedita
Won, 1997b: 385, pl. 6, fig. 19

E
130

Wuyia
Feng in Feng et al., 2007: 31
Entactiniidae



Wuyia dongpanica
Feng in Feng et al., 2007: 33, pl. 5, fig. 9

E
131

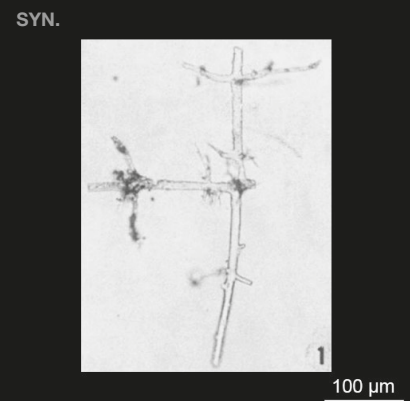
Arcoclathrata
Afanasieva & Amon, 2016: 217
Haplentactiniidae



Arcoclathrata alekseevi
Afanasieva & Amon, 2016: 219, pl. 2, fig. 9

E
132

Arrhiniella
Kozur & Mostler, 1981: 4
Haplentactiniidae



Haplentactinia arrhinia
Foreman, 1963: 270, pl. 1, fig. 1
SEE HAPLENTACTINIA

E
133

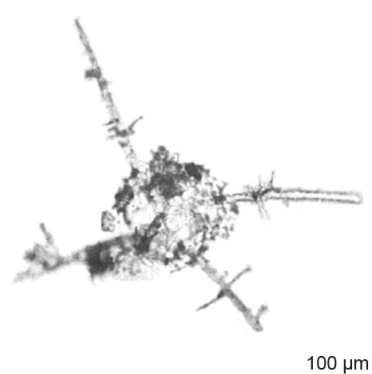
Bissylentactinia
Nazarov, 1975: 93
Haplentactiniidae



Bissylentactinia rudicula
Nazarov, 1975: 94, pl. 13, fig. 1

E
134

Haplentactinia
Foreman, 1963: 270
Haplentactiniidae



Haplentactinia rhinophyusa
Foreman, 1963: 270, pl. 1, fig. 2

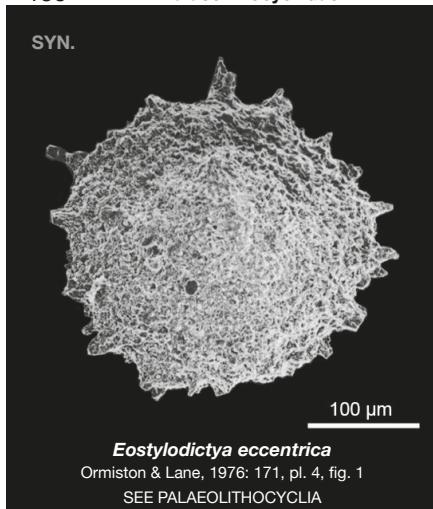
E
135

Syntagentactinia
Nazarov in Nazarov & Popov, 1980: 56
Haplentactiniidae

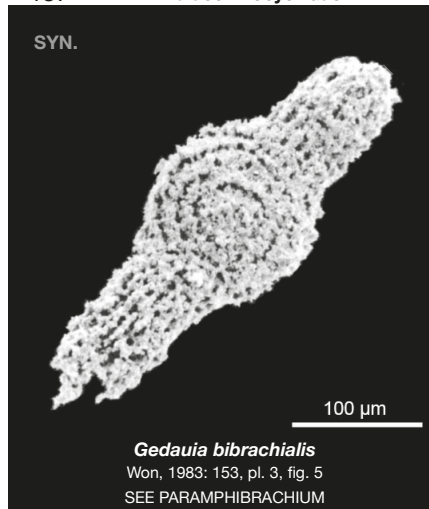


Syntagentactinia biocculosa
Nazarov in Nazarov & Popov, 1980: 56, pl. 12, fig. 1

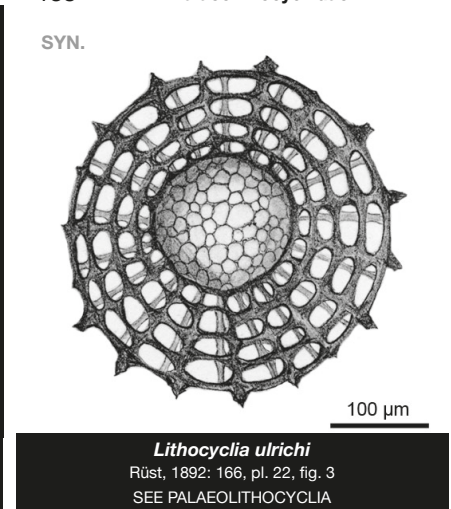
E
136
Eostylodictya
Ormiston & Lane, 1976: 170
Palaeolithocyliidae



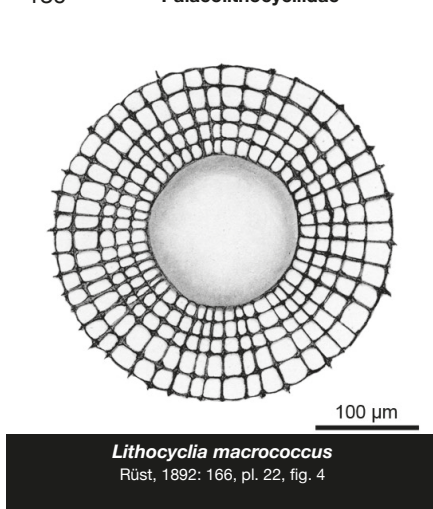
E
137
Gedauia
Won, 1983: 153
Palaeolithocyliidae



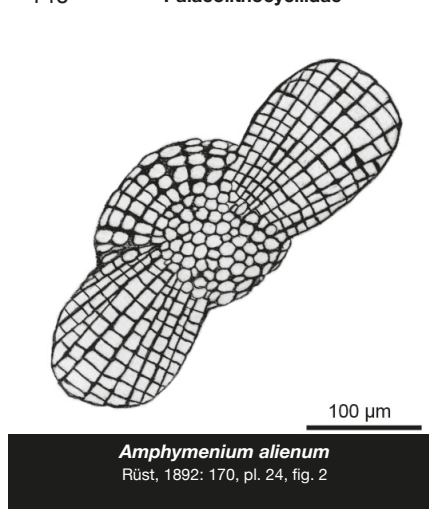
E
138
Palaeoastracyclia
Kozur & Mostler, 1972: 16
Palaeolithocyliidae



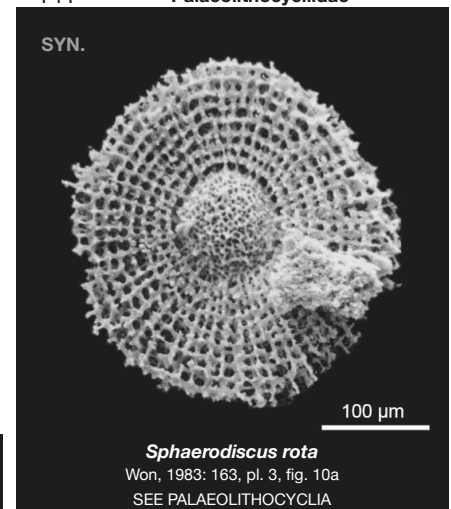
E
139
Palaeolithocyelia
Kozur & Mostler, 1972: 17
Palaeolithocyliidae



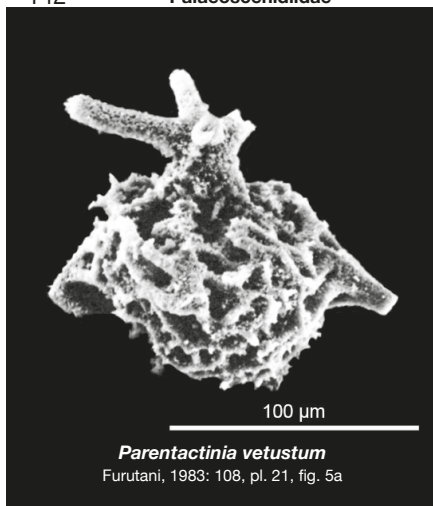
E
140
Paramphibrachium
Kozur & Mostler, 1978: 143
Palaeolithocyliidae



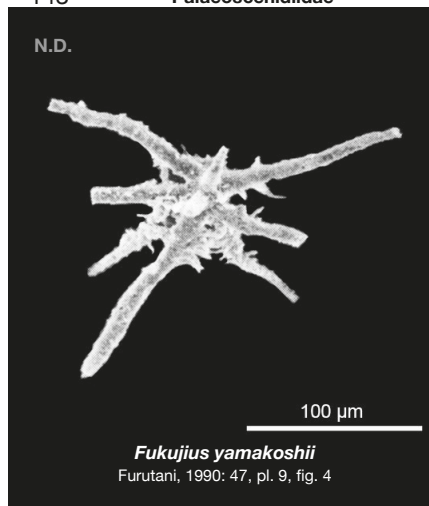
E
141
Sphaerodiscus
Won, 1983: 163
Palaeolithocyliidae



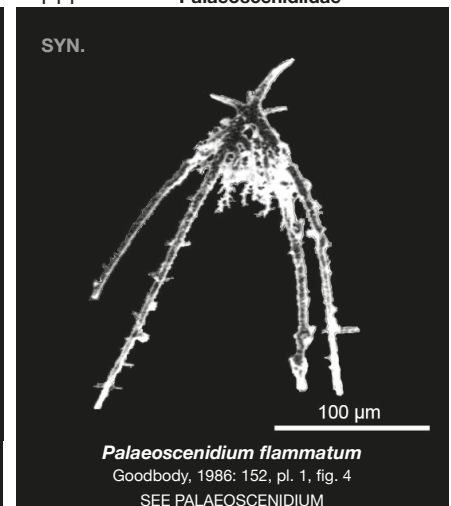
E
142
Deflantrica
Wakamatsu, Sugiyama & Furutani, 1990: 167
Palaeosceniidae



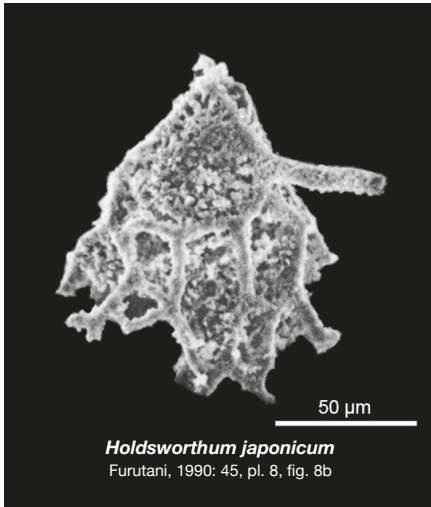
E
143
Fukujius
Furutani, 1990: 46
Palaeosceniidae



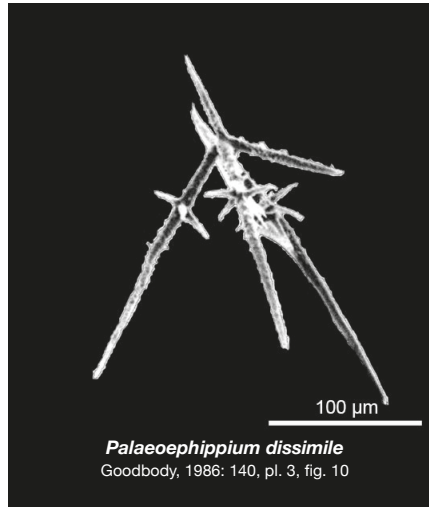
E
144
Goodbodyum
Furutani, 1990: 43
Palaeosceniidae



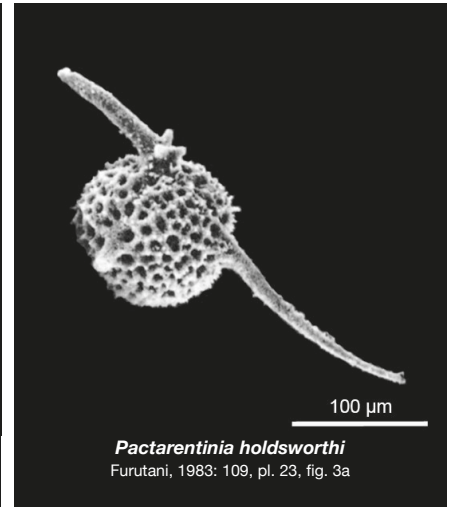
E
145 *Holdsworthum*
Furutani, 1990: 44
Palaeosценидиidae



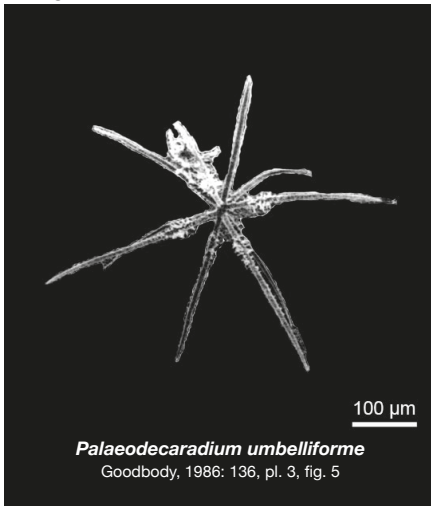
E
146 *Insolitignum*
MacDonald, 1999: 2053
Palaeosценидиidae



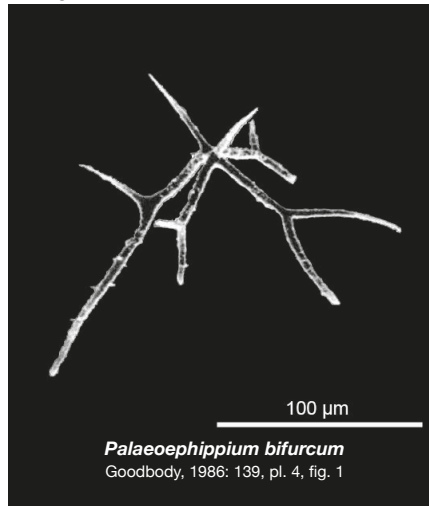
E
147 *Pactarentinia*
Furutani, 1983: 109
Palaeosценидиidae



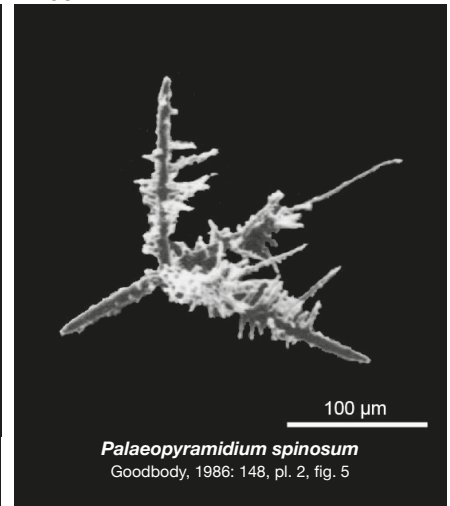
E
148 *Palaeodecaradium*
Goodbody, 1986: 136
Palaeosценидиidae



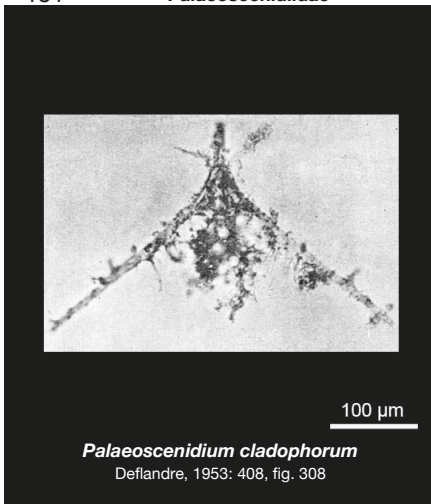
E
149 *Palaeoehippium*
Goodbody, 1986: 138
Palaeosценидиidae



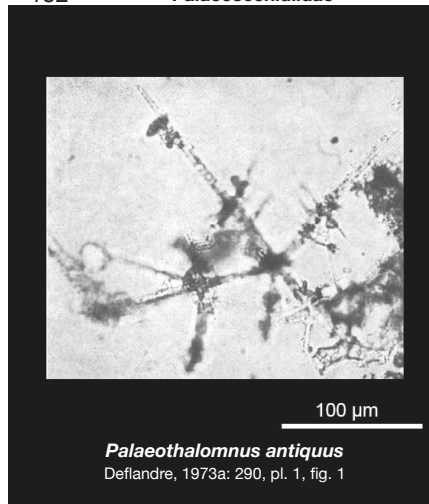
E
150 *Palaeopyramidium*
Goodbody, 1986: 147
Palaeosценидиidae



E
151 *Palaeosцениidium*
Deflandre, 1953: 408
Palaeosценидиidae

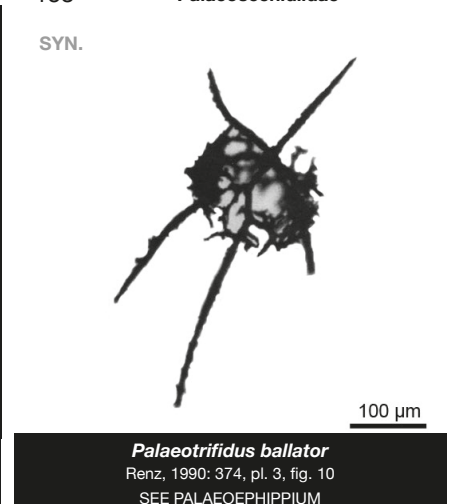


E
152 *Palaeothalomnus*
Deflandre, 1973b: 497
Palaeosценидиidae



E
153 *Palaeotrifidus*
Renz, 1990: 374
Palaeosценидиidae

SYN.



E
154

Palaeotripus
Goodbody, 1986: 152
Palaeoscenediidae

SYN.



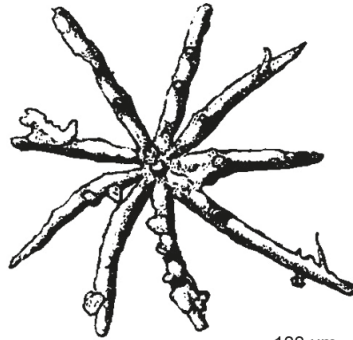
100 µm

Palaeotripus nudus
Goodbody, 1986: 154, pl. 1, fig. 8
SEE PALAEODECARADIUM

E
155

Palaeoumbraculum
Amon, Braun & Ivanov, 1995: 8
Palaeoscenediidae

SYN.

