Zeitschrift: Eclogae Geologicae Helvetiae
Herausgeber: Schweizerische Geologische Gesellschaft
Band: 55 (1962)
Heft: 1

Artikel: Globigerinopsis, a new genus of the foraminiferal family globigerinidae
Autor: Bolli, Hans M.
DOI: https://doi.org/10.5169/seals-162923

Globigerinopsis, a New Genus of the Foraminiferal Family Globigerinidae

By **Hans M. Bolli** (Maracaibo)

With one plate (I)

INTRODUCTION

While examining Foraminifera in subsurface sections of the Oficina formation of eastern Venezuela, the writer came across certain planktonic specimens that could not be included in any of the genera recently described by BOLLI, LOEBLICH and TAPPAN (1957). Shape and trochospiral arrangement of the chambers in these new forms are that of a *Globigerina*. The aperture however, instead of remaining interiomarginal, umbilical as in *Globigerina*, becomes interiomarginal, spiroumbilical in the adult specimens. These new forms which are here described as *Globigerinopsis*, n. gen., apparently have a restricted stratigraphic range. They have been observed so far only in the upper part of the Oficina formation of eastern Venezuela and also in the *Globorotalia fohsi robusta* zone of beds equivalent to the Bao formation in the Dominican Republic.

The Sinclair Oil and Refining Company, from whose wells most of the described and figured specimens come, has given permission to publish this description. Further, Dr. PEDRO J. BERMUDEZ has kindly made available to the author a sample from the Dominican Republic that contains well preserved specimens of the new genus *Globigerinopsis*.

SYSTEMATIC DESCRIPTION

Family Globigerinidae
Subfamily Globigerininae
Genus *Globigerinopsis*, n. gen.

Type species. – *Globigerinopsis aguasayensis*, n. sp.

Test free, trochospiral. Chambers spherical to ovate. Sutures depressed, radial or oblique. Wall calcareous, perforate, radial in structure. Surface smooth, pitted, cancellate, hispid or spinose. Aperture interiomarginal, umbilical in early stage, later becoming interiomarginal, spiroumbilical.

Stratigraphic range. – *Globigerinopsis*, n. gen., is known to occur in the Miocene *Globorotalia fohsi robusta* zone. This is based on the co-occurrence of the new genus with *Globorotalia fohsi robusta* in a sample from beds equivalent to the Bao formation in the Dominican Republic (for details of the locality see under

the description of *Globigerinopsis aguasayensis*). Observations in subsurface sections of the Oficina formation in eastern Venezuela also point to such an age of the new genus. Because only ditch samples were available from these sections, results are not sufficiently precise to determine whether the range of *Globigerinopsis* is equal to or represents only part of that of the zonal marker *Globorotalia fohsi robusta* or may possibly even extend somewhat below and above the zone.

Surprisingly, *Globigerinopsis* has so far not been found in the *Globorotalia fohsi robusta* zone of the Cipero formation of Trinidad. Planktonic Foraminifera are much more abundant in the Cipero formation, which represents a deeper, clear water, more open sea deposit than does the Oficina formation of eastern Venezuela. If *Globigerinopsis* is really absent from the Cipero formation, one might therefore conclude that the genus prefers a shallower, possibly somewhat turbid environment. Also the Dominican Republic fauna with which *Globigerinopsis* is associated differs from the Cipero fauna in that it contains a higher percentage of benthonic Foraminifera and thus shows more similarity to the Brasso fauna, of identical age, in Trinidad.

Remarks. – *Globigerinopsis*, n. gen., differs from *Globigerina* in having in its adult stage an interiomarginal, spiroumbilical aperture instead of an interiomarginal, umbilical one. The new genus differs from *Hastigerina* in remaining distinctly trochospiral throughout instead of being planispiral throughout or only very slightly trochospiral in the early stage and later becoming planispiral. *Globigerinopsis*, n. gen., differs from *Hastigerinella* in having spherical or ovate chambers throughout instead of the later chambers becoming radially elongate, clavate or cylindrical.

Globigerinopsis aguasayensis, n. sp.

Pl. I, figs. 1–7

Test. – Distinctly trochospiral in the early stage, somewhat less pronounced in the last whorl. Equatorial periphery distinctly lobate. Wall. – Calcareous, perforate; surface finely pitted. *Chambers*. – Inflated, laterally often slightly compressed, especially in the last whorl. About twelve, arranged in two and a half to three whorls. The four chambers of the last whorl increase moderately in size. The ultimate chamber is often of the same size as, or may occasionally even be slightly smaller than, the penultimate one. Sutures. – Radial or slightly oblique, depressed on umbilical and spiral side. Umbilicus. – Fairly wide and deep. Aperture. – Arched, interiomarginal, umbilical in early stage; later extending progressively towards the periphery and eventually to the spiral side. In fully grown specimens interiomarginal, spiroumbilical. This type of aperture is often present already in the penultimate and third last chamber. Bordered by a faint rim. Coiling. – Random. Largest diameter of holotype. – 0.75 mm.

