

The New and Reinstated Genera of Agglutinated Foraminifera published between 2001 and 2004

MICHAEL A. KAMINSKI

Department of Earth Sciences, University College London, Gower Street, London, WC1E 6BT, U.K. and KLFR, 3 Boyne Avenue, Hendon, NW4 2JL, U.K. [m.kaminski@ucl.ac.uk]

ABSTRACT

During the four-year period since the previous International Workshop on Agglutinated Foraminifera, some 18 genera of agglutinated foraminifera have been described as new, and one genus has been reinstated. This brings the total number of new and reinstated genera to 152 since the publication of "Foraminiferal Genera and their Classification" by Loeblich & Tappan (1987).

INTRODUCTION

The purpose of this paper is to continue the compilation of validly described and reinstated genera of agglutinated foraminifera published after Loeblich & Tappan's (1987) book "Foraminiferal Genera and their Classification". In this paper, I provide a list of the newly described genera of agglutinated foraminifera published in the accessible literature, as well as those that have been newly reinstated or emended. The current work is a continuation of previous compilations containing 133 valid genera (Kaminski, 2000, 2004a), and encompasses the years 2001 to 2004, inclusive.

It is my intention to update these "appendices" to Loeblich & Tappan (1987) approximately every four years as a regularly occurring chapter in the IWAF proceedings volumes. The purpose of this work is to review recent changes and updates to the taxonomy with the goal of stabilising the generic nomenclature of the agglutinated foraminifera. The supra-generic affiliation of the genera follows Kaminski (2004b).

Genera reinstated since 2001

CONGLOPHRAGMIUM Bermúdez & Rivero, 1963, emend. Kaminski & Kuhnt, 2004

Type species. *Trochammina conglobata* Brady, 1884, OD.

Conglophragmium Bermúdez & Rivero, 1963, p. 177.

Conglobatoides Saidova, 1981, p. 18 (name not available, ICZN Art. 13 (a) (i). no description); type species: *Trochammina conglobata* Brady, 1884; OD (isotypic synonym).

Test free, compact, coiled streptospirally with axis

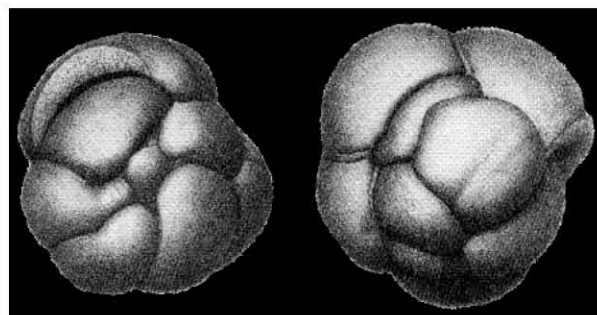


Figure 1. *Conglophragmium conglobatum* (Brady, 1884), Holocene, HMS CHALLENGER Station 23, off Sombrero Island, West Indies, x30 (from Brady, 1884, pl. 40, figs 8, 9).

of coiling changing regularly and gradually, involute, with embracing chambers that are sometimes irregularly shaped. The test is chambered at all stages of ontogeny. Chambers may be rounded or elongated in the direction of growth and are separated by depressed sutures. Wall finely agglutinated with a smooth surface, imperforate, with organic cement. Aperture an elongated interiomarginal slit. Early Cretaceous to Holocene; abyssal DSDP/ODP sites, Carpathians, Caucasus, Cosmopolitan.

Remarks. Loeblich & Tappan (1987) regarded *Conglophragmium* as a junior synonym of *Thalmanammina* Pokorný, 1951. Neagu & Platon (1994) redefined *Thalmanammina* based on the original description of Pokorný (1951) and observations of type specimens of the type species (*Haplophragmium subturbinatum* Grzybowski, 1898). *Thalmanammina* differs in possessing U-shaped coiling about two more or less orthogonal axes (thalmanamminiform coiling). The chamber interi-

ors are subspherical, and the wall is thick and coarsely agglutinated. The aperture is areal, an oval to elliptical slit.

Jones (1994) used the genus name *Conglophragmium* in his revision of the Challenger Report, but included the type species in the synonymy of the planispirally-coiled species *Trochamminoides coronatus* (Brady, 1879). Kaminski & Kuhnt (2004) restricted the definition of *Conglophragmium* to streptospiral forms, and separated the two species based on differences in the coiling mode. As pointed out by Bermúdez & Rivero (1963) the genus differs from *Trochamminoides* and *Paratrochamminoides* in its streptospiral coiling and in lacking an initial non-septate portion.