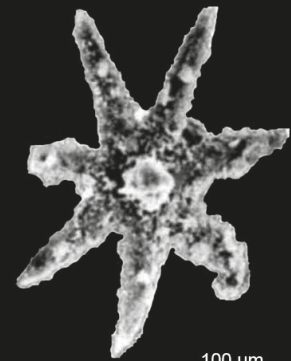


100 µm

Palaeoumbraculum expandum
Amon, Braun & Ivanov, 1995: 8, text-fig. 12a
SEE PRAESATURNALIS

E
156

Praesaturnalis
Li, 1994: 269
Palaeoscenediidae



100 µm

Praesaturnalis septemistellatus
Li, 1994: 269, pl. 1, fig. 15

E
157

Procyrtis
Li, 1995: 336
Palaeoscenediidae



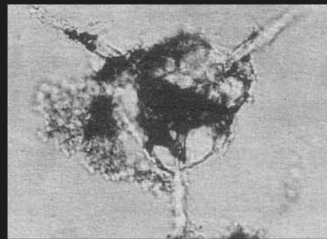
50 µm

Procyrtis rustii
Li, 1995: 336, pl. 1, fig. 17

E
158

Tetraedroclathrum
Deflandre, 1960: 216
Palaeoscenediidae

N.N.



100 µm

Tetraedroclathrum cabrierense
Deflandre, 1960: 216, pl. 1, fig. 22

E
159

Tlecerina
Furutani, 1983: 110
Palaeoscenediidae

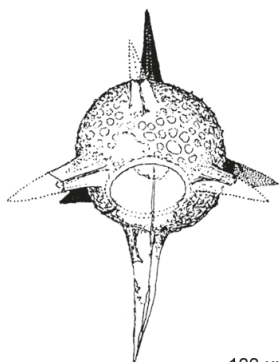


100 µm

Tlecerina horrida
Furutani, 1983: 110, pl. 25, fig. 1

E
160

Pylentonema
Deflandre, 1963: 3981
Pylentonemidae

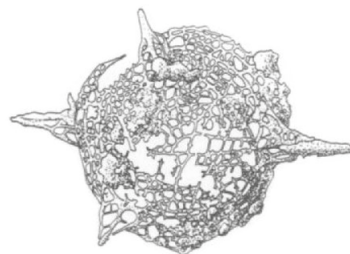


100 µm

Acanthopyle antiqua
Deflandre, 1963: 3982, fig. 1

E
161

Polyentactinia
Foreman, 1963: 281
Pylentonemidae

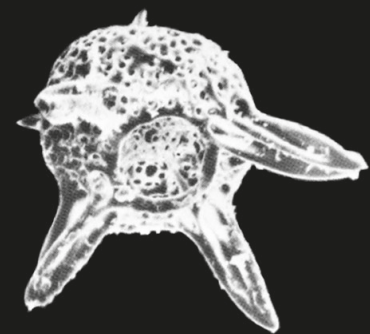


100 µm

Polyentactinia craticulata
Foreman, 1963: 281, pl. 9, fig. 5b

E
162

Quadrapesus
Cheng, 1986: 121
Pylentonemidae

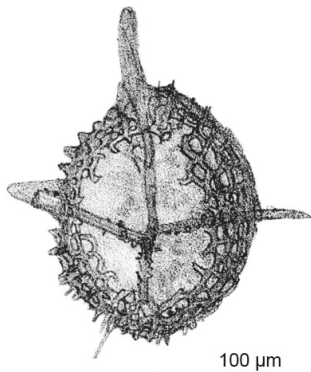


100 µm

Quadrapesus dimitricai
Cheng, 1986: 121, pl. 2, fig. 11

E
163
Ellipsostigma
Hinde, 1899a: 51
Tetrentactiniidae

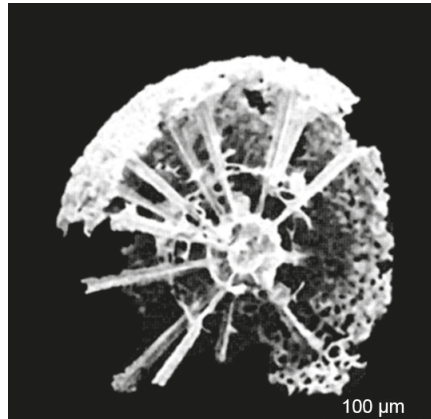
N.D.



100 µm

Ellipsostigma australe
Hinde, 1899a: 51, pl. 9, fig. 5

E
164
Multisphaera
Nazarov & Afanasieva in Afanasieva, 2000c: 75
Tetrentactiniidae

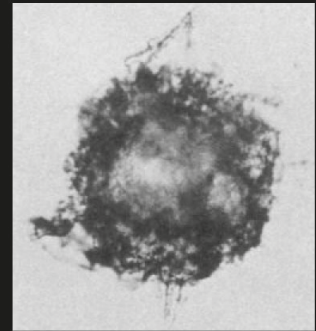


100 µm

Multisphaera impersepta
Nazarov & Afanasieva in Afanasieva, 2000c: 75, pl. 81, fig. 7

E
165
Somphoentactinia
Nazarov, 1975: 92
Tetrentactiniidae

SYN.

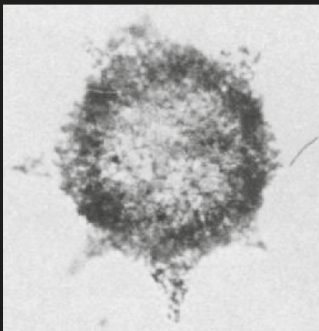


100 µm

Tetrentactinia somphozona
Foreman, 1963: 283, pl. 7, fig. 6a
SEE TETRENTACTINIA

E
166
Spongentactinella
Nazarov, 1975: 91
Tetrentactiniidae

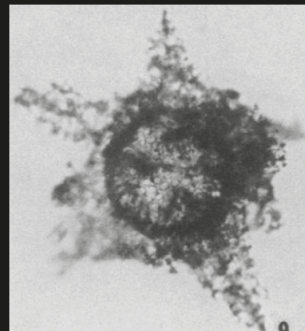
SYN.



100 µm

Tetrentactinia veles
Foreman, 1963: 283, pl. 7, fig. 1
SEE TETRENTACTINIA

E
167
Tetrentactinia
Foreman, 1963: 282
Tetrentactiniidae



100 µm

Tetrentactinia barysphaera
Foreman, 1963: 282, pl. 7, fig. 9

E
168
Trienosphaera
Deflandre, 1973c: 1150
Tetrentactiniidae



100 µm

Trienosphaera sicarius
Deflandre, 1973c: 1150, pl. 2, fig. 3

E
169
Triaoentactinosphaera
Wang, 1997: 155
Tetrentactiniidae

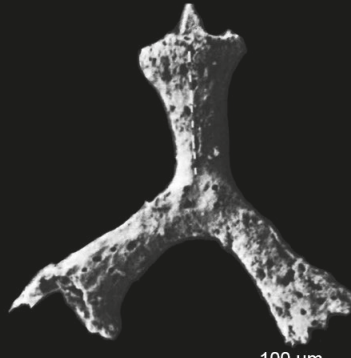
SYN.



100 µm

Triaoentactinosphaera regularia
Wang, 1997: 156, pl. 4, fig. 8
SEE TRIANOSPHAERA

L
170
Caulella
Caridroit, De Wever & Dumitrica, 1999: 608
Caulellidae

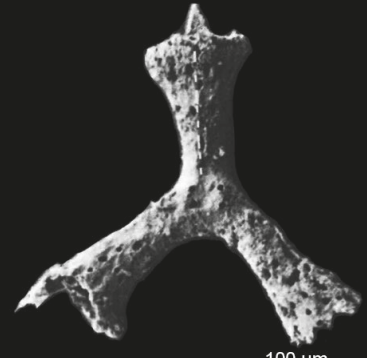


100 µm

Deflandrella manica
De Wever & Caridroit, 1984: 99, pl. 1, fig. 2

L
171
Deflandrella
De Wever & Caridroit, 1984: 99
Caulellidae

HOM.