Stratigraphic occurrence. – *Globorotalia fohsi robusta* zone, in beds equivalent to the Bao formation, Dominican Republic. Probably *Globorotalia fohsi robusta* zone, Oficina formation, eastern Venezuela. This observation is based on ditch samples only, an extension of the range somewhat below and above this zone is therefore possible.

Locality. – Holotype (pl. I, figs, 2a–c) and figured paratype (pl. I, fig. 3) from Sinclair Oil and Refining Company well Aguasay 3, situated 22.75 km. SW of new Aguasay village, Estado Monagas, eastern Venezuela. Holotype from ditch sample 13390′, paratype from ditch sample 8710′. Figured paratypes (pl. I, figs. 1, 7) from ditch samples 6992′ and 7820′ resp. of Sinclair Oil and Refining Company well Aguasay 2, situated 22.75 km. SW of new Aguasay village, Estado Monagas, eastern Venezuela. Figured hypotypes (pl. I, figs. 4–6) from P. J. BERMUDEZ collection, sample H 20006, collected from outcrop on south side of the small bridge across the Niza rivulet, km 7 of the El Palenque-San Cristobal highway, Trujillo Province, Dominican Republic. The figured specimens are deposited in the Museum of Natural History, Basel (holotype C 2752, paratypes C 2751, C 2753, C 2757, hypotypes C 2754–C 2756).

Remarks. – *Globigerinopsis aguasayensis*, n. sp., differs from *Globigerinopsis martin-kayei*, n. sp., in the smaller size as added of the chambers in the last whorl, especially in that of the ultimate chamber. While both species occur in the studied Aguasay and other Oficina formation subsurface sections, only *Globigerinopsis aguasayensis* was found in the single examined sample from the Dominican Republic. It is therefore possible, though it could not be determined with certainty in the available material, that the two species may have slightly different stratigraphic ranges. The specimens from the Oficina formation of eastern Venezuela (Aguasay and other well sections) are usually pyritized and larger in size compared with the very well preserved specimens from the Dominican Republic.

Globigerinopsis martin-kayei, n. sp.

Pl. I, figs. 8–10

Test. – Distinctly trochospiral in the early stage, somewhat less pronounced in the last whorl. Equatorial periphery distinctly trilobate. Wall. – Calcareous, perforate, surface finely pitted. Chambers. – Inflated, about twelve, arranged in two and a half to three whorls. The three chambers of the last whorl increase rapidly in size, especially the ultimate one, thus giving the test a shape similar to that of *Globigerinoides triloba*. Sutures. – Radial or slightly oblique, depressed on spiral side; radial, depressed on umbilical side. Umbilicus. – Fairly wide and deep. Aperture. – Arched, interiomarginal, umbilical in early stage; later extending progressively towards the periphery and eventually to the spiral side. In fully grown specimens interiomarginal, spiroumbilical. This type of aperture may already be present in the penultimate chamber. Bordered by a rim. Coiling. – Random. Largest diameter of holotype. – 1.00 mm.

Stratigraphic occurrence. – Probably *Globorotalia fohsi robusta* zone, Oficina formation, eastern Venezuela. This observation is based on ditch samples only, an extension of the range somewhat below and above this zone is therefore possible.

Locality. – Holotype (pl. I, figs. 10a–c) and figured paratype (pl. I, fig. 9) from Sinclair Oil and Refinig Company well Aguasay 3, situated 22.75 km SW of new Aguasay village, Estado Monagas, eastern Venezuela. Holotype from ditch

sample 13890′, paratype from ditch sample 9510′. Figured paratype (pl. I, fig. 8) from ditch sample 6970′ of Sinclair Oil and Refining Company well Aguasay 2, situated 22.75 km SW of new Aguasay village, Estado Monagas, eastern Venezuela. The figured specimens are deposited in the Museum of Natural History, Basel (holotype C 2760, paratypes C 2758, C 2759).

Remarks. – See under *Globigerinopsis aguasayensis.*

The species is named for Dr. Peter H. Martin-Kaye, Government Geologist, Windward Islands, in recognition of this contributions to the geology of British Guiana and several islands of the Lesser Antilles.

REFERENCES

BOLLI, H. M., LOEBLICH, A. R., & TAPPAN, H. (1957): *The planktonic foraminiferal families Hantkeninidae, Orbulinidae, Globorotaliidae and Globotruncanidae.* U. S. Nat. Mus. Bull. 215.