Kaminski, M.A. & Kuhnt, W. 2004. What, if anything, is a *Paratrochamminoides*? A key to the morphology of the Cretaceous to Cenozoic species of *Conglophragmium* and *Paratrochamminoides* (Foraminifera). In: Bubik, M., & Kaminski, M.A., (eds), Proceedings of the Sixth International Workshop on Agglutinated Foraminifera. Grzybowski Foundation Special Publication, 8, 273-285.

New Genera published since 2001

LUFFAMMINA Kamenskaya, Bagirov & Simdianov, 2002



Figure 2. *Luffammina atlantica*, Kamenskaya, Bagirov & Simdianov, 2002. Holocene, North Atlantic, "Rainbow" Hydrothermal site, North Atlantic, 2400 m depth, holotype, (from Kamenskaya et al., 2002).

Type species. *Luffammina atlantica*, Kamenskaya, Bagirov & Simdianov, 2002, OD.

Luffammina Kamenskaya, Bagirov & Simdianov, 2002, p. 148.

Test large, up to 2 cm in length, comprised of a basal thickening attached to the surface of a relict hydrothermal chimney, and an elongated tubular part that widens distally, elevated above the surface of the substrate. The distal part of the tube may be dichotomously branched. The test is elastic, and often its interior cavity is not clearly defined. The chamber interior is filled with loose agglutinated particles, largely coccoliths, diffuse cytoplasm, and voids. The organism does not concentrate internal stercomata. Wall agglutinated, consisting of fine

detritus and agglutinated coccoliths, with the surface covered by *Methanotrix*-like bacteria. Holocene, North Atlantic, Mid-Atlantic Ridge, 2400m.

Remarks. Differs from *Arborammina* Shires, Gooday & Jones, 1994, in its weakly branched upper part, by the absence of bead-like structures on the surface of the test, and in its thin agglutinated wall comprised mainly of coccoliths. Family Arboramminidae.

Kamenskaya, O.E., Bagirov, N.E. & Simdianov, T.G. 2002.

Luffammina atlantica gen. et sp. nov. (Foraminifera, Arboramminidae) from the hydrothermal area Rainbow. In: Kuznetsov, A.P., & Zvezina, O.N. (eds), *Adaptational aspects of the Evolution of Marine Fauna: Collected Proceedings*. VNIRO Publishers, Moscow, 144-152.

TOXISARCON Cedhagen & Pawłowski, 2002

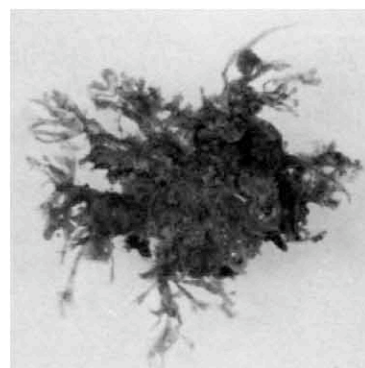


Figure 3. *Toxisarcon synsuicidica*, Cedhagen & Pawłowski, 2002. Holocene, Kosterfjord, Sweden, 30-60 m depth, paratype, diameter=5 mm (from Cedhagen & Pawłowski, 2002).

Type species. *Toxisarcon synsuicidica*, Cedhagen & Pawłowski, 2002, OD.

Toxisarcon Cedhagen & Pawłowski, 2002, p. 351.

Test large, up to 20 mm in diameter, either covered by an agglutinated test or entirely naked and resembling an amoeba. Test is free, irregular, monothalamous with a central inflated region, giving rise to branches that taper and multifurcate terminally. Test wall poorly cemented, flexible, with a range of agglutinated particles. Thick masses of agglutinated material attach to the organic lining, which is brownish with a violet tinge. Aperture indistinct, numerous pseudopodia protrude from small openings on the test surface. Pseudopodia extend several cm in all directions. Sweden, Kosterfjord, 30 to 60 m.

Remarks. Comparison of small subunit rDNA sequences suggests that *Toxisarcon* is most closely related to the genera *Cylindrogullmia* and *Gloioigullmia*, which differ in possessing elongate tests with one or two apertures. Like *Astrorhiza limicola* and some allogromids, *Toxisarcon* has the ability to abandon its test and live for some time as a naked amoeba.