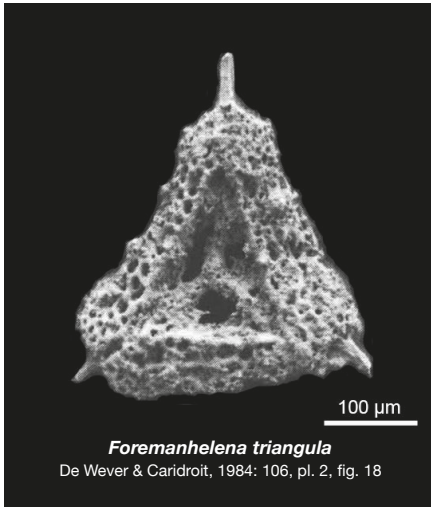


100 µm

Deflandrella manica
De Wever & Caridroit, 1984: 99, pl. 1, fig. 2
SEE CAULELLA

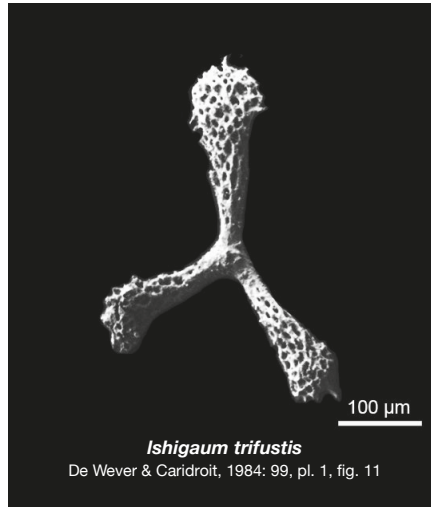
L
172

Foremanhelenia
De Wever & Caridroit, 1984: 104
Cauletellidae



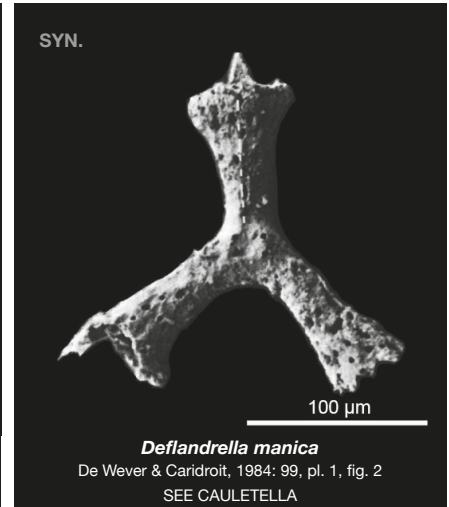
L
173

Ishigaum
De Wever & Caridroit, 1984: 99
Cauletellidae



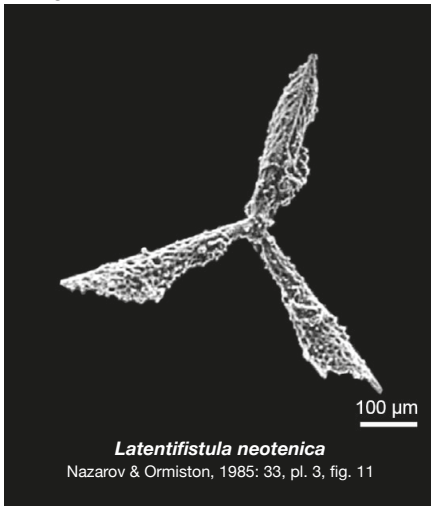
L
174

Kimagior
Sugiyama, 2000: 228
Cauletellidae



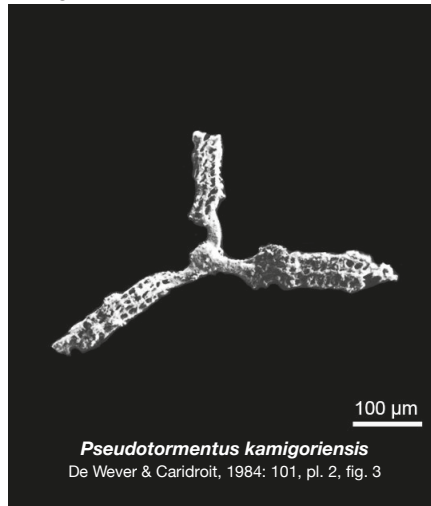
L
175

Praedeflandrella
Kozur & Mostler, 1989: 211
Cauletellidae



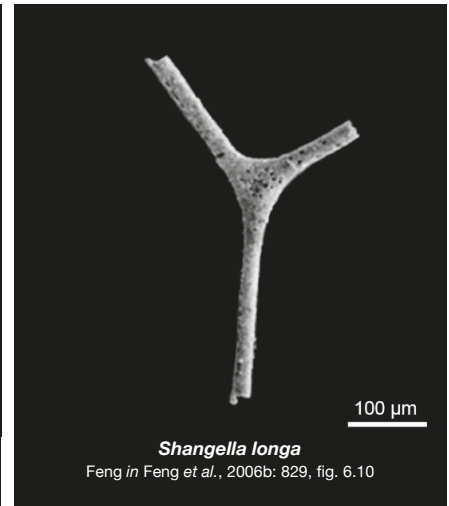
L
176

Pseudotormentus
De Wever & Caridroit, 1984: 101
Cauletellidae



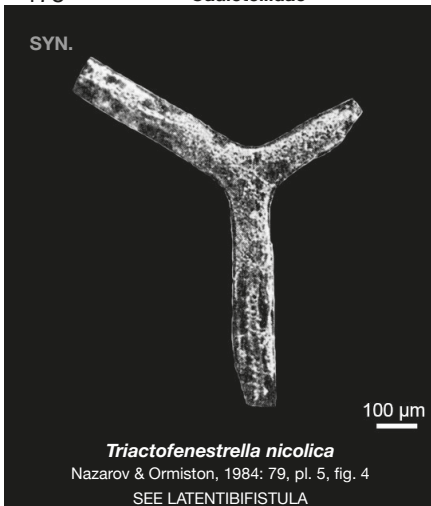
L
177

Shangella
Feng in Feng *et al.*, 2006b: 828
Cauletellidae



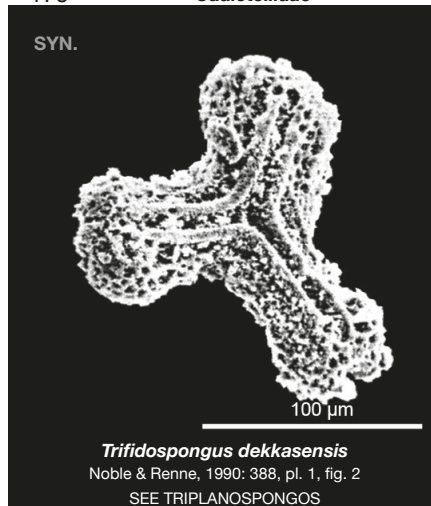
L
178

Triactofenestrella
Nazarov & Ormiston, 1984: 79
Cauletellidae



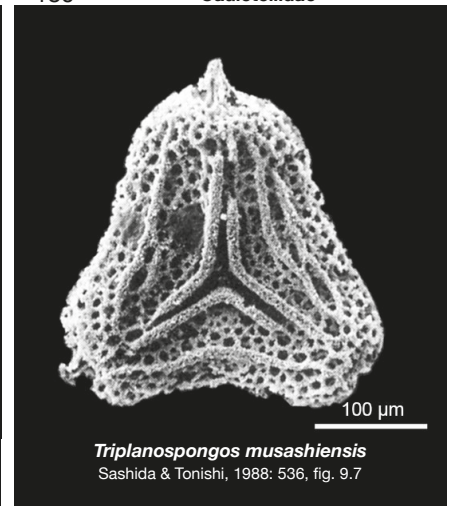
L
179

Trifidospongos
Noble & Renne, 1990: 388
Cauletellidae



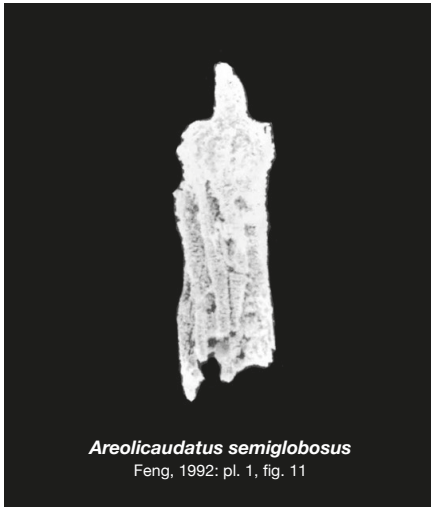
L
180

Triplanospongos
Sashida & Tonishi, 1988: 536
Cauletellidae



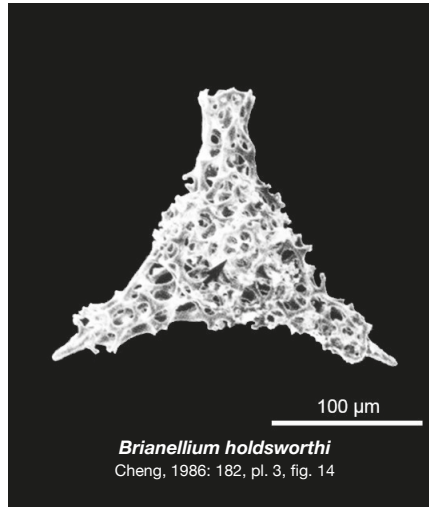
L
181

Areolicaudatus
Feng & Liu, 1993: 545
Latentifistulidae



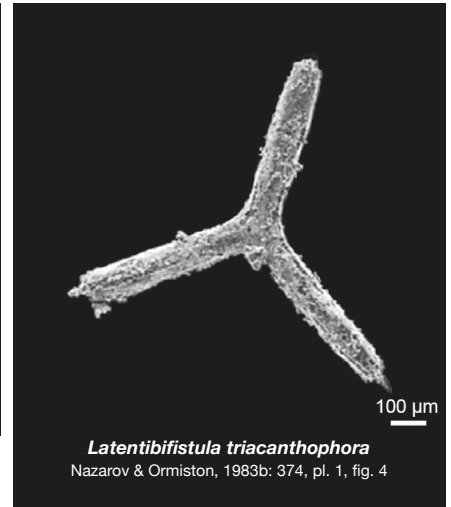
L
182

Brianellium
Cheng, 1986: 180
Latentifistulidae



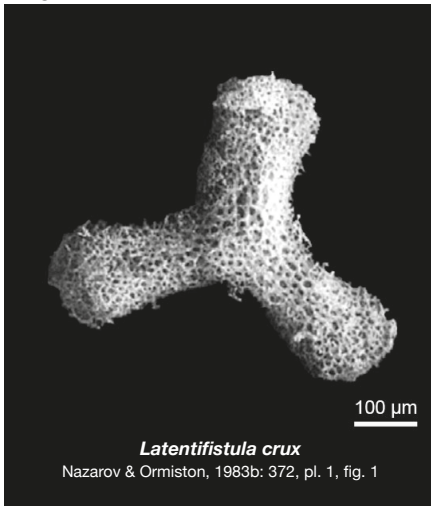
L
183

Latentibifistula
Nazarov & Ormiston, 1983b: 373
Latentifistulidae



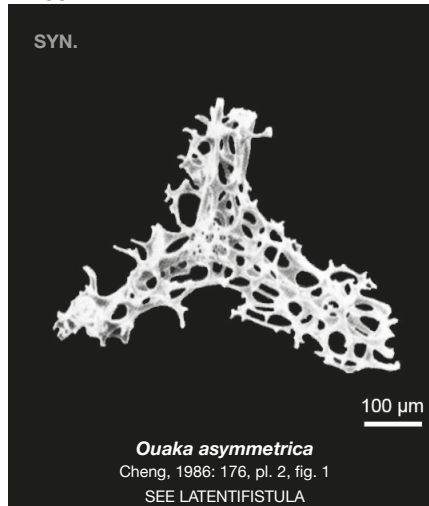
L
184

Latentifistula
Nazarov & Ormiston, 1983b: 371
Latentifistulidae



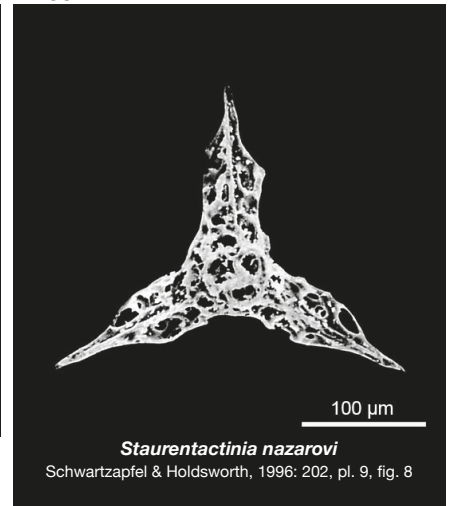
L
185

Ouaka
Cheng, 1986: 176
Latentifistulidae



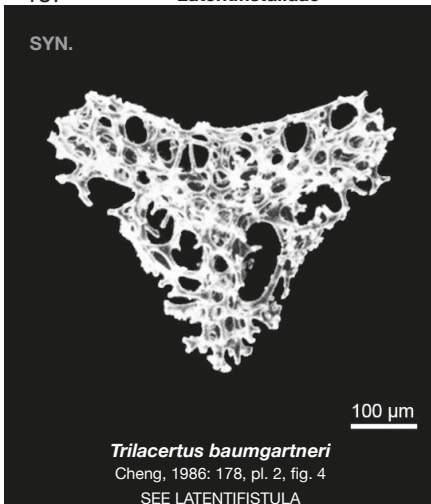
L
186

Staurentactinia
Schwartzapfel & Holdsworth, 1996: 202
Latentifistulidae



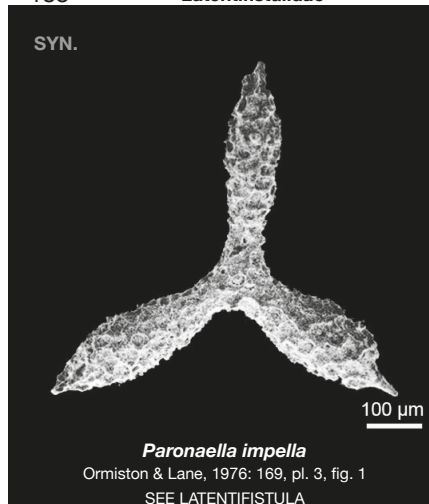
L
187

Trilacertus
Cheng, 1986: 177
Latentifistulidae



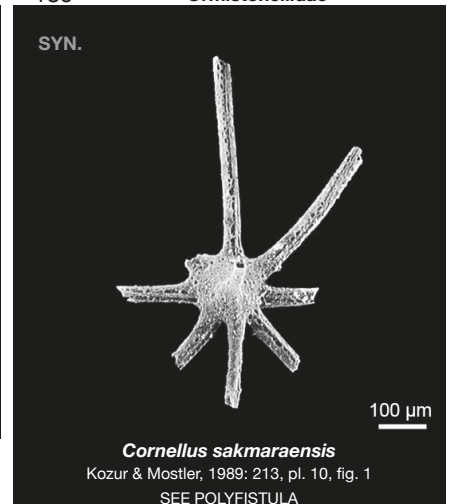
L
188

Wonella
Kozur & Mostler, 1989: 220
Latentifistulidae



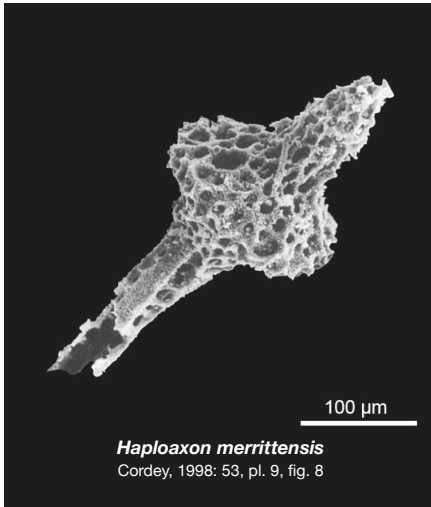
L
189

Cornellus
Kozur & Mostler, 1989: 212
Ormistonellidae



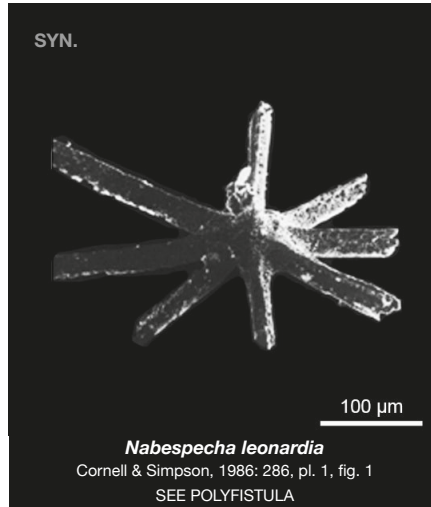
L
190

Haploaxon
Cordey, 1998: 52
Ormistonellidae



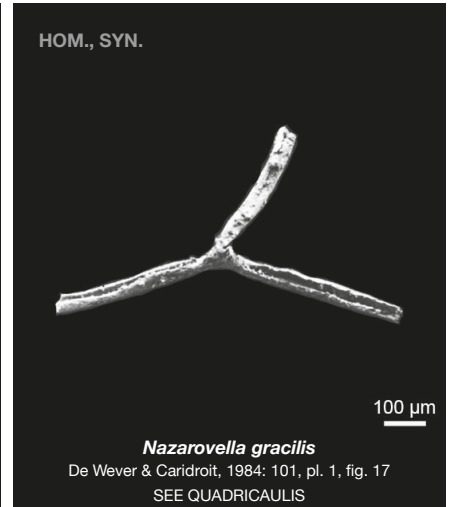
L
191

Nabespecha
Cornell & Simpson, 1986: 286
Ormistonellidae



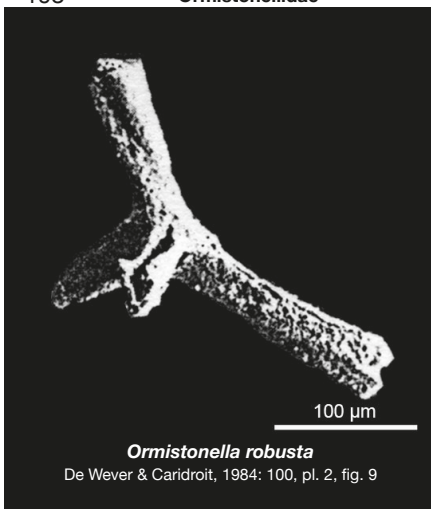
L
192

Nazarovella
De Wever & Caridroit, 1984: 101
Ormistonellidae



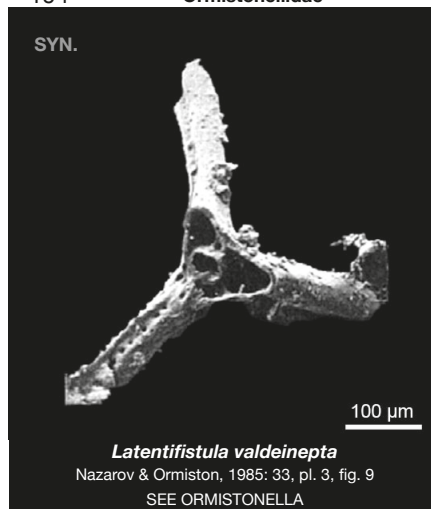
L
193

Ormistonella
De Wever & Caridroit, 1984: 100
Ormistonellidae



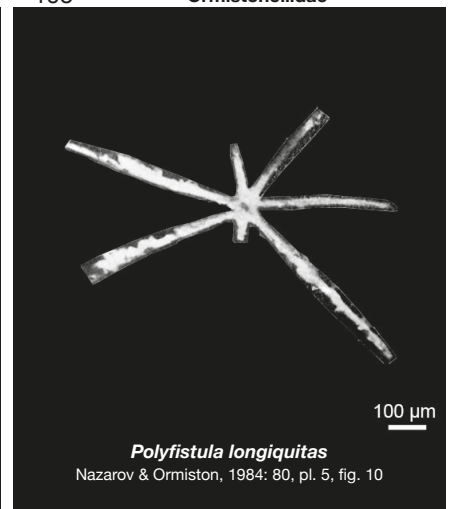
L
194

Paulianella
Kozur & Mostler, 1989: 215
Ormistonellidae



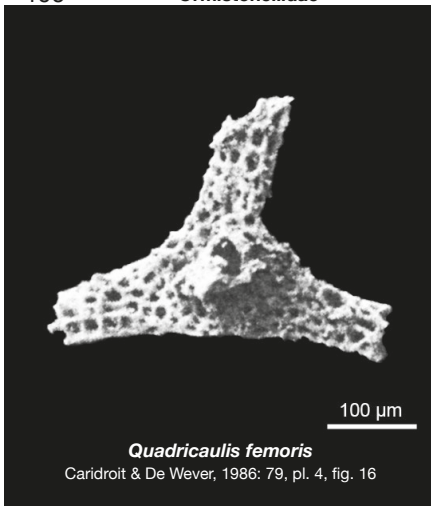
L
195

Polyfistula
Nazarov & Ormiston, 1984: 80
Ormistonellidae



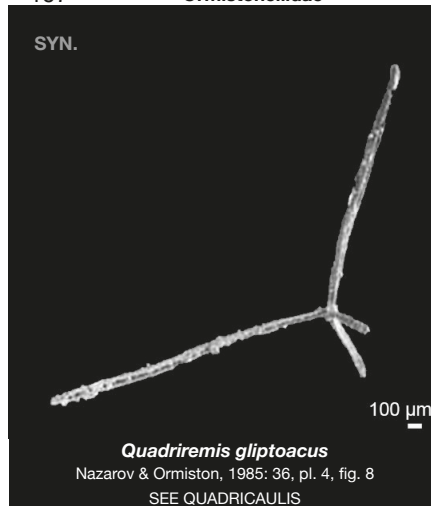
L
196

Quadracaulis
Caridroit & De Wever, 1986: 79
Ormistonellidae



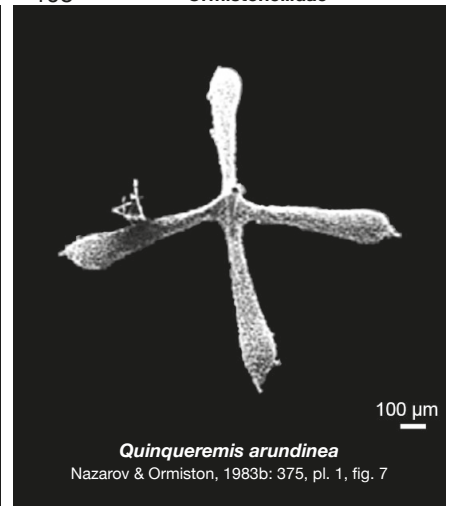
L
197

Quadriremis
Nazarov & Ormiston, 1985: 36
Ormistonellidae



L
198

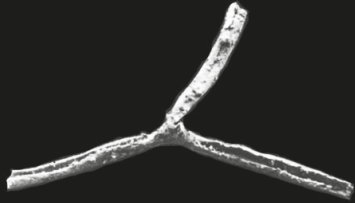
Quinqueremis
Nazarov & Ormiston, 1983b: 374
Ormistonellidae



L
199

Raciditor
Sugiyama, 2000: 227
Ormistonellidae

SYN.



100 µm

Nazarovella gracilis
De Wever & Caridroit, 1984: 101, pl. 1, fig. 17
SEE QUADRICAULIS

L
200

Grandetortura
Sashida & Tonishi, 1991: 90
Pseudolitheliidae

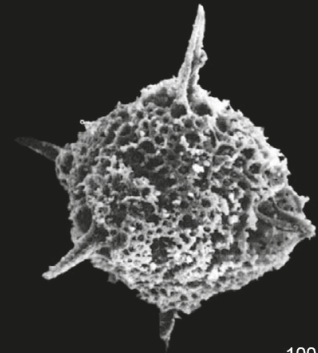


100 µm

Grandetortura nipponica
Sashida & Tonishi, 1991: 92, pl. 1, fig. 1

L
201

Octatortum
Nazarov & Ormiston, 1985: 42
Pseudolitheliidae



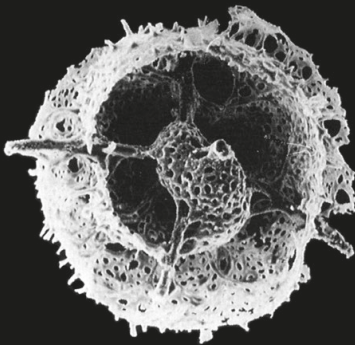
100 µm

Octatortum cornelli
Nazarov & Ormiston, 1985: 42, pl. 5, fig. 15

L
202

Pseudolithelius
Kozur & Mostler, 1989: 185
Pseudolitheliidae

SYN.



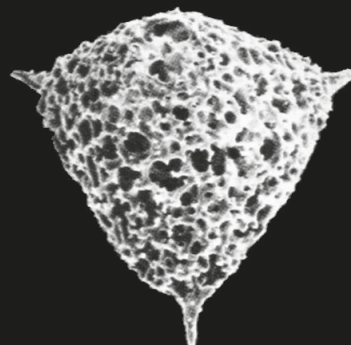
100 µm

Pseudolithelius permicus
Kozur & Mostler, 1989: 186, pl. 18, fig. 1a
SEE OCTATORTUM

L
203

Archaeopyramisa
Cheng, 1986: 185
Tetratortentidae

SYN.



100 µm

Archaeopyramisa haeckeli
Cheng, 1986: 186, pl. 4, fig. 4
SEE TETRAGREGNON

L
204

Mostlerispongus
Kozur, 1993: 110
Tetratortentidae

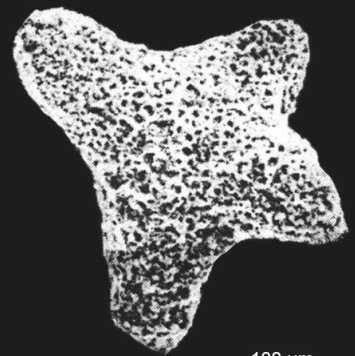


100 µm

Mostlerispongus sosioensis
Kozur, 1993: 110, pl. 2, fig. 5

L
205

Quadrilobata
Wang, 1995: 144
Tetratortentidae



100 µm

Quadrilobata ephippiomorpha
Wang, 1995: 144, pl. 2, fig. 16

L
206

Tetracircinata
Nazarov & Ormiston, 1984: 74
Tetratortentidae

SYN.

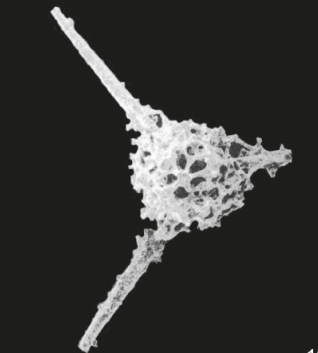


100 µm

Tetracircinata recondita
Nazarov & Ormiston, 1984: 74, pl. 5, fig. 2
SEE TETRAGREGNON

