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THE SYSTEMATIC STUDY OF FOUR NEW SUBSPECIES OF AGGLUTINATED FORAMINIFERA FROM THE BOTTOM SEDIMENTS OF THE NORTHWESTERN PART OF THE BAY OF BENGAL

ELONEE PAL

GEOLOGY DEPARTMENT, RANCHI UNIVERSITY, RANCHI-834008, INDIA

ABSTRACT

This paper describes the morphology and taxonomy of four new subspecies of agglutinated foraminifers from the bottom sediments of the northwestern part of the Bay of Bengal, and discusses its distribution.

INTRODUCTION

Samples from 50 stations of the northwestern part of the Bay of Bengal, collected by the Marine Geology Unit of the Geological Survey of India were studied for their foraminiferal content. The area covered was 52,640 sq. km bounded by coastal regions of Bengal on the North, Bengal and Orissa on the West, 88° 30′ latitude on the south (Fig. 1). Detailed identification of the agglutinated foraminifers has been done. In this communication, four new subspecies of Textulariids are described.

SYSTEMATIC PALAEONTOLOGY

The classification follows Loeblich and Tappan (1964, 1974).

Phylum	Protozoa. GOLDFUSS, 1818
Subphylum	Sarcodina SCHMARDA, 1871
Class	Rhizopoda VON SEIBOLD 1845
Order	Foraminiferida EICHWALD, 1830
Suborder	Textularina DELAGE & HEROUARD, 1896

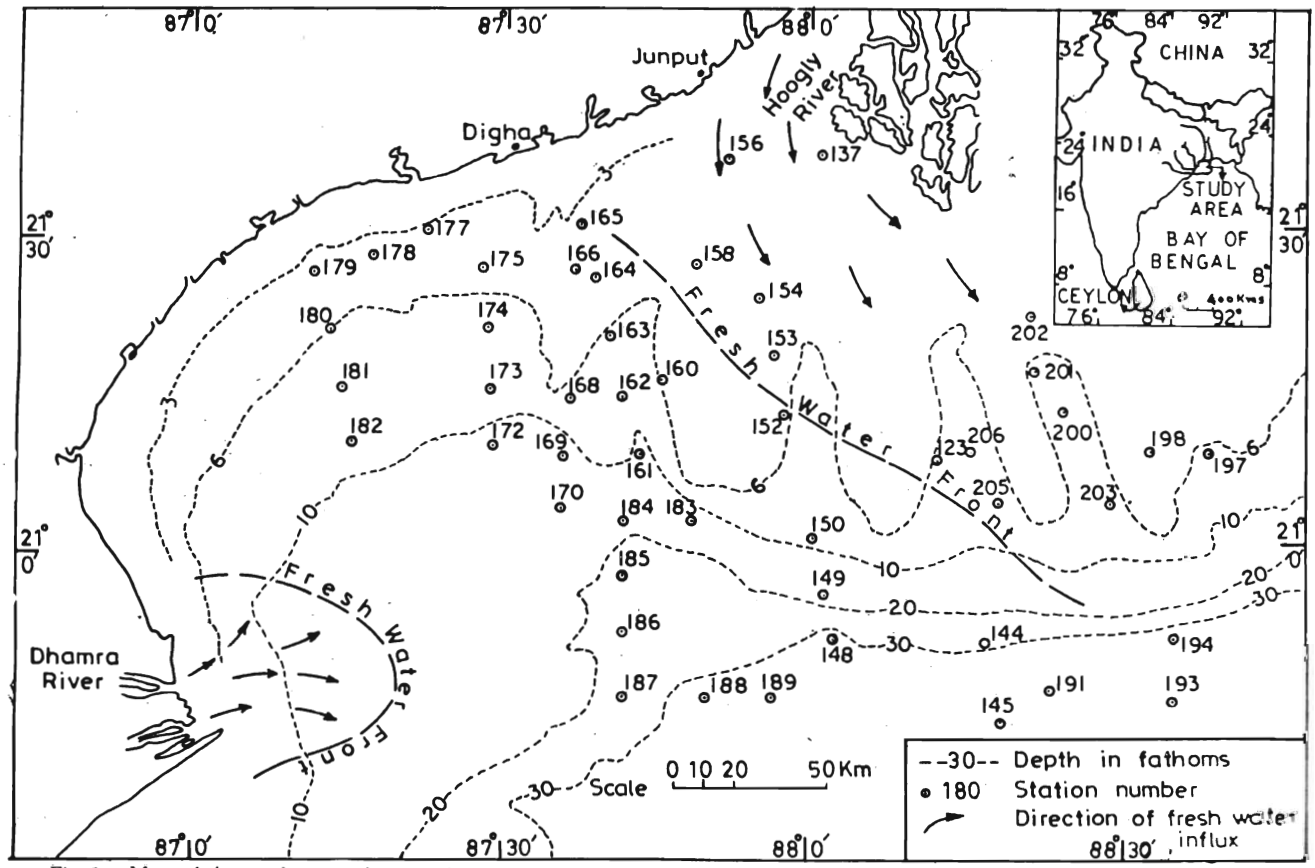


Fig. 1. Map of the study area showing the sampling stations, the bathymetric contours, and the fresh water fronts.