A peculiar behaviour of the type species *T. syn-suicidica* was observed by Cedhagen & Pawłowski (2002) in the laboratory. On one occasion when the naked form was touched with forceps or a pipette, a dark blue or gray-blue spot immediately appeared in the place where the individual was touched. The spot gradually grew and additional blue spots appeared on various parts of the cell. Within less than a minute the entire specimen was dark blue and dead. Simultaneously, a toxic compound was released into the water, inducing the same blue spots to appear in all other individuals in the culture, leading to their death within a few minutes. Water from the Petri dishes acquired a slight yellowish tinge. This water was tested on a variety of small invertebrates, copepods, ostracods, and small polychaetes. Animals placed in the water were immediately paralyzed by the toxin in the water. However attempts to repeat this observation failed, suggesting that the toxin is not produced by the animal but is derived from its diet. The source of the toxin is likely toxic algae such as dinoflagellates. *Toxisarcon* appears to be capable of ingesting large quantities of the algae without being affected by their toxic contents, but the individuals become extremely fragile. Any injury such as puncture of the cell membrane can provoke release of the toxin and the collective suicide of other individuals. In nature, *Toxisarcon* is probably able to break down the toxins, thereby contributing to the detoxification of the natural sediment.

Cedhagen, T. & Pawłowski, J. 2002. *Toxisarcon synsuicidica* n.gen., n.sp., a large monothalamous foraminiferan from the west coast of Sweden. *Journal of Foraminiferal Research*, **32** (4), 351-357.

LAKITES Nestell & Tolmacheva, 2004

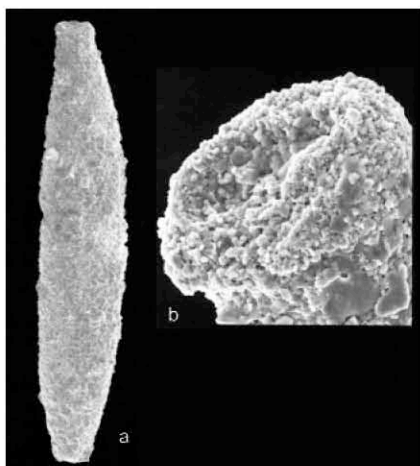


Figure 4. *Lakites ordovicus* Nestell & Tolmacheva, 2004. Holotype. Lower Ordovician, Lakity Member, Tetragraptus phyllograptoides graptolite zone, Baltic Russia. a. Side view, x90. b. Detail of aperture, x360 (from Nestell & Tolmacheva, 2004).

Type species. *Lakites ordovicus* Nestell & Tolmacheva, 2004 OD.

Lakites Nestell & Tolmacheva, 2004, p. 257.

Test free, monothalamous, stick-shaped, straight or slightly curved, elongate, slightly inflated in middle part and narrowing to both ends, sometimes compressed, or twisted at one of the ends, one apertural end narrower than the other end. On the narrowest end there is a small collar, two apertures one at each end. Aperture round, sometimes one of them plugged. Wall agglutinated, white in colour, densely cemented, composed of fine muscovite and sericite, rare grains of K-feldspar and single quartz grains, surface smooth or slightly rough. Lower Ordovician (Latorp stage), East of St. Petersburg, Russia.

Remarks. Differs from *Bathysiphon* in having an inflated middle part that narrows to the apertural ends, in the absence of constrictions. Differs from *Crespinitella* in the lack of constrictions and in its narrower test. Family Hippocrepinellidae.

Nestell, G.P. & Tolmacheva, T.Yu. 2004. Early Ordovician foraminifers from the Lava River Section, northwestern Russia. *Micropaleontology*, **50** (3), 253-280.

LAVELLA Nestell & Tolmacheva, 2004

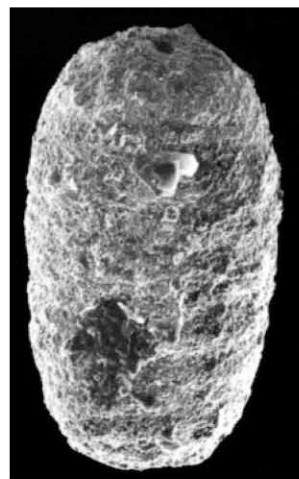


Figure 5. *Lavella cucumeriformis* Nestell & Tolmacheva, 2004. Lower Ordovician, Lava River section, Lakity Member of Leetse Formation, Baltic Russia. Side view of holotype, x200; (from Nestell & Tolmacheva, 2004).

Type species. *Lavella cucumeriformis* Nestell & Tolmacheva, 2004; OD.

Lavella Nestell & Tolmacheva, 2004, p. 268.

Test free, monothalamous, cucumber-shaped, with blunt initial and apertural ends. Aperture terminal, small, simple, round, located in the centre of the apertural surface. Wall agglutinated, densely cemented, imperforate, fine grained and very thick, surface smooth to slightly rough. Lower Ordovician (Latorp regional stage); Baltic Russia.

Remarks. The type species is from the Leetse Formation,

Lakity Member (*Prioniodus elegans* conodont zone).

Nestell, G. & Tolmacheva, T., 2004. Early Ordovician foraminifers from the Lava River Section, northwestern Russia. *Micropaleontology*, 50 (3), 253-280.