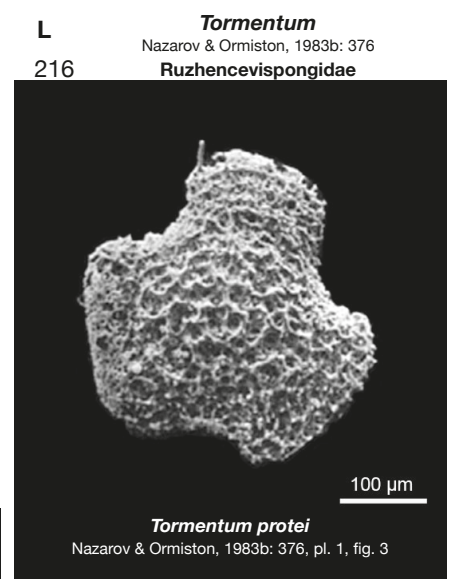
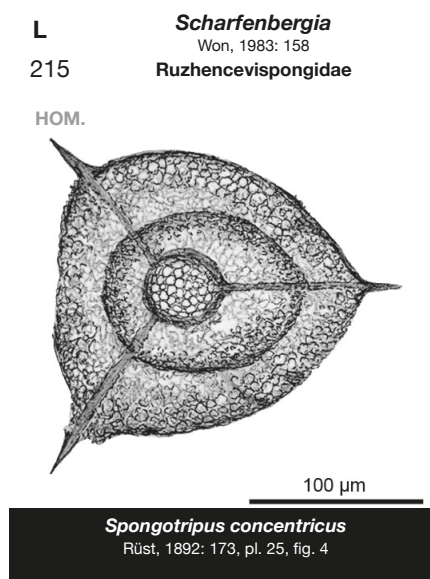
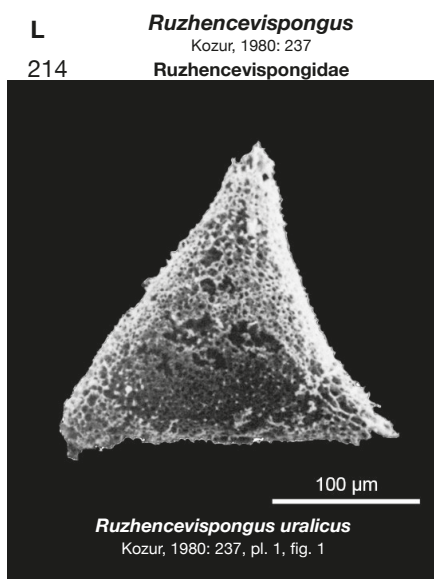
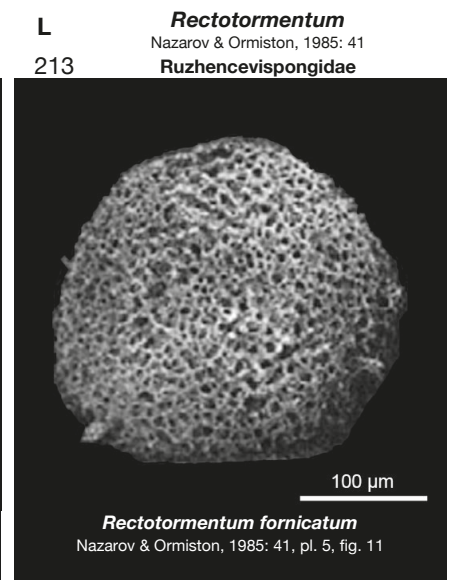
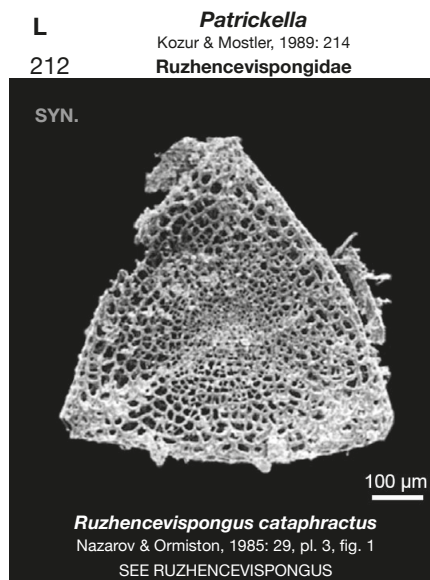
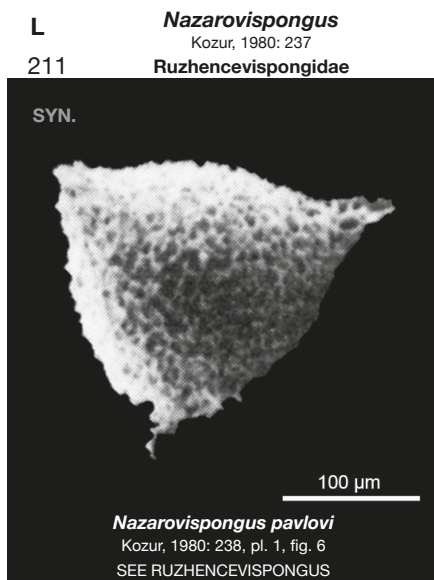
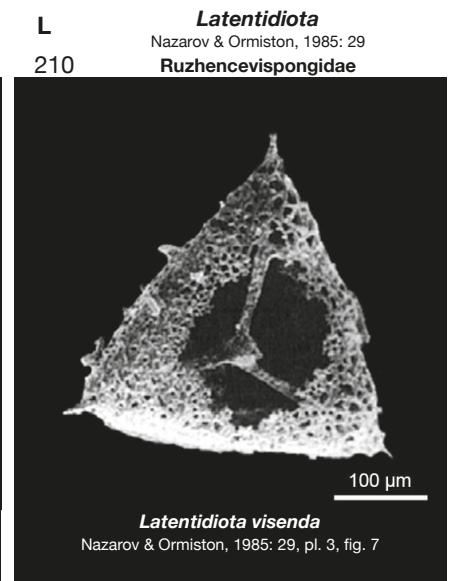
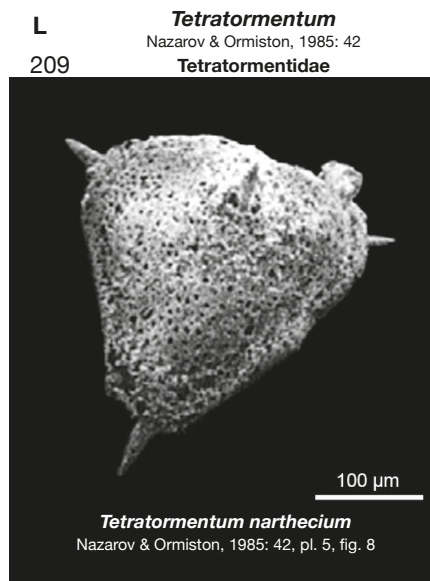
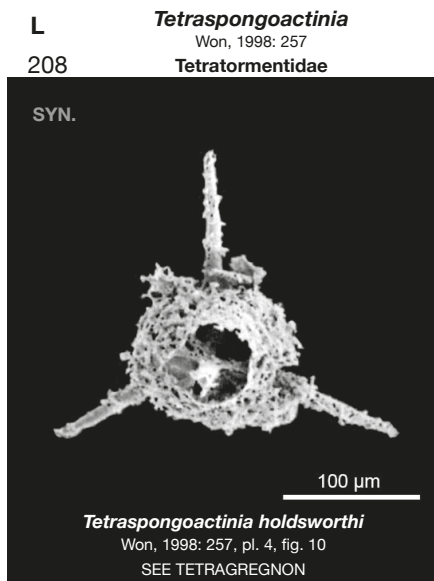
L
207

Tetragregnon
Ormiston & Lane, 1976: 167
Tetratortentidae

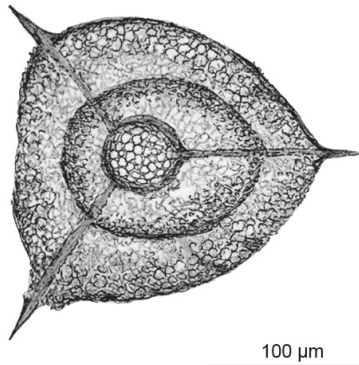


100 µm

Tetragregnon sycamorensis
Ormiston & Lane, 1976: 167, pl. 2, fig. 6



L
217 *Wonio*
Özdikmen, 2009: 247
Ruzhencevispongidae

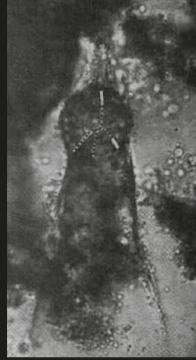


100 µm

Spongotripus concentricus
Rüst, 1892: 173, pl. 25, fig. 4

N
218 *Allocyrtium*
Afanasieva, 1986: 31
Archocyrtiidae

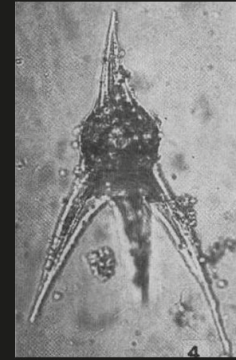
SYN.



100 µm

Archocyrtium castuligerum
Deflandre, 1972a: pl. 4, fig. 6; Deflandre, 1972b: 15
SEE ARCHOCYRTIUM

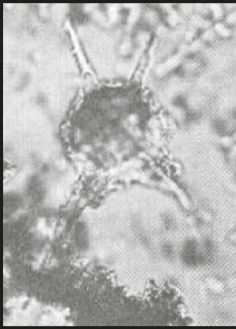
N
219 *Archocyrtium*
Deflandre, 1972b: 15
Archocyrtiidae



100 µm

Archocyrtium riedeli
Deflandre, 1972a: pl. 4, fig. 4; Deflandre, 1972b: 15

N
220 *Cerarchocyrtium*
Deflandre, 1973d: 151
Archocyrtiidae

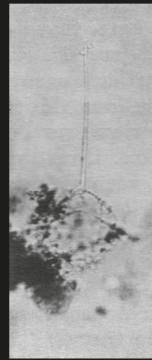


50 µm

Cerarchocyrtium ambiguum
Deflandre, 1973d: 151, pl. 4, fig. 1

N
221 *Ceratoclathrum*
Deflandre, 1960: 216
Archocyrtiidae

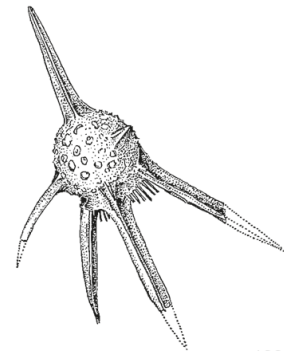
N.N.



100 µm

Ceratoclathrum ambiguum
Deflandre, 1960: 216, pl. 1, fig. 8

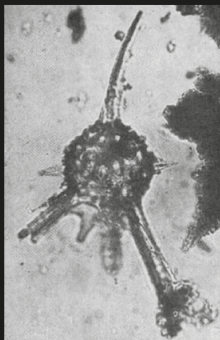
N
222 *Cyrtisphaeractenium*
Deflandre, 1972b: 14
Archocyrtiidae



100 µm

Cyrtisphaeractenium mendax
Deflandre, 1972a: pl. 1, fig. 10; Deflandre, 1972b: 15

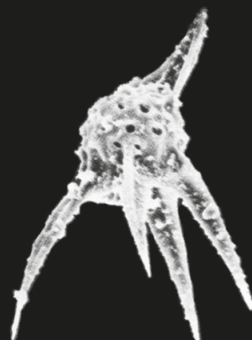
N
223 *Cyrtisphaeronemium*
Deflandre, 1972b: 14
Archocyrtiidae



100 µm

Cyrtisphaeronemium prudentigerum
Deflandre, 1972a: pl. 2, fig. 1; Deflandre, 1972b: 14

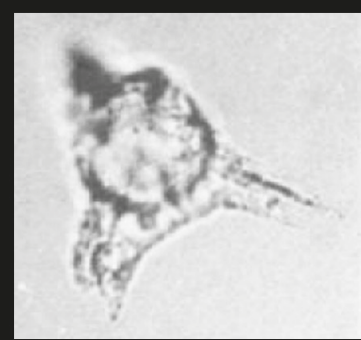
N
224 *Deflandrellium*
Cheng, 1986: 134
Archocyrtiidae



100 µm

Deflandrellium georgesi
Cheng, 1986: 134, pl. 7, fig. 7

N
225 *Foremaniella*
Deflandre, 1972b: 14
Archocyrtiidae



100 µm

Cyrtentactinia cibdelosphaera
Foreman, 1963: 285, pl. 8, fig. 3

N
226

Mostlerium
Cheng, 1986: 136
Archocyrtiidae

SYN.



100 µm

Mostlerium unicum
Cheng, 1986: 136, pl. 4, fig. 8
SEE PARARCHOCYRTIUM

N
227

Pararchocyrtium
Deflandre, 1972b: 15
Archocyrtiidae



100 µm

Pararchocyrtium mirabile
Deflandre, 1972a: pl. 4, fig. 1; Deflandre, 1972b: 15

N
228

Robotium
Cheng, 1986: 137
Archocyrtiidae

SYN.

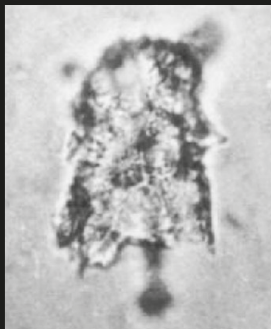


100 µm

Robotium validum
Cheng, 1986: 139, pl. 3, fig. 11
SEE PARARCHOCYRTIUM

N
229

Cyrtentactinia
Foreman, 1963: 284
Popofskyellidae



100 µm

Cyrtentactinia primotica
Foreman, 1963: 285, pl. 8, fig. 2a

N
230

Kantollum
Cheng, 1986: 163
Popofskyellidae



100 µm

Kantollum pittsburgense
Cheng, 1986: 164, pl. 2, fig. 4

N
231

Popofskyellum
Deflandre, 1964: 3058
Popofskyellidae

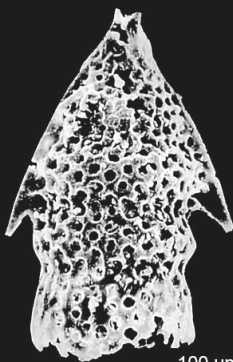


100 µm

Popofskyellum pulchrum
Deflandre, 1964: fig. 1

N
232

Totollum
Schwartzapfel & Holdsworth, 1996: 142
Popofskyellidae

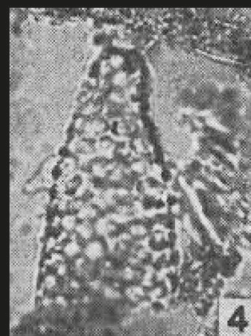


100 µm

Totollum blomei
Schwartzapfel & Holdsworth, 1996: 146, pl. 10, fig. 1

N
233

Tuscaritellum
Deflandre, 1972b: 16
Popofskyellidae

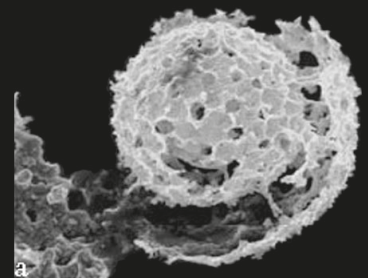


50 µm

Tuscaritellum imitatum
Deflandre, 1972a: text-fig. 4

S
234

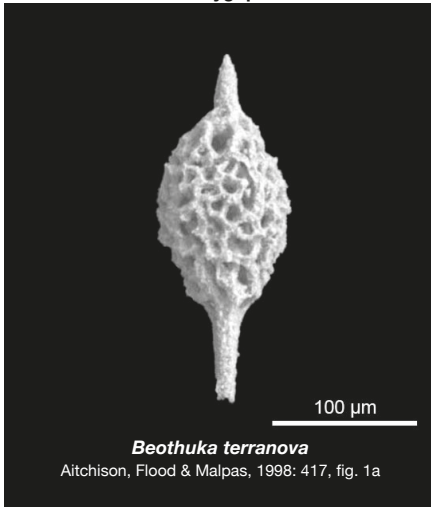
Antygopora
Maletz & Bruton, 2005: 713
Antygoporidae



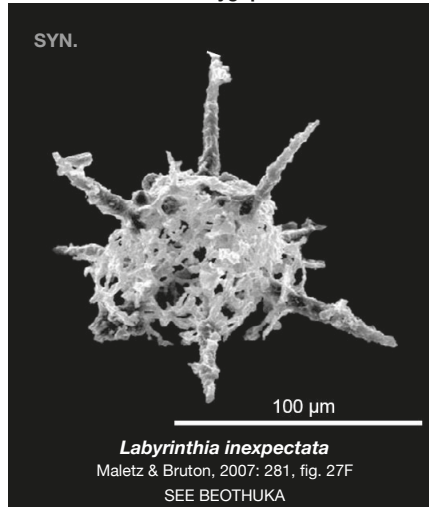
50 µm

Antygopora ordovicica
Maletz & Bruton, 2005: 715, fig. 2a

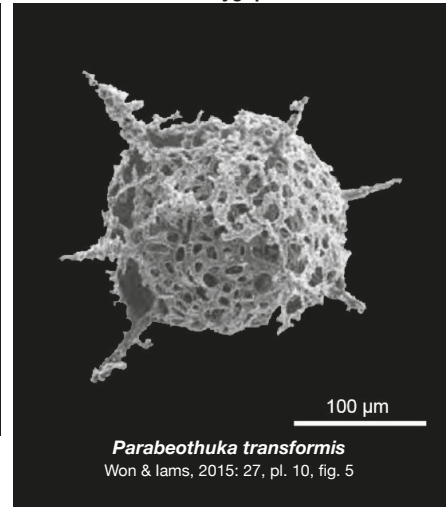
S
235
Beothuka
Aitchison, Flood & Malpas, 1998: 417
Antygoporidae



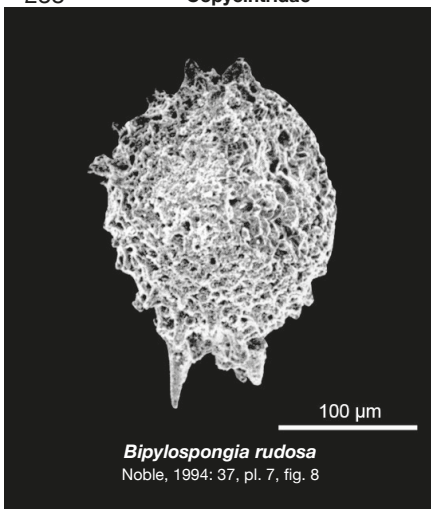
S
236
Labyrinthia
Maletz & Bruton, 2007: 281
Antygoporidae



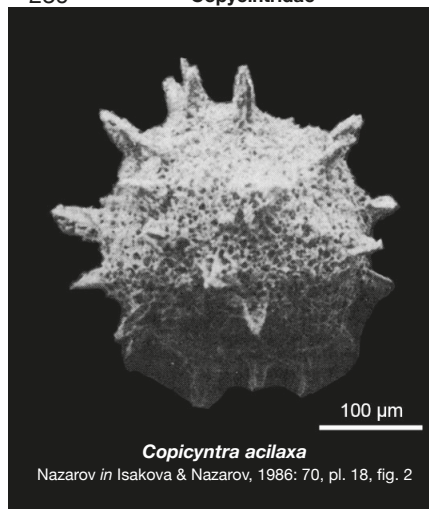
S
237
Parabeothuka
Won & Iams, 2015: 27
Antygoporidae



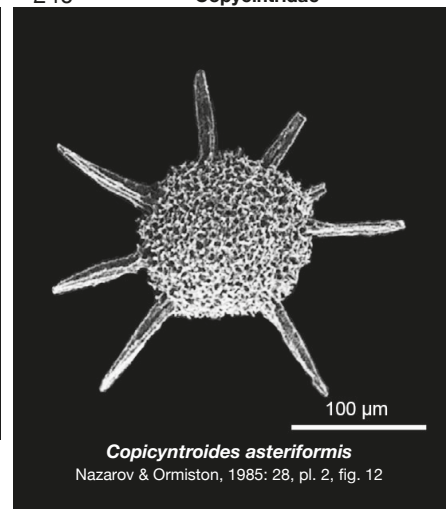
S
238
Bipylspongia
Noble, 1994: 37
Copycintridae



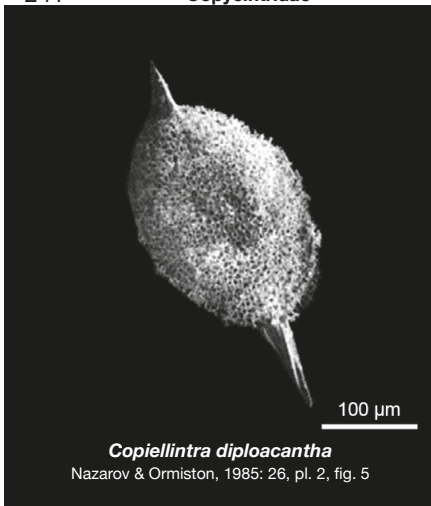
S
239
Copicyntra
Nazarov & Ormiston, 1985: 24
Copycintridae



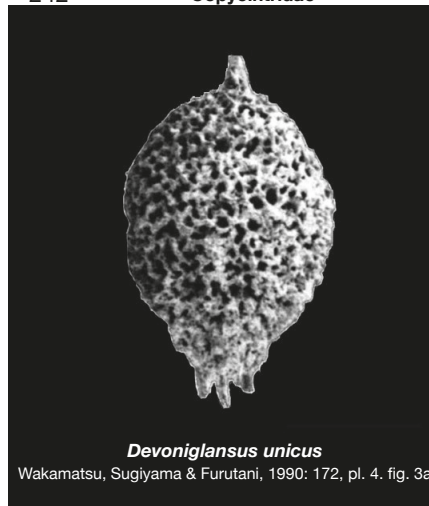
S
240
Copicyntroides
Nazarov & Ormiston, 1985: 28
Copycintridae