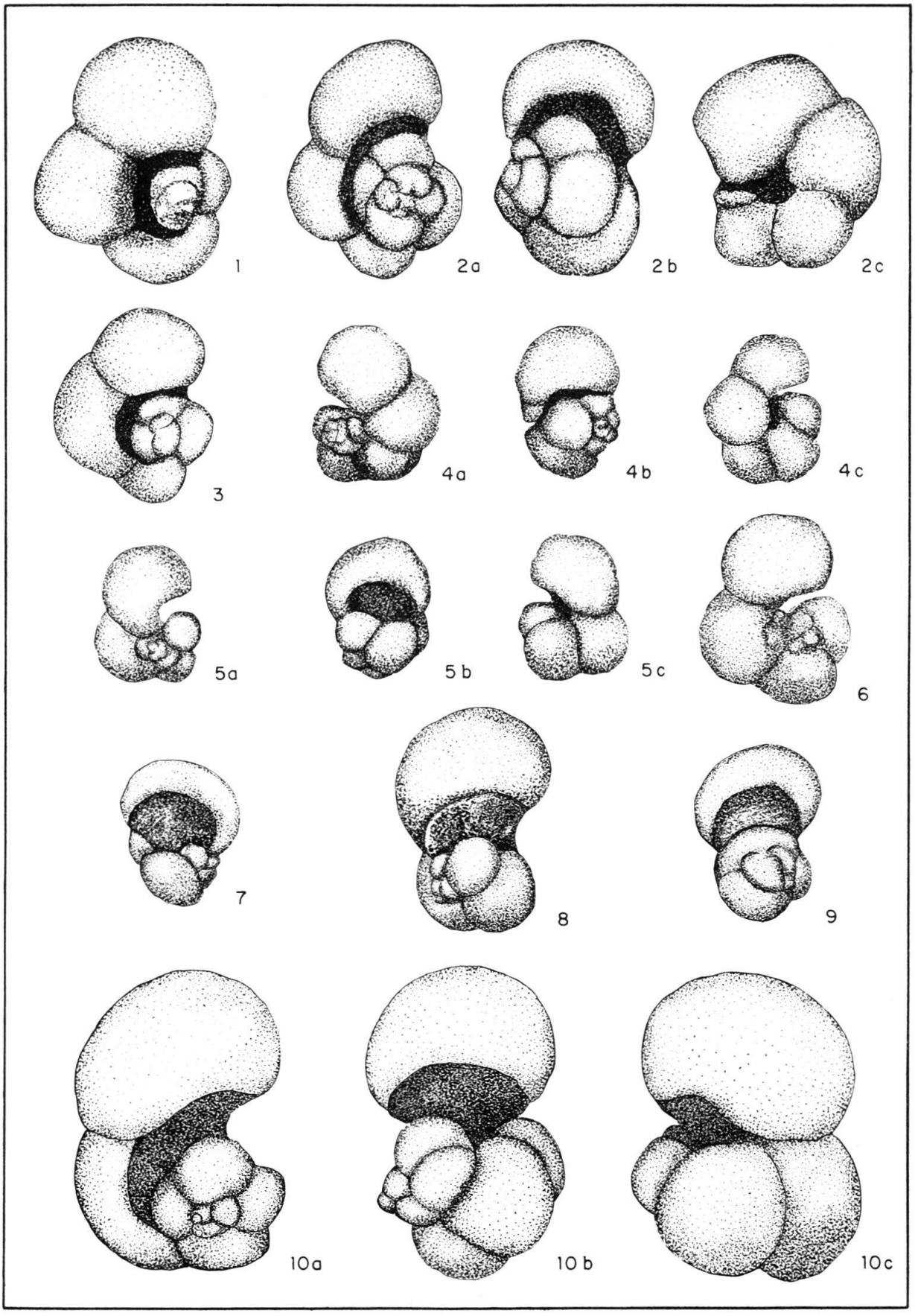
Manuscript received December 1, 1961

Plate I

Globigerinopsis, n. gen.
All figures × 43

Figs. 1–7. *Globigerinopsis aguasayensis*, n. sp. 282
1 Spiral view of paratype. The aperture extends to the third last chamber on the spiral side.
2a Spiral view of holotype. 2b Edge view, showing the distinct trochospiral arrangement of especially the early chambers. 2c Umbilical view.
3 Spiral view of paratype.
4a Spiral view of hypotype. 4b Edge view. 4c Umbilical view.
5a Spiral view of hypotype. 5b Edge view. 5c Umbilical view.
6 Spiral view of hypotype.
7 Edge view of juvenile paratype from the Aguasay area.

Figs. 8–10. *Globigerinopsis martin-kayei*, n. sp. 283
8, 9 Edge view of paratypes.
10a Spiral view of holotype. 10b Edge view, showing the distinct trochospiral arrangement of especially the early chambers. 10c Umbilical view.


1
2a
2b
2c
3
4a
4b
4c
5a
5b
5c
6
7
8
9
10a
10b
10c