SIPHONAMMINA Geslin, Heinz & Hemleben, 2004



Figure 6. *Siphonammina bertholdii* Geslin, Heinz & Hemleben, 2004. Holocene, Bermuda; Whalebone Bay, 1.5 m depth. Side view of holotype, (from Geslin *et al.*, 2004).

Type species. *Siphonammina bertholdii* Geslin, Heinz & Hemleben, 2004, OD.

Siphonammina Geslin, Heinz & Hemleben, 2004, p. 113.

Test free, thin, tapering, tubular and unbranching, with a slightly curved shape, with two open ends. At the smaller end, a proloculus was observed in juveniles, but it is lost in later developmental stages, leaving both ends of the tube open. The larger apertural end is rounded and confined by an apertural ring. Wall agglutinated, test is composed mostly of calcium carbonate particles, quartz grains, diatoms, and other detritus, with organic cement.

Remarks. The aperture of *Siphonammina bertholdii* is characterised by an apertural ring and constricts the diameter of the aperture to approximately 6 µm. The test is composed mostly of calcium-carbonate elements (grains and needles) that may come from calcareous algae and miliolid foraminiferal tests. The colour is white. In water, the test is soft and flexible, whereas the dried test is brittle and disaggregates very quickly. The genus differs from *Bathysiphon* in possessing an apertural ring. Family Hippocrepinidae.

Geslin, E., Heinz, P. & Hemleben, C., 2004. Behaviour of *Bathysiphon* sp. and *Siphonammina bertholdii* n.gen n.sp. under controlled oxygen conditions in the laboratory: implication for bioturbation. In: Bubík, M. & Kaminski, M.A. (eds), *Proceedings of the Sixth International Workshop on Agglutinated Foraminifera. Grzybowski Foundation Special Publication*, 8, 105-118.

TIPEAMMINA Neagu, 2004

Type species. *Rhabdammina elliptica* Deeke, 1884, OD. *Tipeammina* Neagu, 2004, p. 382.

Test free, bilocular, with a very small elliptical initial chamber which has a thin wall and is rarely preserved. Second chamber large, conical, growing rapidly in diameter, with a thick wall and siliceous or weakly calcified cement. The wall structure is bilamellar, with an inner layer made up of monoaxial

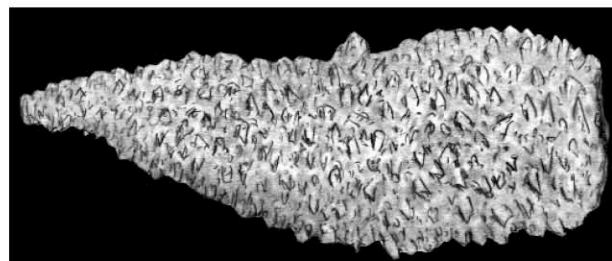


Figure 7. *Tipeammina elliptica* (Deeke, 1884). Lower Liassic, Adneth Limestones, Tipea valley, Romania, length = 1.56 mm (from Neagu, 2004, pl. 1, fig. 10).

sponge spicules arranged parallel or subparallel, and an external layer made up of sponge spicules and quartz grains. Aperture at the open end of the tubular chamber.

Remarks. Differs from *Kechenotiske* Loeblich & Tappan, 1984 by its thick wall structure, and from *Jaculella* Brady, 1879 in its bilamellar wall structure and its unconstricted aperture. Subfamily Jaculellinae.

Neagu, T. 2004. Smaller agglutinated foraminifera from an olistolith of Adneth Limestones, Tipea Valley, Persani Mountains, Romania. In: Bubík, M. & Kaminski, M.A. (eds), *Proceedings of the Sixth International Workshop on Agglutinated Foraminifera. Grzybowski Foundation Special Publication*, 8, 381-392.

JUGIMURAMMINA Zheng, 2001

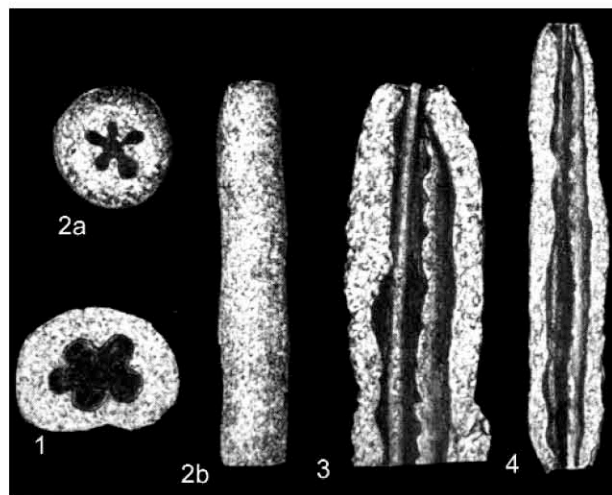


Figure 8. *Jugimurammina stellapertura* Zheng, 2001. Holocene, East China Sea, 1000 m, paratypes, x35 (from Zheng, 2001, pl. 113, figs 8-10b). 1, 2a, apertural views showing stellate aperture, 2b, lateral view; 3, 4, sectioned specimens showing internal ribs.)