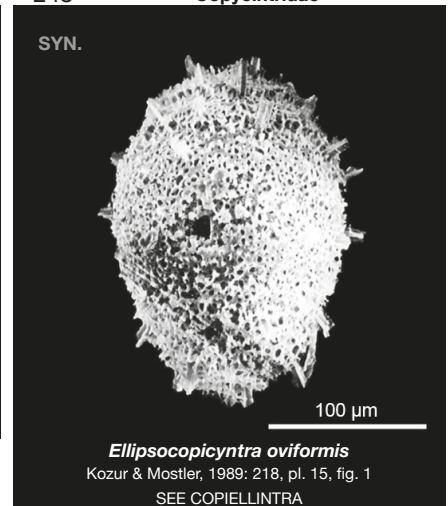
S
241
Copiellintra
Nazarov & Ormiston, 1985: 25
Copycintridae



S
242
Devoniglansus
Wakamatsu, Sugiyama & Furutani, 1990: 171
Copycintridae

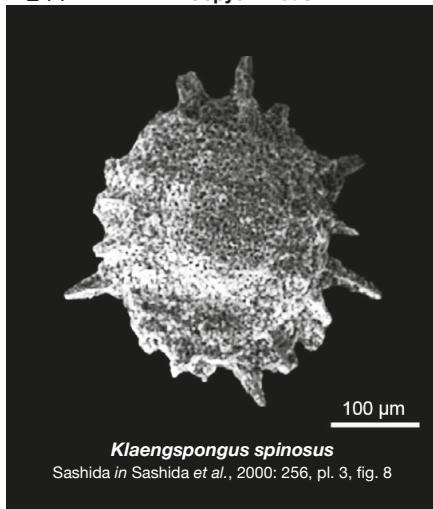


S
243
Ellipsocopicyntra
Kozur & Mostler, 1989: 218
Copycintridae



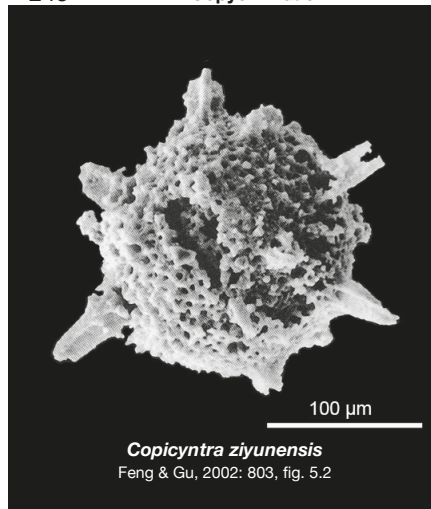
S
244

Klaengspongos
Sashida *in* Sashida *et al.*, 2000: 256
Copycintridae



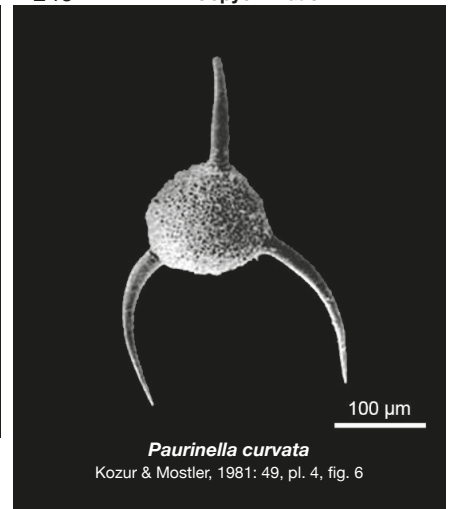
S
245

Paracopycyntra
Feng *in* Feng *et al.*, 2006a: 25
Copycintridae



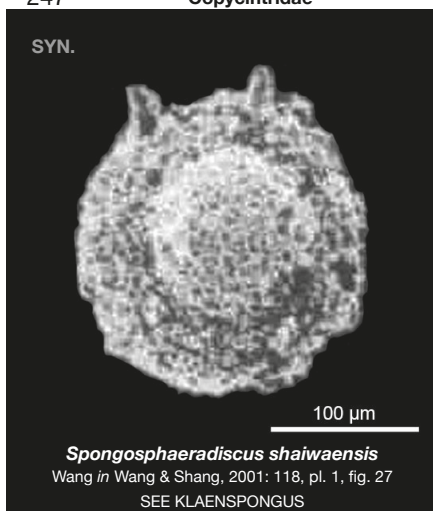
S
246

Paurinella
Kozur & Mostler, 1981: 49
Copycintridae



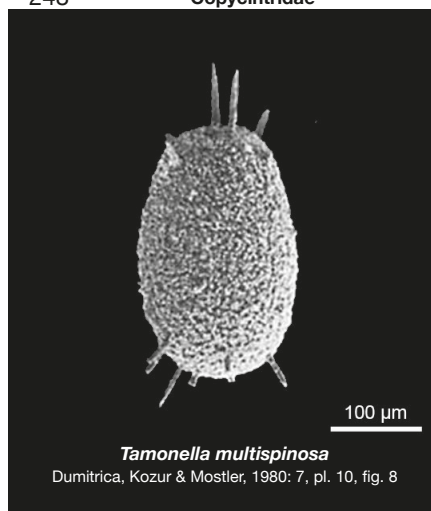
S
247

Spongospaeradiscus
Wang *in* Wang & Shang, 2001: 118
Copycintridae



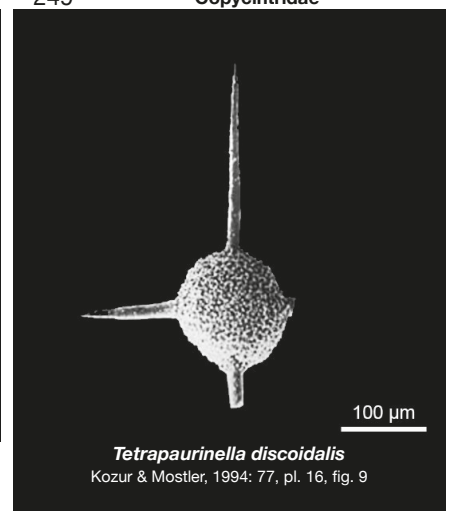
S
248

Tamonella
Dumitrica, Kozur & Mostler, 1980: 7
Copycintridae



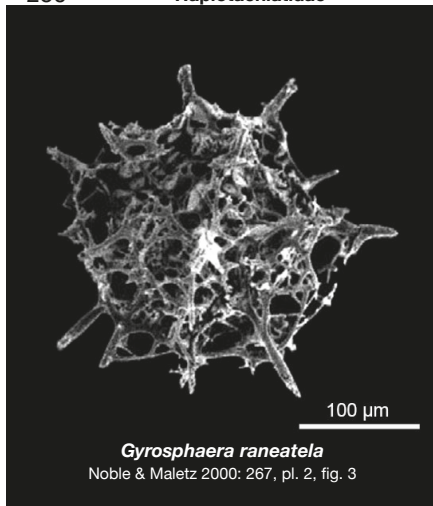
S
249

Tetrapaurinella
Kozur & Mostler, 1994: 76
Copycintridae



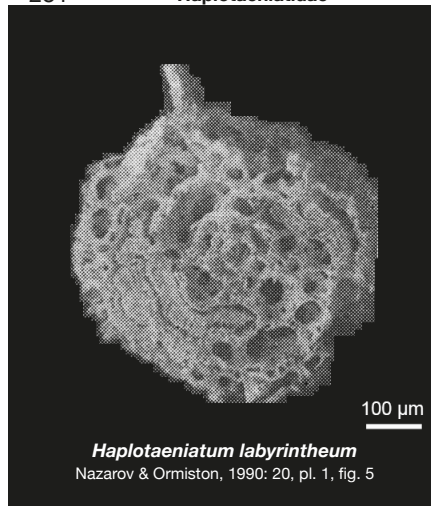
S
250

Gyrosphaera
Noble & Maletz 2000: 267
Haplotaeniidae



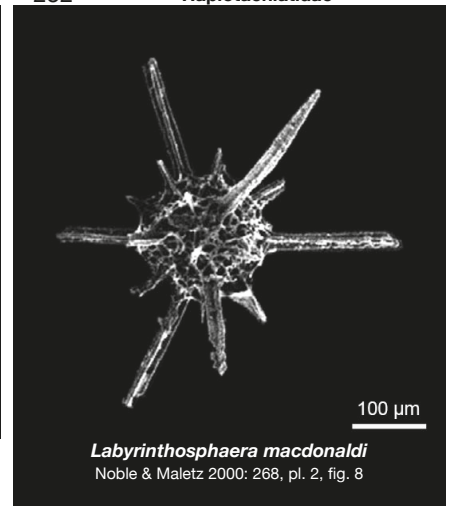
S
251

Haplotaeniatum
Nazarov & Ormiston, 1990: 19
Haplotaeniidae

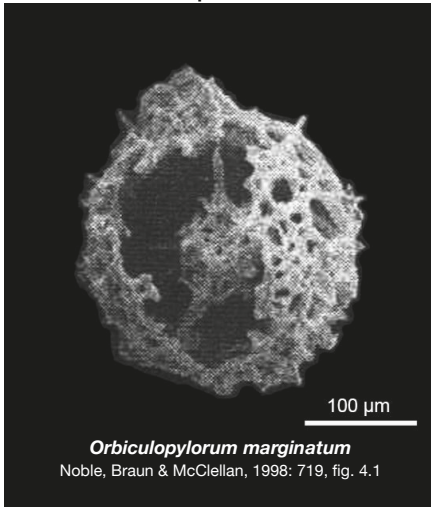


S
252

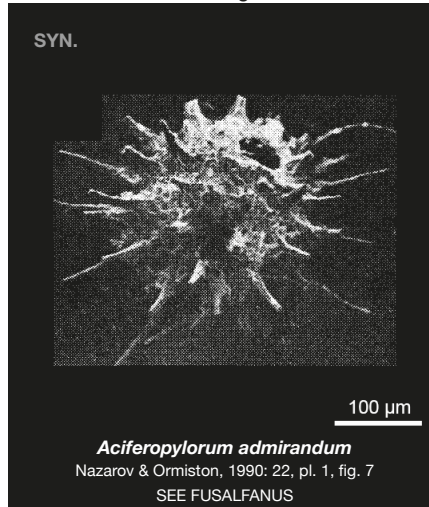
Labyrinthosphaera
Noble & Maletz 2000: 268
Haplotaeniidae



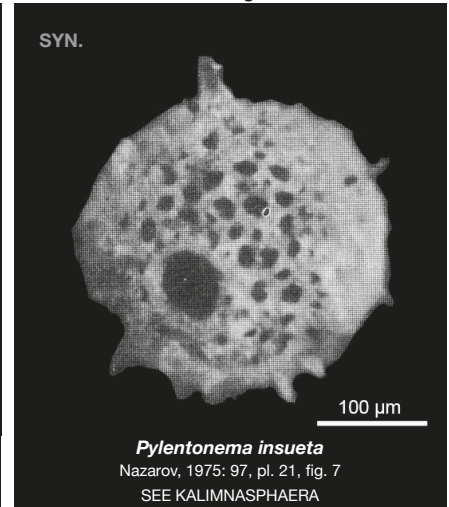
S
253
Orbiculopylorum
Noble, Braun & McClellan, 1998: 718
Haplotaeniidae



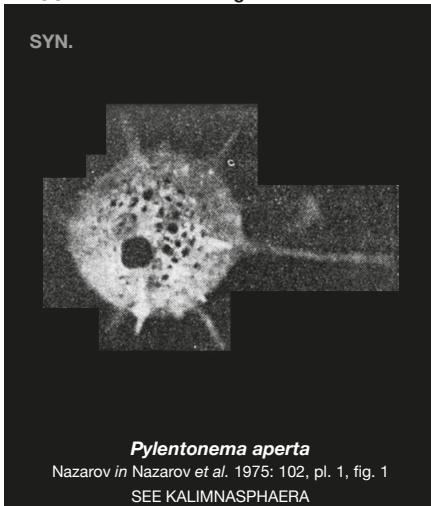
S
254
Aciferopylorum
Nazarov & Ormiston, 1990: 21
Inaniguttidae



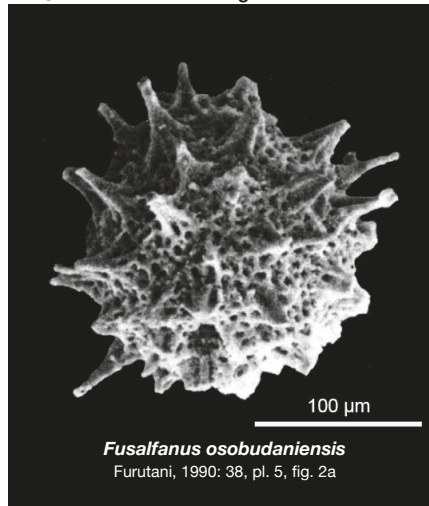
S
255
Cessipylorum
Nazarov in Afanasieva, 1986: 30
Inaniguttidae



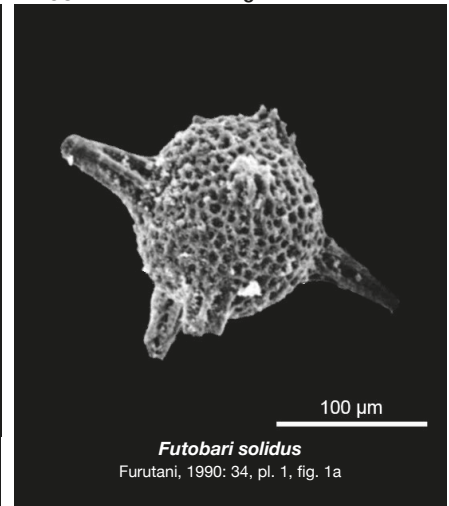
S
256
Cessipylorum
Nazarov & Ormiston in Nazarov, 1988: 70
Inaniguttidae



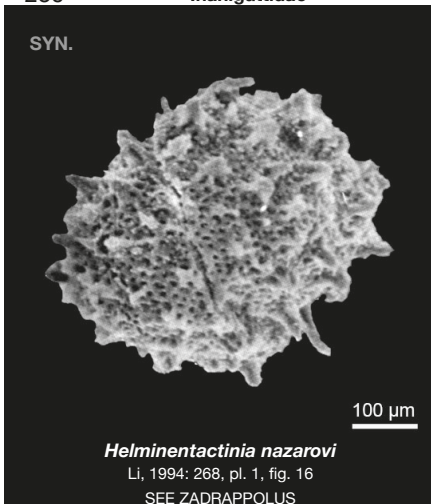
S
257
Fusalfanus
Furutani, 1990: 38
Inaniguttidae



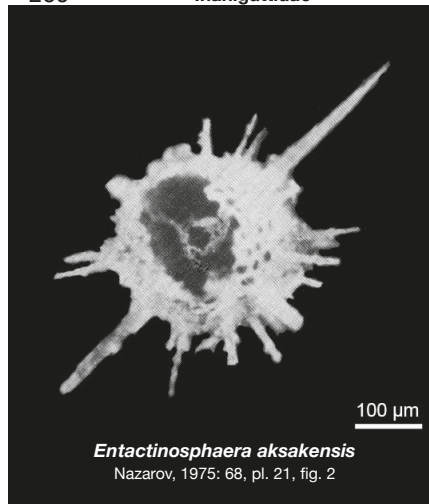
S
258
Futobari
Furutani, 1990: 34
Inaniguttidae



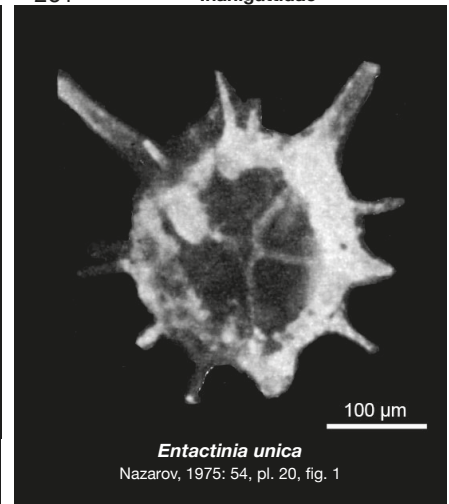
S
259
Helminentactinia
Li, 1994: 268
Inaniguttidae