Superfamily Lituolacea de BLAINVILLE,1825
Family Hormosinidae Haeckel, 1894
Genus *Reophax* MONTFORT,1808

Reophax depressa indica n. subsp
(Pl. I—1)

Material: 22 specimens.

Description: Test elongate, uniserial; axis usually straight but may also be curved; proloculus spherical; later chambers gradually increase in size and are somewhat inflated in the middle and more or less spherical; sutures between the chambers quite distinct and depressed. Aperture in the form of a compressed ellipse at the end of a small ridge-like neck. Last chamber somewhat pyriform. Wall coarsely agglutinated with grains of quartz projecting from the surface; wall in between the projections smooth.

Dimensions: (in mm): Length 1.56—1.60; thickness: 0.42-0.61

Remarks: *Reophax depressa indica*, n.subsp. is destinguished from *Reophax depressus* Natland, by its cylindrical test with circular cross section.

R. dentaliniformis Brady has a much longer neck and elongated chambers. In *R. moniliformis* Siddall (Murray, 1971) which has some similarity with the present form, the nature of the wall and aperture is different.
Standard slide: Syntypes in slide no. 185/1.

Distribution: Station nos. 169, 170, 184, 185, 187.

Etymology: The subspecific name indica is derived from the geographic name 'India'.

Bigenerina nodosaria cappelloneformis n. sub sp
(Pl. I—2)

Material: 26 Specimens.

Description: Test large elongate; biserial stage compressed. small; chambers of the uniserial stage rapidly increase in size. The last chamber is comparatively much larger than the previous one and is nearly spherical. Initial part consists of 3 to 4 chambers; final part has 6 to 7 chambers. Sutures in the early part less distinct, slit like, curved or rounded. Aperture at the end of a short neck.

Dimensions (in mm): Total length1.27-1.31; length of uniserial part 0.95-1.03; maximum width of uniserial part 0.53; maximum width of biserial part 0.30-0.34; length of neck 0.04.

Remarks: This species differs from *Bigenerina nodosaria* d'Orbigny in having a much inflated last chamber and a somewhat more compressed biserial part. The present form may represent an ecotypic variant of *B. nodosaria.*

Standard slide: Syntypes in slide no. 185/3.

Distribution: Station nos. 170, 185, 187, 188.

Etymology: The subspecific name cappelloneformis refers to the large inflated cap like terminal chamber.

Bigenerina nodosaria scabra n. sub sp.
(Pl. I—3)

Material: More than 50 specimens.

Description: Test elongate; cylindrical in the later part. Biserial part small consisting of 3 to 4 chambers gradually increasing in size. Uniserial part has a circular cross section consisting of indistinctly demarcated 6 to 7 chambers which are almost equal in diameter. Suture sometimes obscured by coarse grains projecting from the surface. Aperture terminal, rounded at the end of a short but distinct neck. Wall coarsely agglutinated and roughly finished.

Dimensions (in mm): Total length 0.86—1.18; length of uniserial part 0.68-1.05; maximum width of biserial part 0.34-0.40; length of neck 0.04-0.08.

Remarks: The present subspecies differs from *Bigenerina nodosaria* d'Orbigny in having a coarsely and roughly finished wall and a short but distinct neck. It is regarded as an ecotypic variant of *B. nodosaria.*

Standard slide: Syntypes in slide no. 188/4a.

Distribution: Station nos. 170, 185, 188.