Type species. *Jugimurammina stellapertura* Zheng, 2001, OD.

Jugimurammina Zheng, 2001, p. 215.

Test large, elongate tubular, circular to subcircular in cross section. External wall with slight constrict-

tions at irregular intervals but not septate internally. Wall agglutinated, thick, consisting of homogeneous, fine and loosely cemented sand grains, surface rough. Internal wall with 4-5 longitudinal, serrate or crenulate ridges extending the whole length of the tubular chamber. Aperture at the slightly constricted ends of the tube, appearing stellate as a result of the presence of internal ribs. Holocene, East China Sea (1000 m).

Remarks. This genus differs from all other tubular genera in having internal longitudinal ribs extending the whole length of the tube. Family Jugimuraminidae Zheng, 2001.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

HORMOSINELLOIDES Zheng, 2001

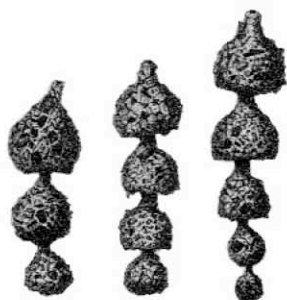


Figure 9. *Hormosinelloides guttifer* (Brady, 1884). Holocene, Challenger Station 323, South Atlantic, east of Buenos Aires at 35° 59'S at 1900 fathoms, x50 (from Brady, 1884, pl. 31, figs 10-12). Lectotype is specimen on right.

Type species. *Reophax guttifer* Brady, 1884, OD.

Hormosinelloides Zheng, 2001, p. 278.

Test free, uniserial, straight to slightly curved. Chambers overlapping, globular to pyriform, the first two may be appressed, the following ones separated by short stolon-like necks. Chambers overlap, with each succeeding chamber attached near the base of the apertural neck of the preceding one. Wall thin, consisting of coarse sand grains and sponge spicules. Cement organic, undifferentiated, with an inner and outer organic layer. Aperture terminal at the end of the neck. Upper Cretaceous to Holocene, Cosmopolitan.

Remarks. *Hormosinelloides* resembles *Subreophax* because of its slightly meandering test. However, in our opinion it is closer to *Reophax* because of the nature of connections between chambers. In *H. guttifer* the chambers embrace, (i.e., they are attached near the base of the apertural neck of the preceding one). In dissected specimens the end of the apertural neck of the older chamber can be seen to protrude into the chamber lumina of the following chamber. By contrast, in both *Subreophax* and *Hormosinella*, chambers are separated solely by stolons formed by

constrictions of the wall (chambers do not overlap). Zheng (2001) noted that in *Hormosinelloides*, the first two chambers are closely appressed. Kaminski & Gradstein (2005) designated a lectotype of the type species. Subfamily Reophacinae.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

POSADIA Guisberti & Coccioni, 2003.

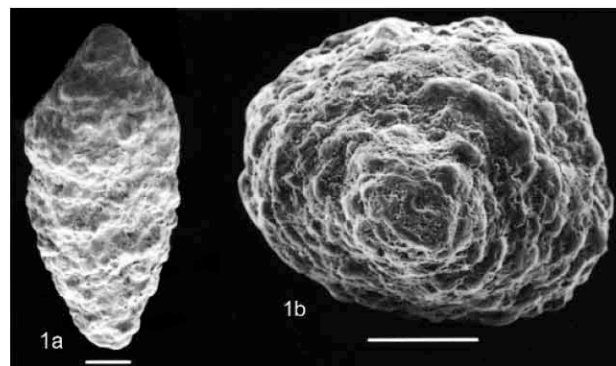


Figure 10. *Posadia feronensis* Guisberti & Coccioni, 2003. 1a. lateral view of holotype, Upper Bathonian Dorgali Dolostone, Posada Hill, Sardinia, Italy, 1b. view of aperture, scale = 200 µm, (from Guisberti & Coccioni, 2003).

Type species. *Posadia feronensis* Guisberti & Coccioni, 2003, OD.

Posadia Guisberti & Coccioni, 2003, p. 212.