S
260
Inanibigutta
Nazarov & Ormiston in Nazarov, 1988: 56
Inaniguttidae

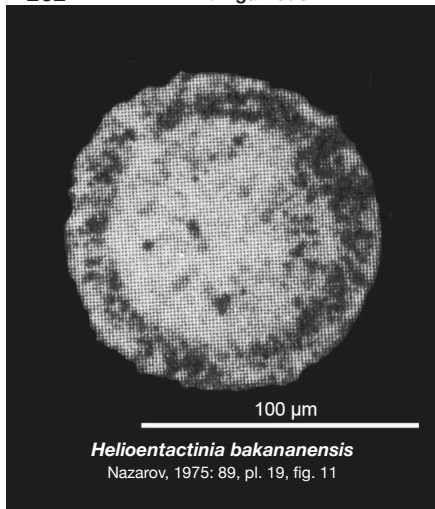


S
261
Inanigutta
Nazarov & Ormiston, 1984: 72
Inaniguttidae



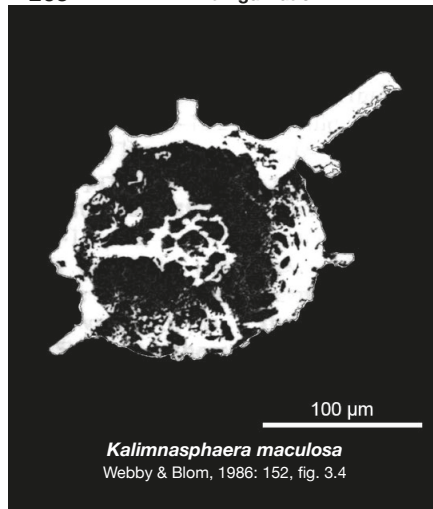
S
262

Inanihella
Nazarov & Ormiston, 1984: 72
Inaniguttidae



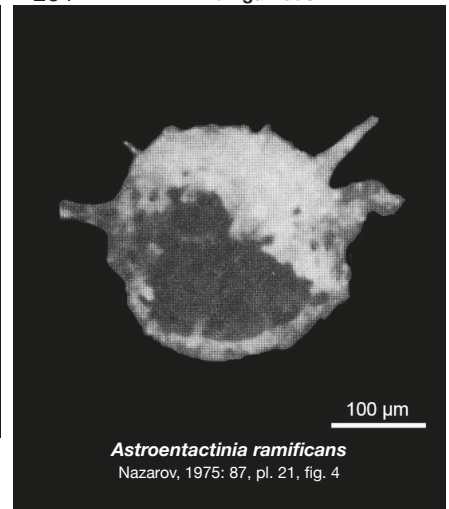
S
263

Kalimnasphaera
Webby & Blom, 1986: 152
Inaniguttidae



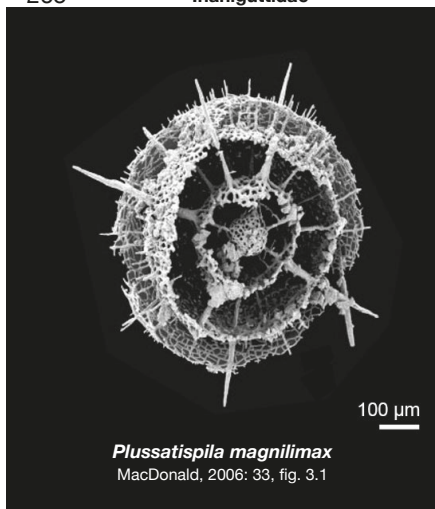
S
264

Oriundogutta
Nazarov & Ormiston in Nazarov, 1988: 57
Inaniguttidae



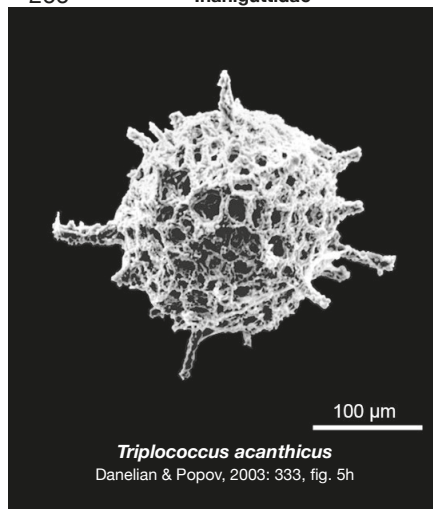
S
265

Plussatispila
MacDonald, 2006: 33
Inaniguttidae



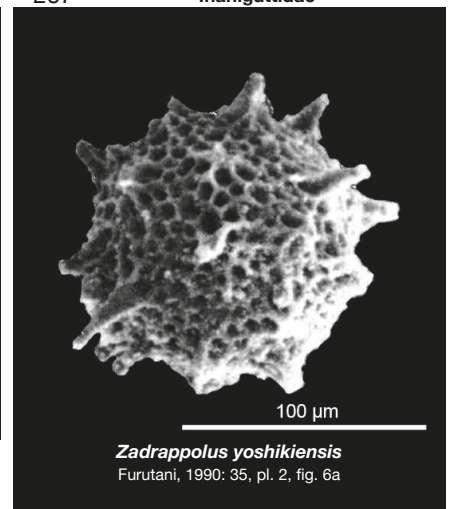
S
266

Triplococcus
Danelian & Popov, 2003: 333
Inaniguttidae



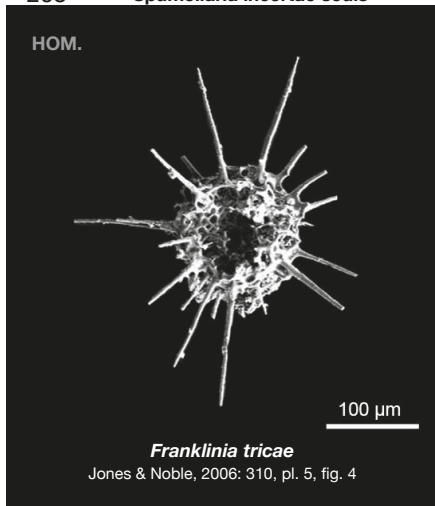
S
267

Zadrappolus
Furutani, 1990: 35
Inaniguttidae



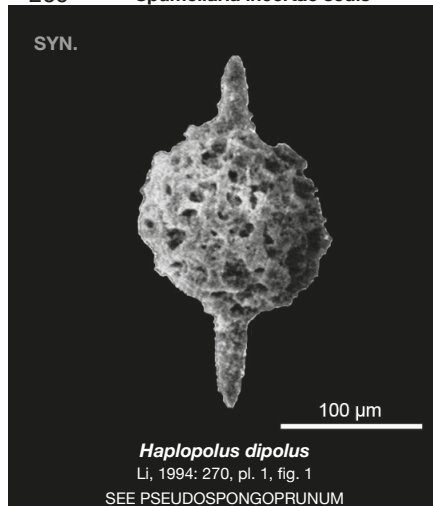
S
268

Franklinia
Jones & Noble, 2006: 308
Spumellaria incertae sedis



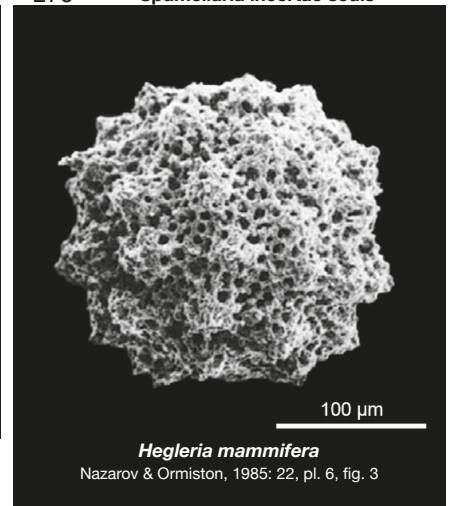
S
269

Haplopolus
Li, 1994: 270
Spumellaria incertae sedis

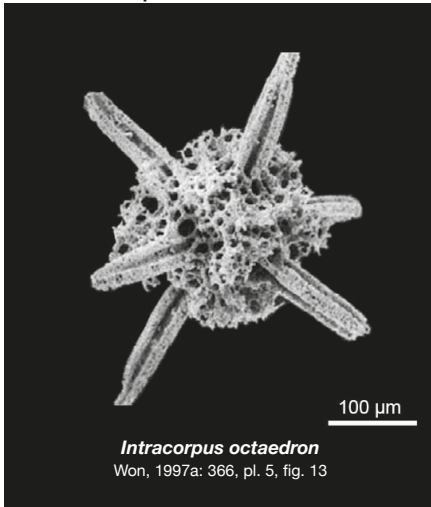


S
270

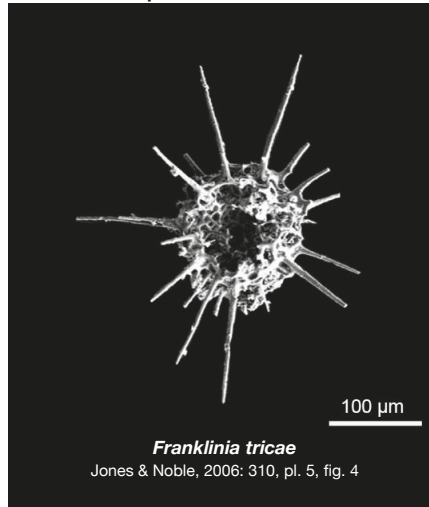
Hegleria
Nazarov & Ormiston, 1985: 22
Spumellaria incertae sedis



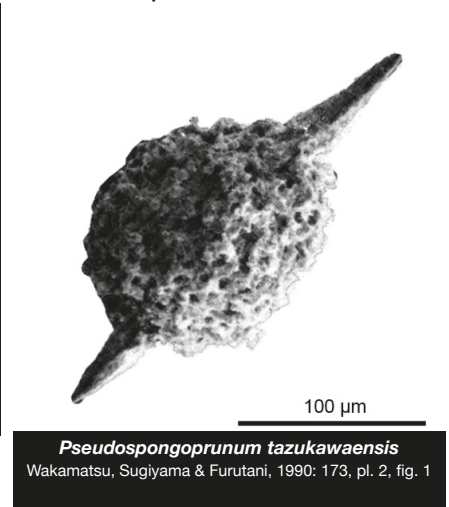
S
271 *Intracarpus*
Won, 1997a: 366
Spumellaria incertae sedis



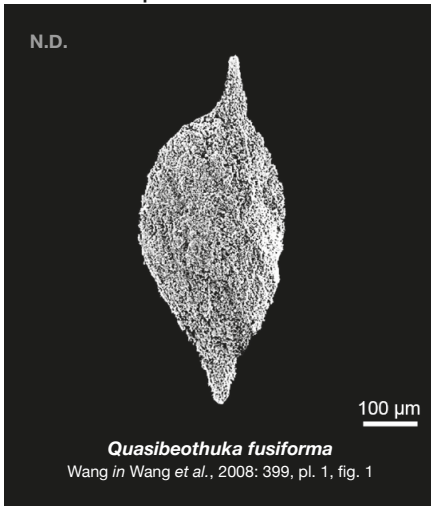
S
272 *Maletzella*
Noble, 2014: 35
Spumellaria incertae sedis



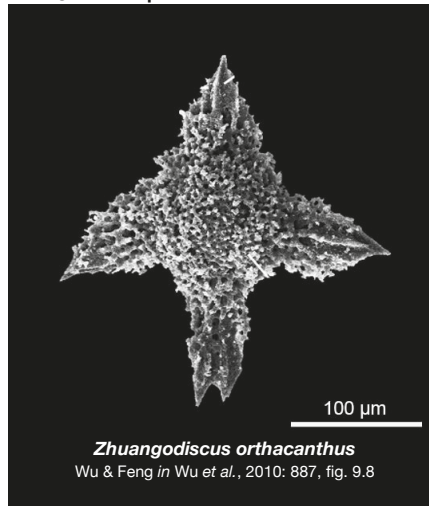
S
273 *Pseudospongoprimum*
Wakamatsu, Sugiyama & Furutani, 1990: 172
Spumellaria incertae sedis



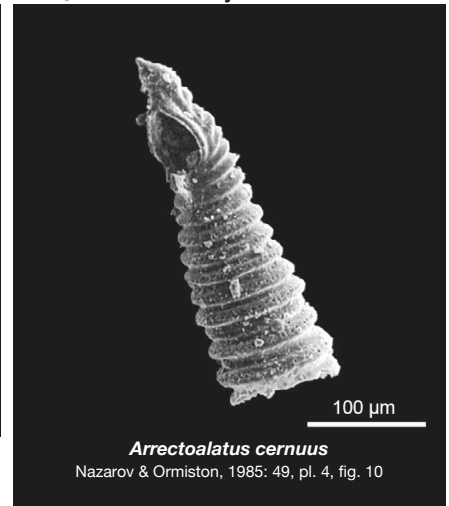
S
274 *Quasibeothuka*
Wang in Wang et al., 2008: 399
Spumellaria incertae sedis



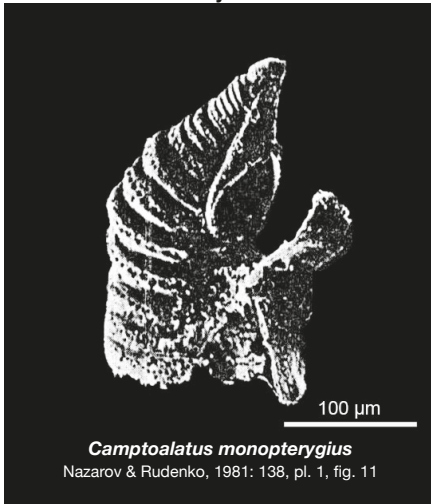
S
275 *Zhuangodiscus*
Wu & Feng in Wu et al., 2010: 887
Spumellaria incertae sedis



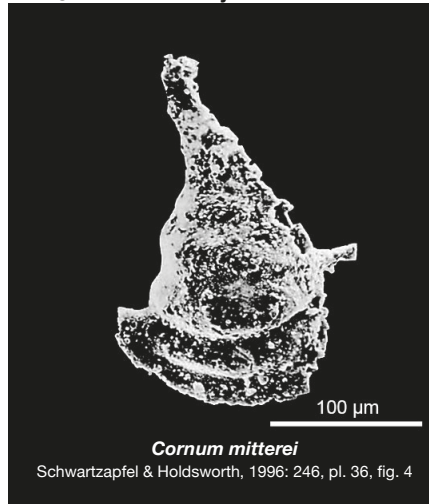
S
276 *Arrectoalatus*
Nazarov & Ormiston, 1985: 49
Corythoecidae



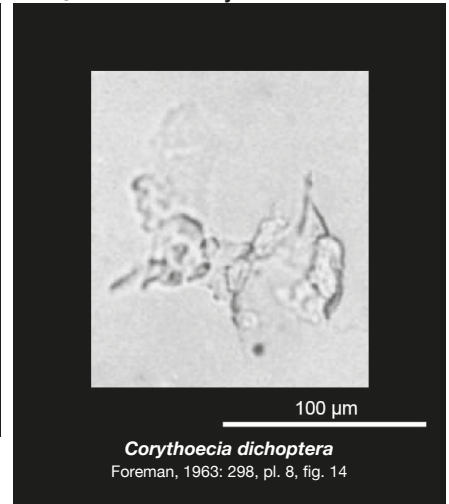
S
277 *Camptoalatus*
Nazarov & Rudenko, 1981: 138
Corythoecidae

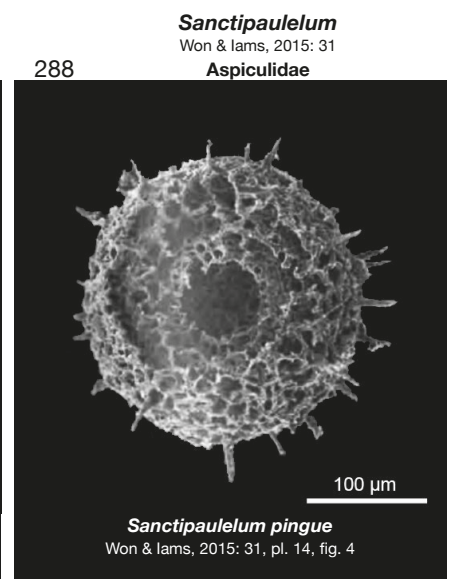
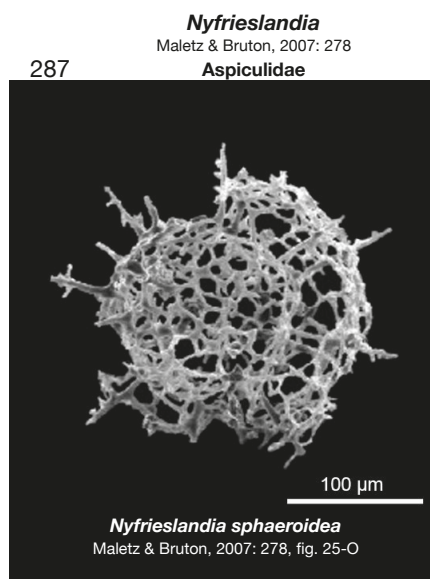
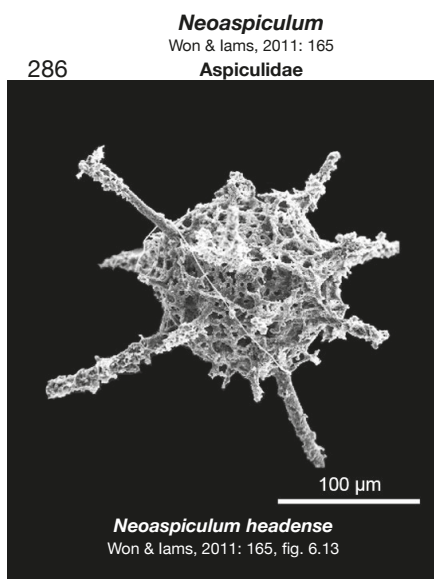
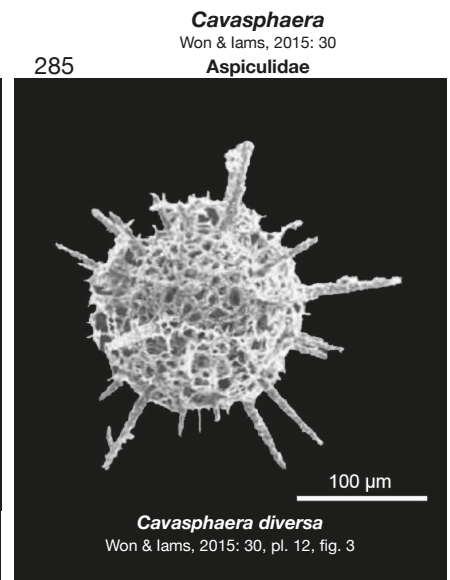
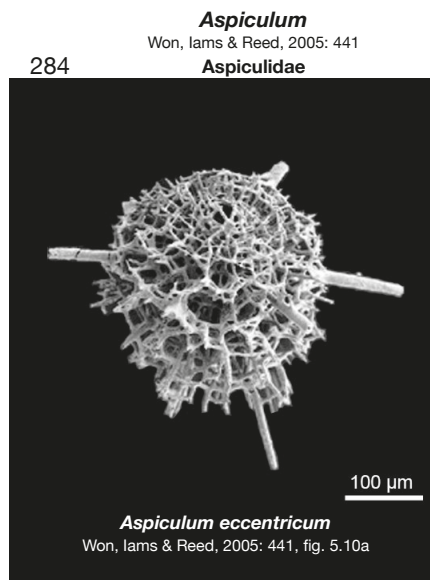
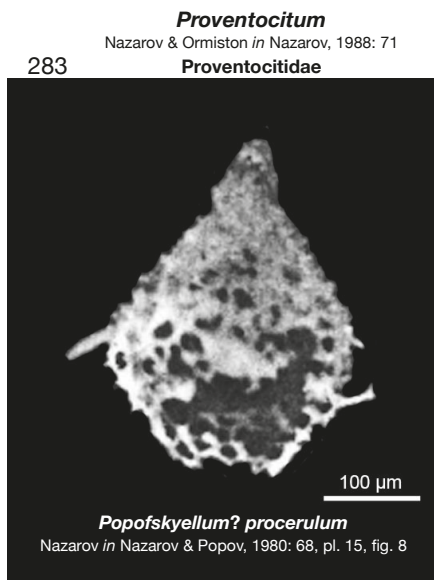
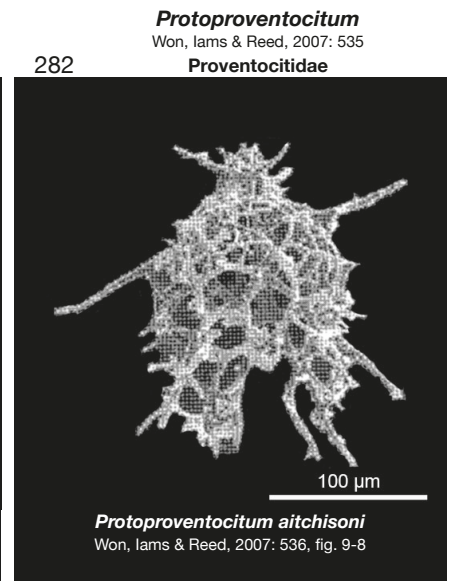
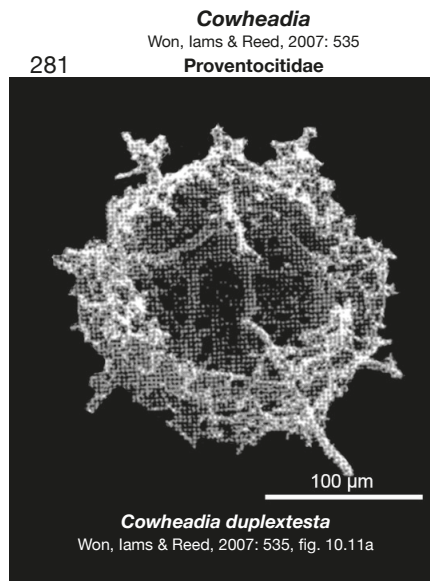
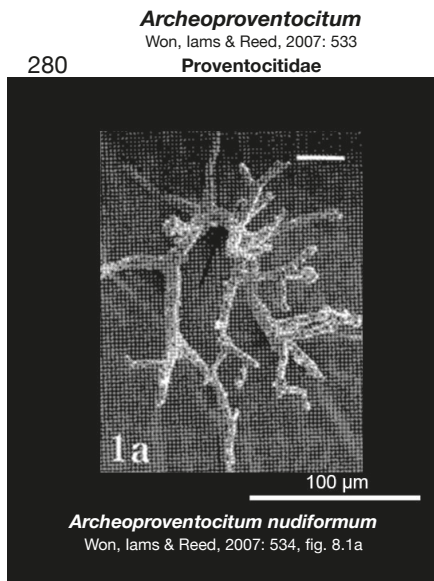