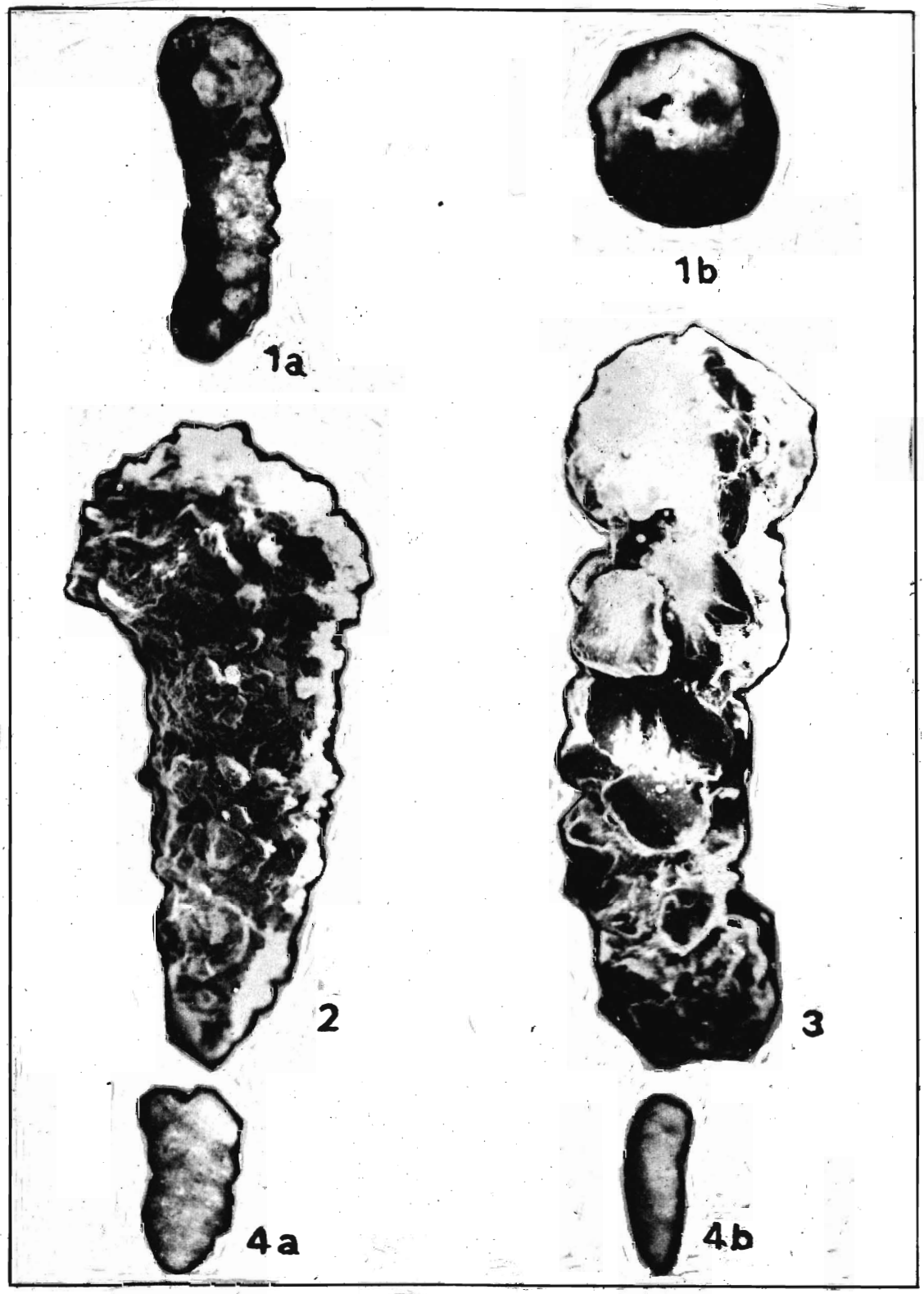
Etymology: The subspecific name scabra refers to the rough surface.

Textularia foliacea bengalensis n. sub sp.
(Pl. I—4)

Material: More than 50 specimens.

Description: Test agglutinated, biserial, elongated, compressed; earlier part tapering and wedge shaped in edge view. Wall smooth with a few coarse grains of quartz. Cross section in the form of a compressed ellipse. Chambers gradually increase in height and width, particularly in the latter two-third of the test; last chamber somewhat inflated. Aperture small in the form of an arch. Edge indistinctly carinate in the initial part and broadly rounded in the latter part.

Dimensions (in mm): Length 0.44-0.72; maximum width 0.29-0.34; maximum thickness 0.15-0.21.


1a
1b
2
3
4a
4b

Remarks:This subspecies differs from *Textularia foliacea* Heron-Allen and Earland by its coarsely agglutinated nature of the wall and inflated latter chambers. In other respects this form is similar to *T. foliacea* described by Lalicker and McCulloch (1940). In some of the forms the last two chambers are higher, thicker and wider than the previous ones. These specimens may represent gerontic forms of the above subspecies.

Standard slide: Syntypes in slide no. 182/1.

Distribution: Station nos. 169, 170, 172, 181, 182, 184, 185, 187, 188, 189.

Etymology: The subspecific name bengalensis is proposed after Bengal which is a state of India adjacent to the present area.

CONCLUSION

Besides the above four new subspecies the agglutinated foraminifers found in the present area are *Bigenerina nodosaria, Textularia calva, T. earlandi, T. sagittula.*

Detailed study in the area has revealed that agglutinated foraminifers are common in front of the mouths of the Brahmani-Dhamra River system where coarser materials are available for the construction of their tests. This material is absent in areas off the mouth of the Hooghly River. (Mallik, 1975).

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EXPLANATION OF PLATE

PLATE I

1. *Reophax depressa indica* n. sub sp.; Syntype; 1 a, side view; 1 b, apertural view X 36
2. Scanning electron micrograph of *Bigenerina nodosaria cappelloneformis* n. sub sp.; X 70
3. Scanning electron micrograph of *Bigenerina nodosaria Scabra* n. sub sp.; X 63
4. *Textularia foliacea bengalensis* n. sub sp.; 4 a, side view; 4 b, edge view X 54