Test free, uniserial throughout, rectilinear, initial part occasionally curved. Lateral outline ovate to cigar-shaped, elongate, cross-section rounded to elliptical. Sutures rectilinear or slightly curved. Chambers low and broad, inflated and commonly asymmetrical in outline, shaped like an inverted "V" in longitudinal section. Wall and septa thick, simple in structure, cement calcareous. Test surface roughly finished. Proloculus spheroidal. Aperture terminal, rounded to ovate, produced on a short central conical neck. Upper Bathonian, Sardinia.

Remarks. The general outline of *Posadia* bears resemblance to *Reophax*, but it differs in its strongly overlapping chambers. Subfamily Hormosininae.

Guisberti, L. & Coccioni, R. 2003. *Posadia feroniensis* n.gen., n.sp. (Lituolida, Hormosinidae) from the Bathonian of Sardinia, Italy. *Journal of Foraminiferal Research*, 33 (3), 211-218.

INVOLUTARENA Zheng, 2001

Type species. *Involutarena bathyalis* Zheng, 2001, OD. *Involutarena* Zheng, 2001, p. 330.

Test compressed, planispiral involute. Chambers much overlapping, 4 per whorl, only final whorl visible. Sutures distinct, curved and slightly depressed. Wall thin, organic. Aperture not distinct.

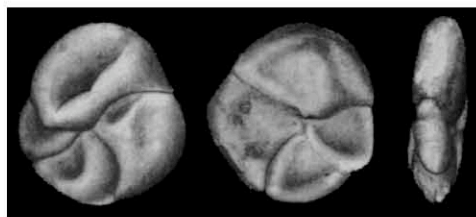


Figure 11. *Involutarena bathyalis* Zheng, 2001, Holotype, Holocene, South China Sea, 1010 m. x70 (from Zheng, 2001, pl 66, fig. 9).

Holocene, South China Sea.

Remarks. The slightly collapsed lateral faces of the chambers make it resemble *Trochammina concava* Chapman, but the latter has 5 chambers to the final whorl and is of much larger size (0.85mm). Family Haplophragmoididae.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

AMMOGLOBOROTALIA Zheng, 2001

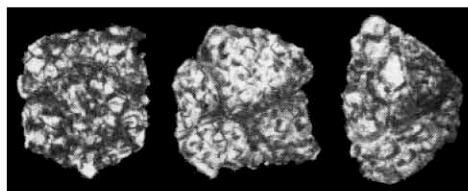


Figure 12. *Ammogloborotalia stellaris* Zheng, 2001, OD(M). Holotype, Holocene, East China Sea, 2100 m. x70 (from Zheng, 2001, pl 44, fig. 9).

Type species. *Ammogloborotalia stellaris* Zheng, 2001, OD. *Ammogloborotalia* Zheng, 2001, p. 421.

Test free, trochospiral, conical, dorsal side flattened, evolute, ventral side convex, involute. Periphery truncate, peripheral angle subacute. Chambers increasing rapidly in breadth along a vertical axis. Suture not very distinct, slightly depressed. Wall coarsely agglutinated, surface coarsely finished. Aperture short, arched slitlike, at the ventral side of the final chamber, basal, near the umbilical end. Holocene, East China Sea, deep water.

Remarks. This new genus resembles *Adercotryma* in its coiling along a vertical axis, but differs from it in being trochospiral, with the dorsal side evolute. Subfamily Trochammininae.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

CYSTAMMINOIDES Zheng, 2001

Type species. *Cystamminoides triloculus* Zheng, 2001, OD.

Cystamminoides Zheng, 2001, p. 422.

Test free, compressed, trochospiral, 3-4 chambers in



Figure 13. *Cystamminoides triloculus* Zheng, 2001, Holotype, Holocene, South China Sea, 1010 m. x35 (from Zheng, 2001, pl. 65, fig. 1).

a whorl, dorsal side with final whorl entirely enveloping the preceding whorl, only final whorl visible on the ventral side. Wall finely agglutinated, surface neatly finished. Aperture sometimes not distinct. Holocene, South China Sea.

Remarks. This new genus differs from *Cystammina* in the aperture being basal instead of areal and in having the final whorl completely enveloping the preceding whorl. Subfamily Trochammininae.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

CONOTROCHAMMINOIDES Zheng, 2001

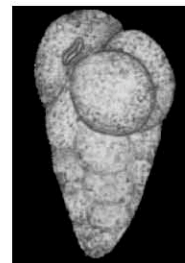


Figure 14. *Conotrochamminoides elongatus* Zheng, 2001, Holotype, Holocene, East China Sea, 69 m. x70 (from Zheng, 2001, pl. 74, fig. 7).

Type species. *Conotrochamminoides elongatus* Zheng, 2001, OD.

Conotrochamminoides Zheng, 2001, p. 459.