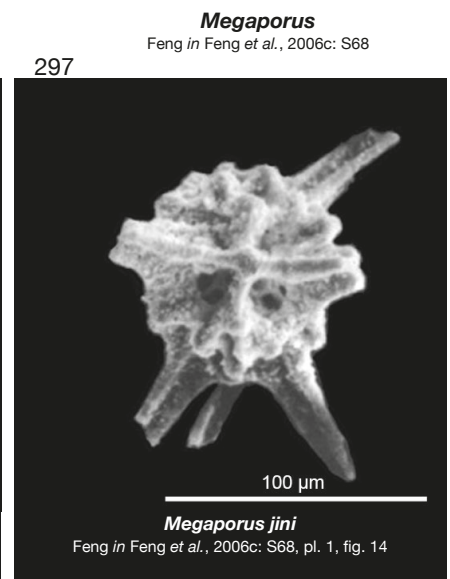
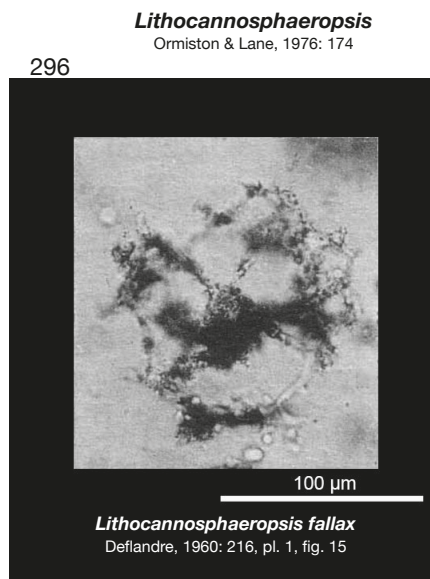
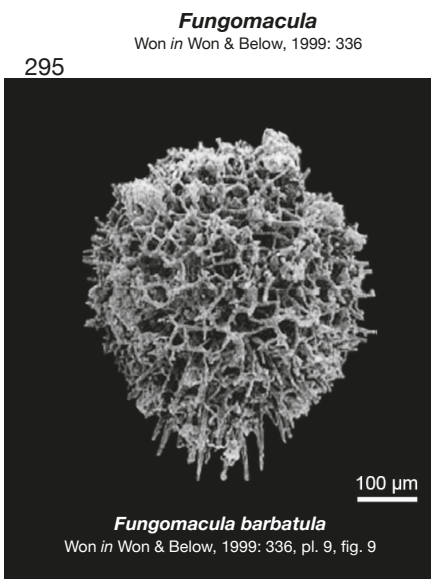
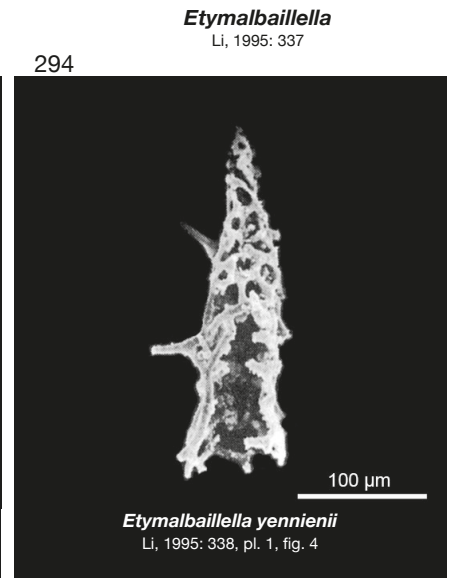
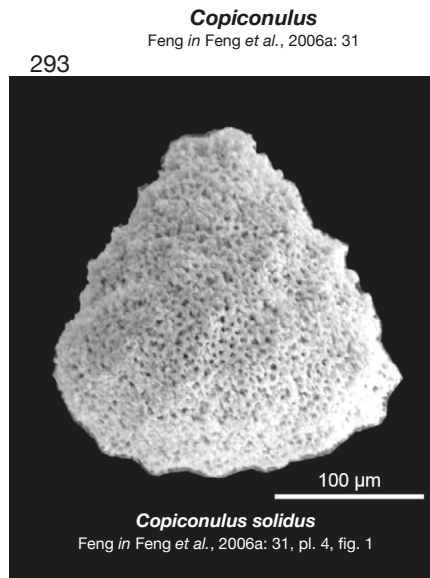
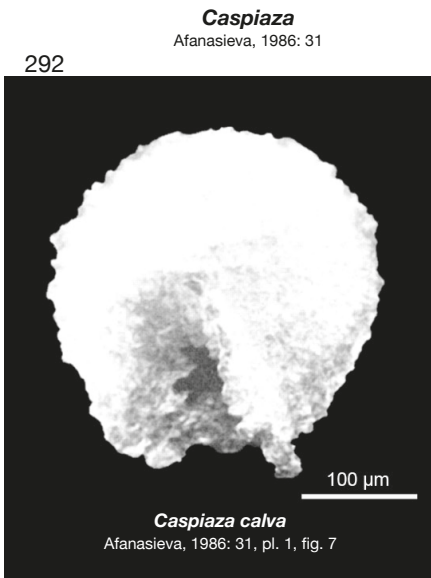
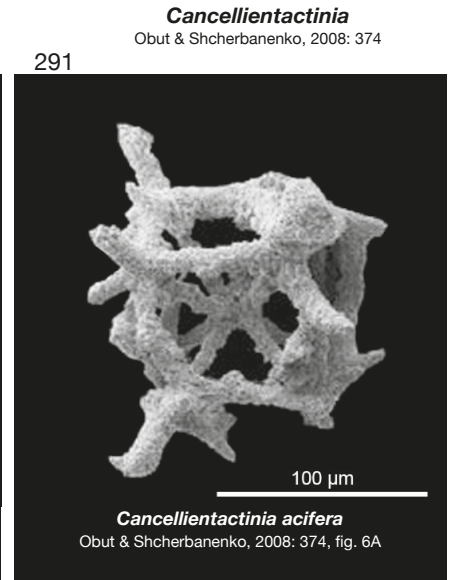
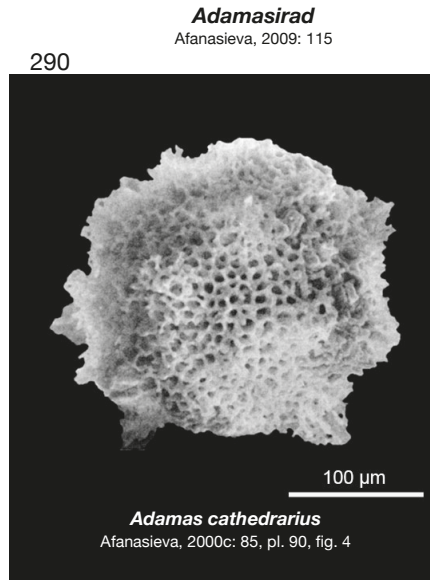
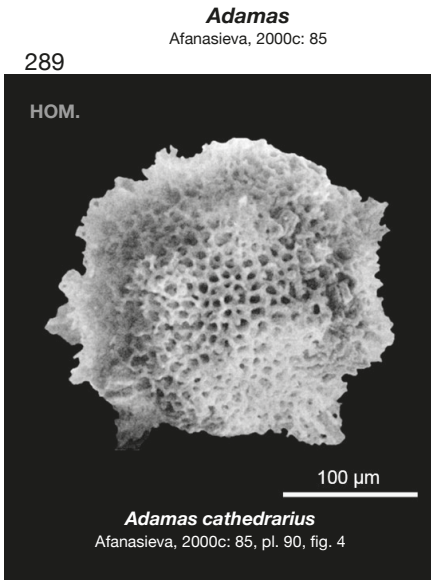
S
278 *Cornum*
Schwartzapfel & Holdsworth, 1996: 230
Corythoecidae



S
279 *Corythoecia*
Foreman, 1963: 298
Corythoecidae

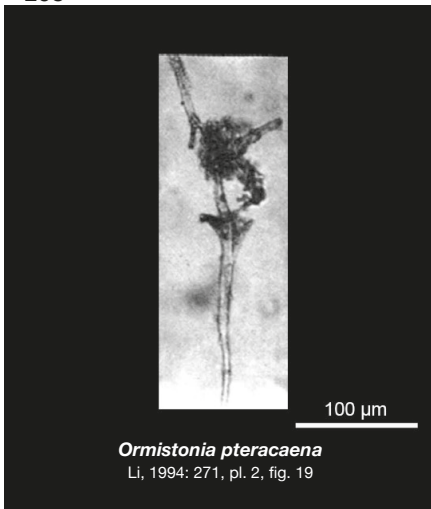






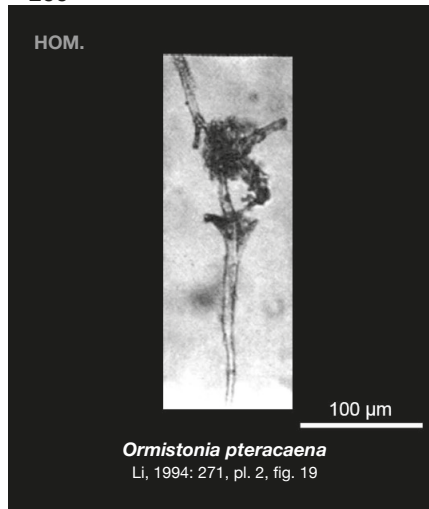
Novormistonina
Özdikmen, 2009: 246

298



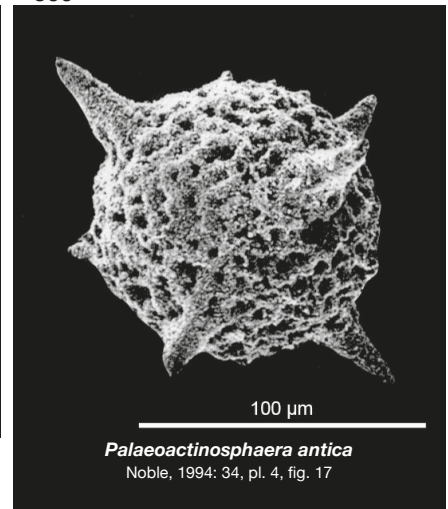
Ormistonina
Li, 1994: 270

299



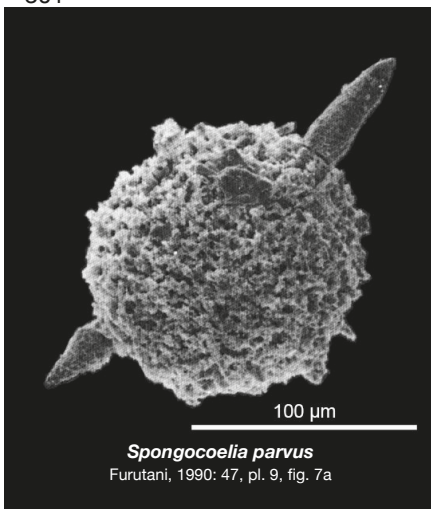
Palaeoactinosphaera
Noble, 1994: 33

300



Praespongocoelia
Noble, 1994: 38

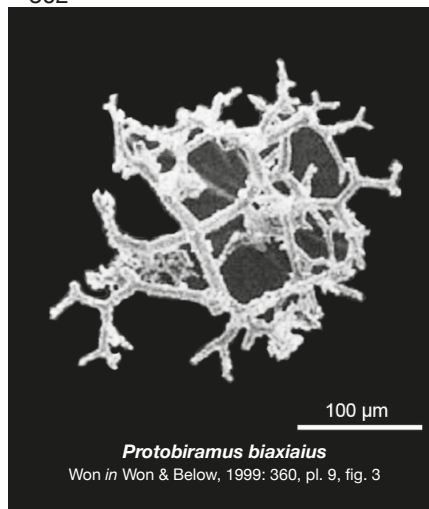
301



Protobiramus

Won in Won & Below, 1999: 358

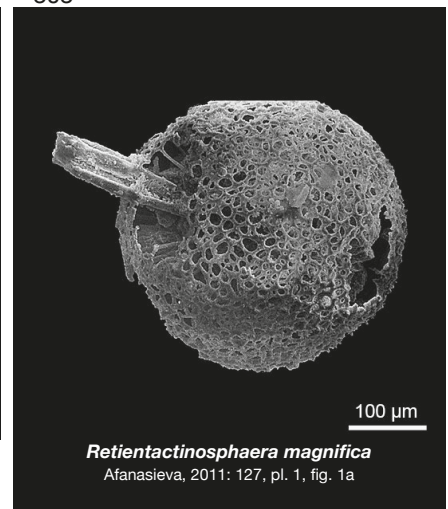
302



Retientactinosphaera

Afanasieva, 2011: 127

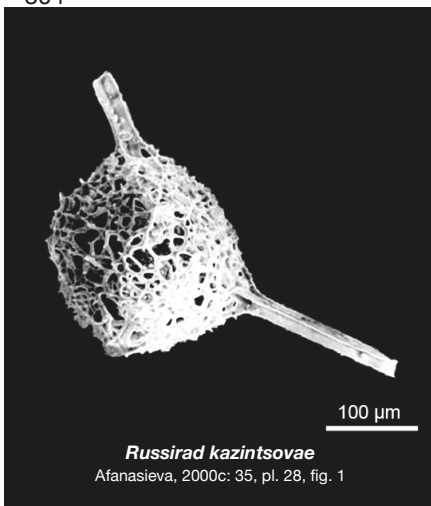
303



Russirad

Afanasieva, 2000c: 35

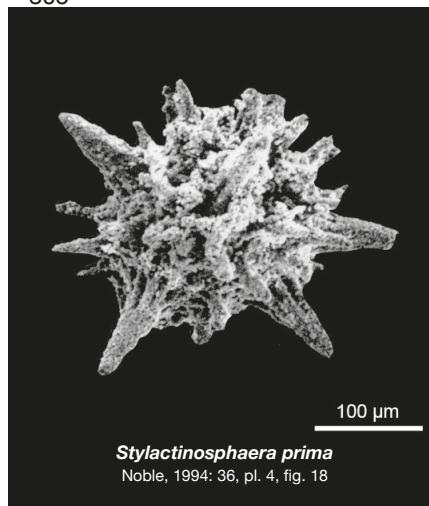
304



Stylactinosphaera

Noble, 1994: 36

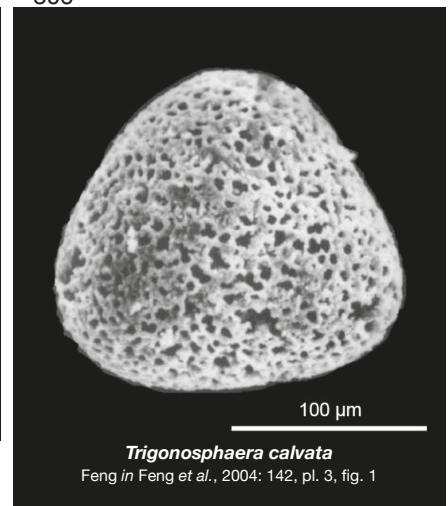
305



Trigonosphaera

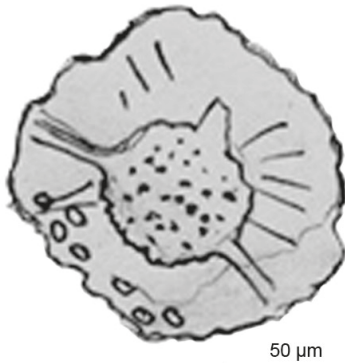
Feng in Feng *et al.*, 2004: 137

306



307
N.D.

Carposphaeridium
Chapman, 1923: 37

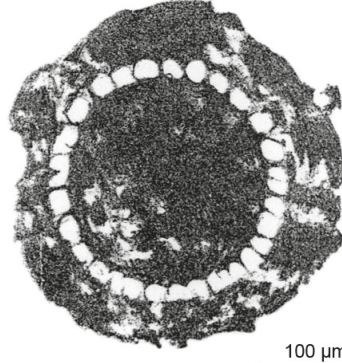


50 µm

Carposphaeridium cambrense
Chapman, 1923: 37, pl. 12, fig. 1

308
N.D.

Diploplegma
Hinde, 1890: 48



100 µm

Diploplegma cinctum
Hinde, 1890: 48, pl. 3, fig. 10

309
N.D.

Dorydictyum
Hinde, 1890: 54



100 µm

Dorydictyum simplex
Hinde, 1890: 54, pl. 3, fig. 7

310
N.D.

Doryplegma
Hinde, 1890: 53



100 µm

Doryplegma nasutum
Hinde, 1890: 53, pl. 3, fig. 9

311
N.D.

Dorysphaera
Hinde, 1890: 52

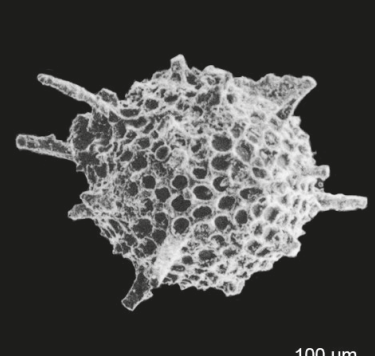


100 µm

Dorysphaera reticulata
Hinde, 1890: 52, pl. 4, fig. 3

312
N.D.

Duplexia
Won, 1983: 141

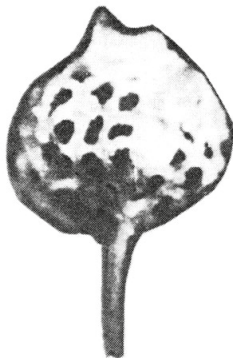


100 µm

Entactinosphaera foremanae
Ormiston & Lane, 1976: 166, pl. 1, fig. 9

313
N.D.

Ectoactinia
Liu, 1992: 129



100 µm

Ectoactinia tulufanensis
Liu, 1992: 129, pl. 1, fig. 1

314
N.D.

Ehrenbergia
Li, 1995: 335



100 µm

Ehrenbergia baijingensis
Li, 1995: 335, pl. 1, fig. 10

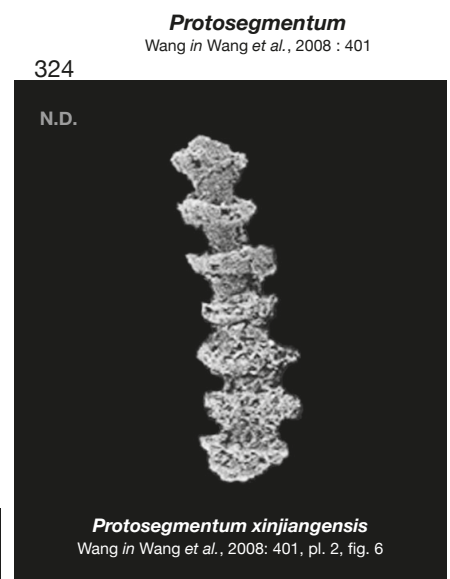
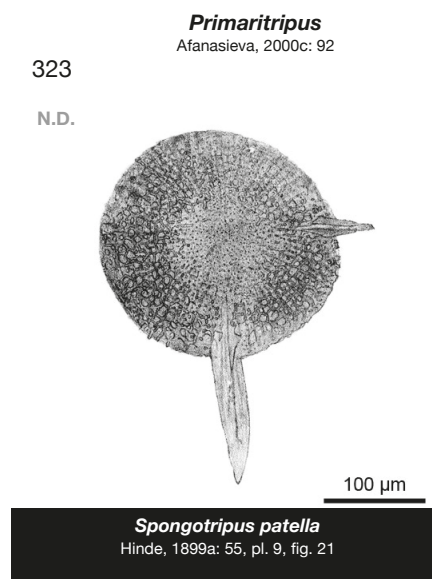
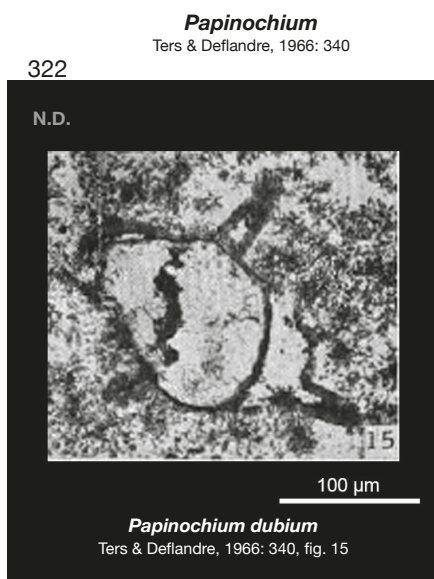
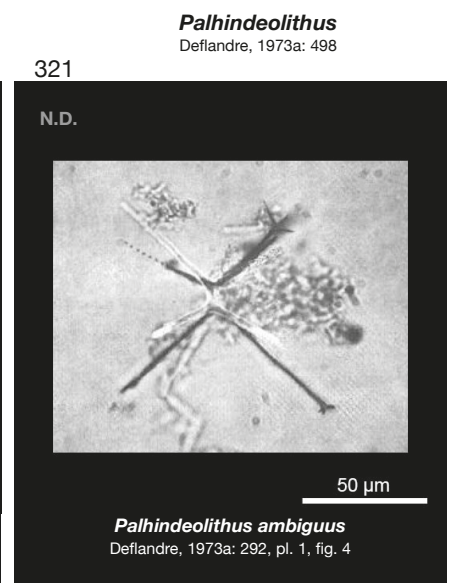
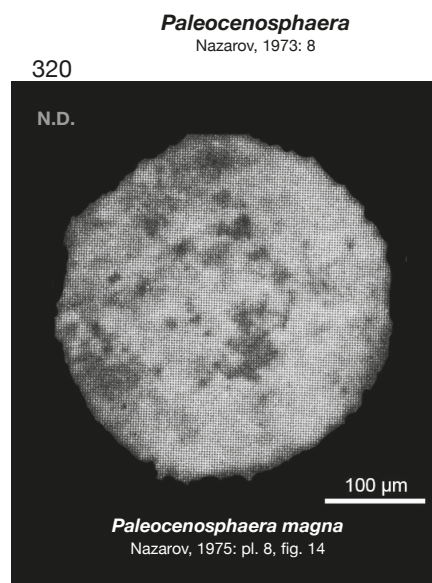
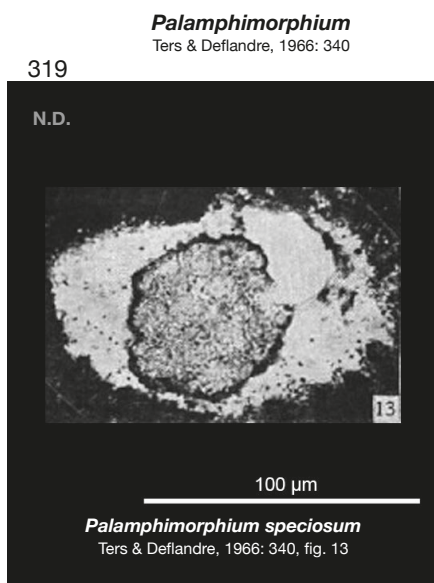
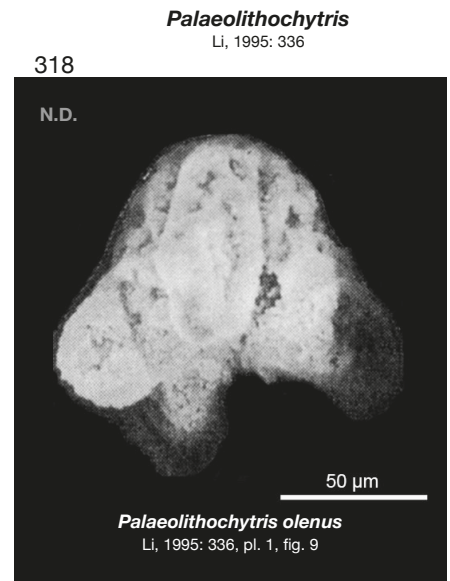
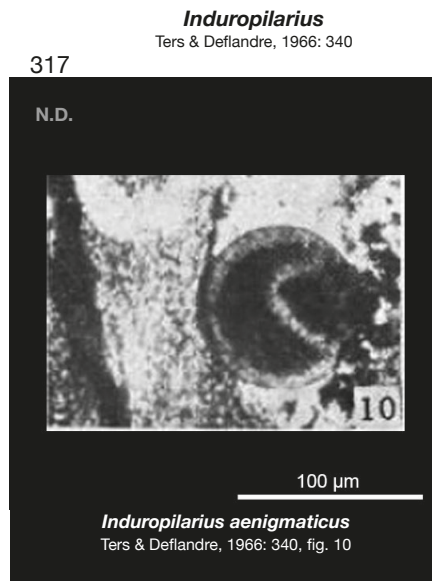
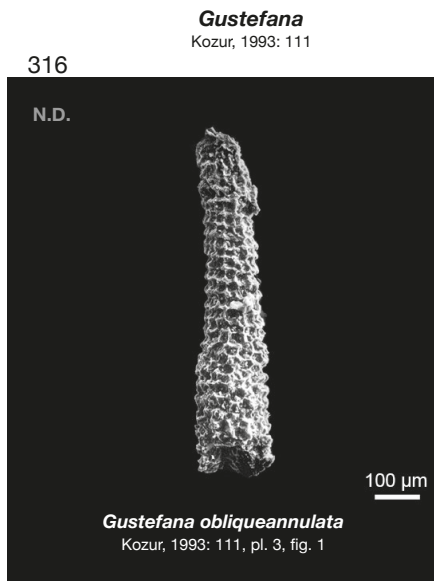
315
N.D.

Guangxitrisphaera
Wang in Wang & Kuang, 1993: 285



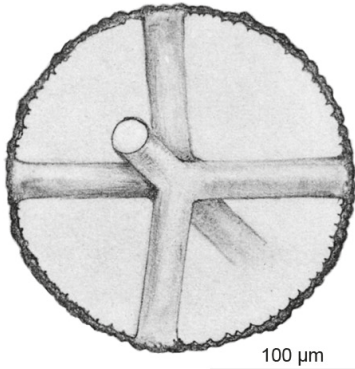
100 µm

Guangxitrisphaera wanyaoensis
Wang in Wang & Kuang, 1993: 285, pl. 3, fig. 15



325 *Pseudostigmosphaera*
Kozur & Mostler, 1979: 30

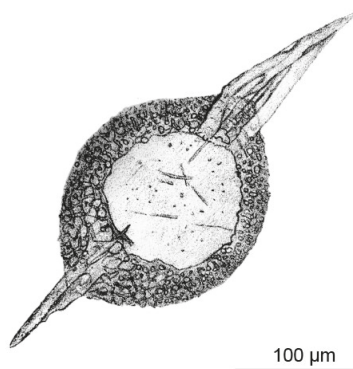
N.D.



Stigmosphaera mira
Rüst, 1892: 135, pl. 6, fig. 11

326 *Spongocoelia*
Hinde, 1899a: 52

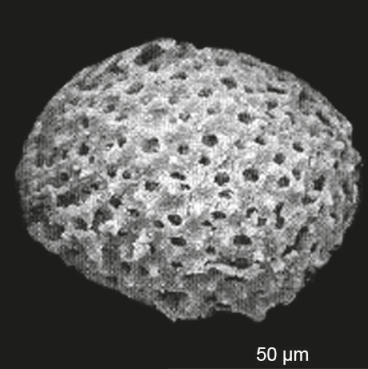
N.D.



Spongocoelia citreum
Hinde, 1899a: 52, pl. 9, fig. 18

327 *Srakaesphaera*
Sashida in Sashida et al., 1997: 12

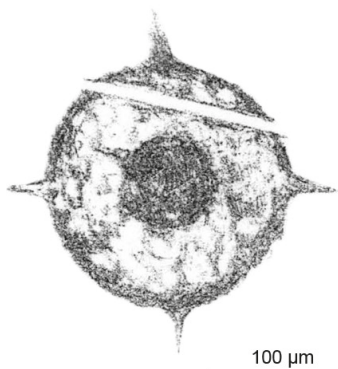
N.D.



Srakaesphaera minuta
Sashida in Sashida et al., 1997: 12, fig. 6.3

328 *Stauroplegma*
Hinde, 1890: 49

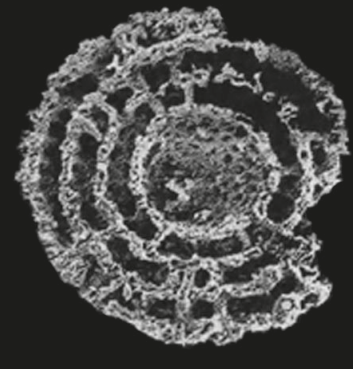
N.D.



Stauroplegma brevispina
Hinde, 1890: 50, pl. 4, fig. 5

329 *Tetrasphaera*
Wang in Wang et al., 2008 : 401

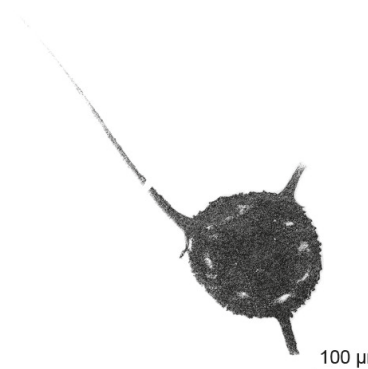
N.D.



Tetrasphaera kuruktagensis
Wang in Wang et al., 2008: 401, pl. 2, fig. 10

330 *Triplosphaera*
Hinde, 1890: 54

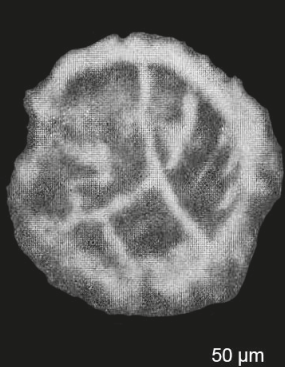
N.D.



Triplosphaera peachii
Hinde, 1890: 55, pl. 4, fig. 9

331 *Ulcundia*
Nazarov, 1974: 110

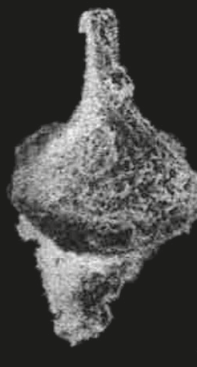
N.D.



Ulcundia incompta
Nazarov, 1974: 111, pl. 2, fig. 5

332 *Wangia*
Feng & Liu, 1993b: 544

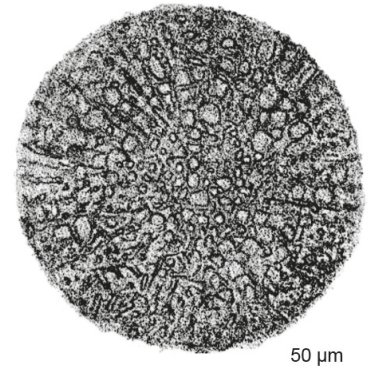
N.D.



Wangia biturbinata
Feng & Liu, 1993b: 544, pl. 1, fig. 18

333 *Palaeodiscalsus*
Afanasieva, 2008: 101

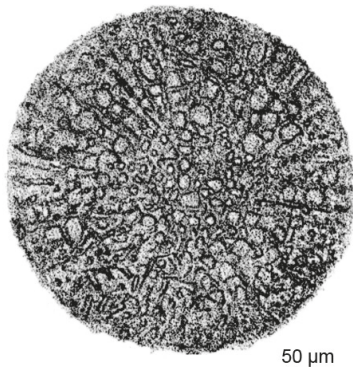
N.D.



Spongodiscus punctus
Hinde, 1899a: 54, pl. 9, fig. 14

334 *Palaeodiscus*
Afanasyeva, 2000c: 91

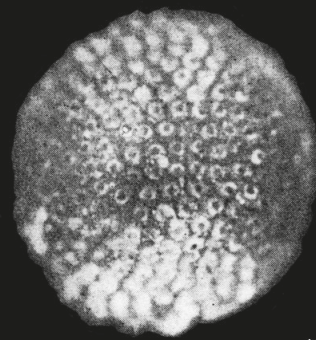
N.D.



50 µm

Spongodiscus punctus
Hinde, 1899a: 54, pl. 9, fig. 14

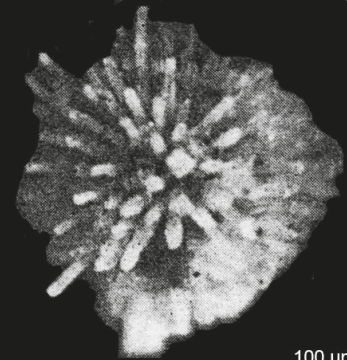
335 *Anakrusa*
Nazarov, 1977: 38
Not Radiolaria



100 µm

Anakrusa miriacantha
Nazarov, 1977: 38, pl. 1, fig. 1

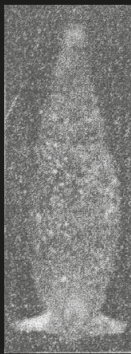
336 *Auliela*
Nazarov, 1977: 39
Not Radiolaria



100 µm

Auliela aspersa
Nazarov, 1977: 40, pl. 1, fig. 5

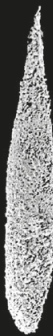
337 *Azyrtalia*
Nazarov, 1973: 11
Not Radiolaria



100 µm

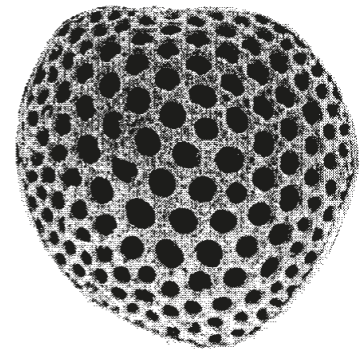
Azyrtalia dilata
Nazarov, 1973: 12, pl. 1, fig. 11

338 *Batoballa*
Wang *et al.*, 2008: 396
Not Radiolaria



Batoballa communis
Wang *in* Wang *et al.*, 2008: 396, pl. 2, fig. 2

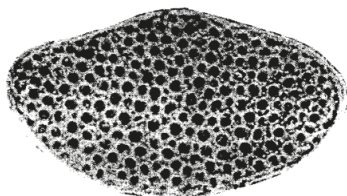
339 *Eoconcharium*
Hao & Shu, 1987: 308
Not Radiolaria



100 µm

Eoconcharium chinense
Hao & Shu, 1987: 309, pl. 1, fig. 3a

340 *Fusuconcharium*
Hao & Shu, 1987: 309
Not Radiolaria



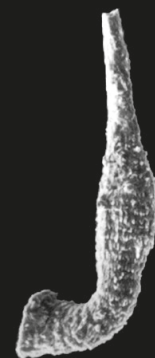
Fusuconcharium typicum
Hao & Shu, 1987: 309, pl. 4, fig. 1a

341 *Konyrium*
Nazarov & Popov, 1976: 41
Not Radiolaria



Konyrium varium
Nazarov & Popov, 1976: 41, pl. 3, fig. 19

342 *Lacisus*
Kozur, 1993: 109
Not Radiolaria

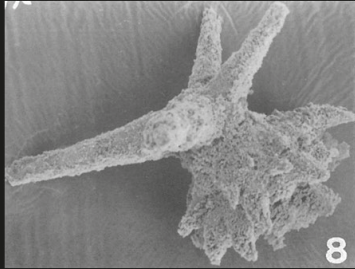


100 µm

Lacisus siphunculus
Kozur, 1993: 109, pl. 1, fig. 12

343

Palaeorubus
Ishiga *in* Ishiga *et al.*, 1987: 300
Not Radiolaria

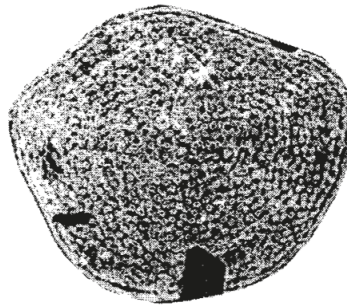


100 µm

Palaeorubus hastingsensis
Ishiga *in* Ishiga *et al.*, 1987: 300, pl. 2, fig. 8

344

Quadratapora
Hao & Shu, 1987: 309
Not Radiolaria



Quadratapora zhenbaensis
Hao & Shu, 1987: 309, pl. 4, fig. 4a