Test high trochospiral, initial end narrowly rounded, increasing rapidly toward the apertural end. Chambers, subglobular, with about 4 to each whorl, those of final whorl slightly inflated. Sutures not very distinct. Wall finely agglutinated. Aperture areal, slitlike, parallel to the base of chamber face, with narrow rim. Color, light yellowish-brown. Holocene, East China Sea.

Remarks. This new genus resembles *Conotrochammina* in being high trochospiral but the latter has 6 chambers per whorl, is coarsely agglutinated, and has round aperture. Family Conotrochamminidae.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

MATANZIOIDES Zheng, 2001

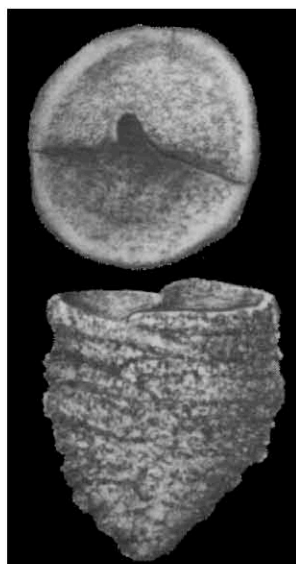


Figure 15. *Matanzioides conica* Zheng, 2001, Holotype, Holocene, East China Sea, 152 m. x70 (from Zheng, 2001, pl. 74, fig. 10).

Type species. *Matanzioides conica* Zheng, 2001 [= *Textulariella simplex* Zheng, 1988 (non Cushman, 1936)], OD.

Matanzioides Zheng, 2001, p. 487.

Test conical. Early chambers triserial, rapidly reducing to biserial which makes up the greater portion of the test. Chambers with vertical septa extending toward but not reaching the center of the test. Wall agglutinated, of coarse and fine sand grains, surface coarse. Aperture at the base of the chamber face, arched. Holocene, East China Sea.

Remarks. This new genus differs from the genus *Matanzia* in the early chambers being triserial instead of being trochospiral and in having a conical instead of cylindrical test. It differs from *Textulariella* in lacking alveolar structures formed by the anastomosing of vertical beams. Subfamily Liebusellinae.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

BIGENERINOIDES Zheng, 2001

Type species. *Vulvulina sinensis* Zheng, 1988, OD.

Bigenerinoides Zheng, 2001, p. 518.

Test free, elongated, early portion biserial and compressed; later portion uniserial, at first compressed, gradually becoming thicker and finally inflated, subglobular. Aperture oblong to round, with a short neck. Holocene.

Remarks. Differs from *Bigenarina* in having uniserial chambers which are at first compressed and with the last one or two becoming subglobular.

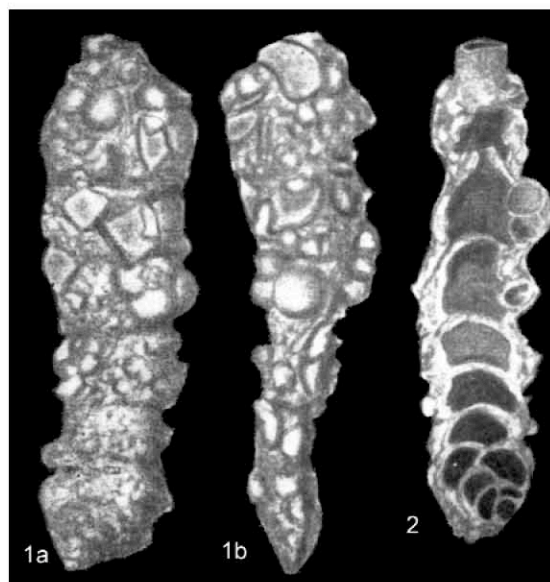


Figure 16. *Bigenerinoides sinensis* (Zheng, 1988), Holotype, Holocene, East China Sea, 130 m. x70. 1. Holotype, side and edge views; 2. Paratype, longitudinal section (from Zheng, 1988, pl. 32, figs. 1, 2).

Subfamily Textulariinae.

Zheng, S. & Fu, Z., 2001. Fauna Sinica, Phylum Granuloreticulosa, Class Foraminifera, Agglutinated Foraminifera. Science press, Beijing. 788 pp + 122 pls.

SIEVOIDES Farinacci & Ekmekci, 2004



Figure 17. *Sievoides kocyigiti* Farinacci & Ekmekci, 2004, Holotype, kimmeridgian, Balcikhisar Section, Turkey, longitudinal section, x9 (from Farinacci & Ekmekci, 2004, pl. 2, fig. 1).

Type species. *Sievoides kocyigiti* Farinacci & Ekmekci, 2004, OD.

Sievoides Farinacci & Ekmekci, 2004, p. 65.

Test large (up to 4.5 mm in length), uniserial, rectilinear to slightly arcuate, only a few overlapping chambers increasing slowly, circular in transverse section. Wall agglutinated, coarse, externally smooth, with a subepidermal alveolar network. Aperture simple, centrally terminal, on an internal neck extending outward. Kimmeridgian, Turkey.

Remarks. The genus externally resembles *Reophax*,

but differs in the presence of a subepidermal alveolar network. Family Cribratinidae.

Farinacci, A. & Ekmekci, E. 2004. *Sievoides kocyigiti* n.gen., n.sp., *Mesoendothyra altineriana* n.sp. and *Kurnubia feleensis* n.sp. from Kimmeridgian shallow water limestones intercalated with alkaline igneous rocks, Western Taurus, Turkey. *Revue de Micropaleontologie*, 47, 57-69.

SAYYABELLUS Mohammed, 2003

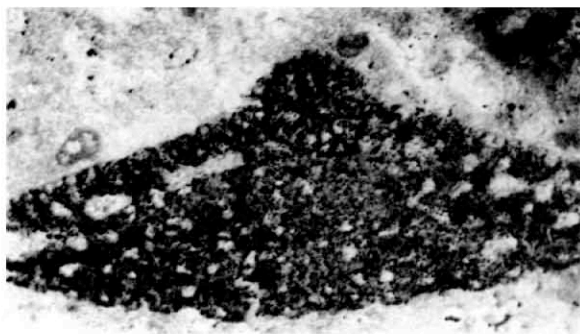


Figure 18. *Sayyabellus scutulus* Mohammed, 2003, axial section through holotype (megalosphaeric form), Upper Barremian to lower Aptian Sarmord Formation, northern Iraq, $\times 83$ (from Mohammed, 2003, pl. 1, fig. 1).

Type species. *Sayyabellus scutulus* Mohammed, 2003, OD.

Sayyabellus Mohammed, 2003, p. 19.

Test low bioconvex shape. Embryonic apparatus small and simple, situated symmetrically at the maximum curvature of the test vertex. Apex bends to one side forming an angle with the growth axis. Embryonic apparatus consists of a minute protoconch enclosed by a planispiral involute coil. Marginal zone is well developed and broad with first-order and rarely second-order vertical septules, and with first-order horizontal septules. Radial zone is well-developed and marked by thick and sharp main partitions. Central complex occupies large areas of the test with structure resulting from the intrication of the main partitions appearing as an irregular and coarse mesh. Apertures are oblique, restricted to the central part of the test. L. Barremian to E. Aptian, Iraq.

Remarks. The new genus resembles *Palorbitolina*, but differs in the presence of an initial planispiral part and in its minute protoconch. The internal structure, in particular the typical coarse mesh is unlike any structure in other orbitolinids. Subfamily Dictyoconinae.

Mohammed, M.U. 2003. *Sayyabellus scutulus*, gen. nov. sp. nov. from the Lower Cretaceous of Iraq. *Dirasat, Pure Sciences*, 30 (1), 19-29.

HISTERAMMINA Neagu & Cîrnaru, 2004

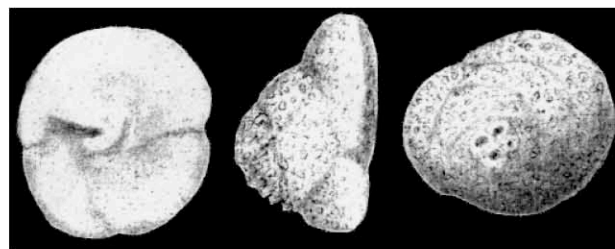


Figure 19. *Histerammina fetestensis* Neagu & Cîrnaru, 2004, lower Aptian, southern Dobrogea, Romania, holotype, maximum diameter = 0.46 mm (from Neagu & Cîrnaru, 2004, pl. 3, figs. 39-41).

Type species. *Histerammina fetestensis* Neagu & Cîrnaru, 2004, OD.

Histerammina Neagu & Cîrnaru, 2004, p. 285.

Test free, trochospiral, with a variability of whorls from low trochospiral to acutely high trochospiral, with 3-4 chambers in the final whorl. Umbilical face concave, weakly depressed, and smooth. Spiral side with 2-4 whorls, with arcuate, weakly depressed sutures. Aperture interiomarginal with a nearly central umbilical position, with a valvular lip. Wall thick, with large canaliculae. Bedoulian (lower Aptian), Romania.

Remarks. Differs from *Valvulammina* by its coarsely canaliculate wall structure. Subfamily Dorothisinae. Neagu, T. & Cîrnaru, P. 2004. Lower Aptian agglutinated foraminifera from the Southern Dobrogea and SE part of the Moesian Platform. *Acta Palaeontologica Romaniaae*, 4, 277-297.

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