

## A PRELIMINARY REPORT ON THE FORAMINIFERAL ASSEMBLAGES FROM THE LAGOON SEDIMENT OF KAVARATTI ATOLL (LACCADIVES)

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### INTRODUCTION

ALTHOUGH Chapman<sup>1</sup> for the first time attempted to work on the foraminiferal collections of the "Investigator" off Laccadives in the Arabian Sea, no attempt has been made up till now regarding the foraminiferal assemblage of Kavaratti Atoll in the Laccadive group of Islands. The present note mainly deals with the faunal assemblage and its systematics as a preliminary report of the work from this region. The detailed investigations of the fauna in relation to the sediment distribution is being studied and will be reported elsewhere.

The Kavaratti Atoll (Fig. 1) is located in the Arabian Sea at 10° 33' N lat. and 73° 36' E longitude.

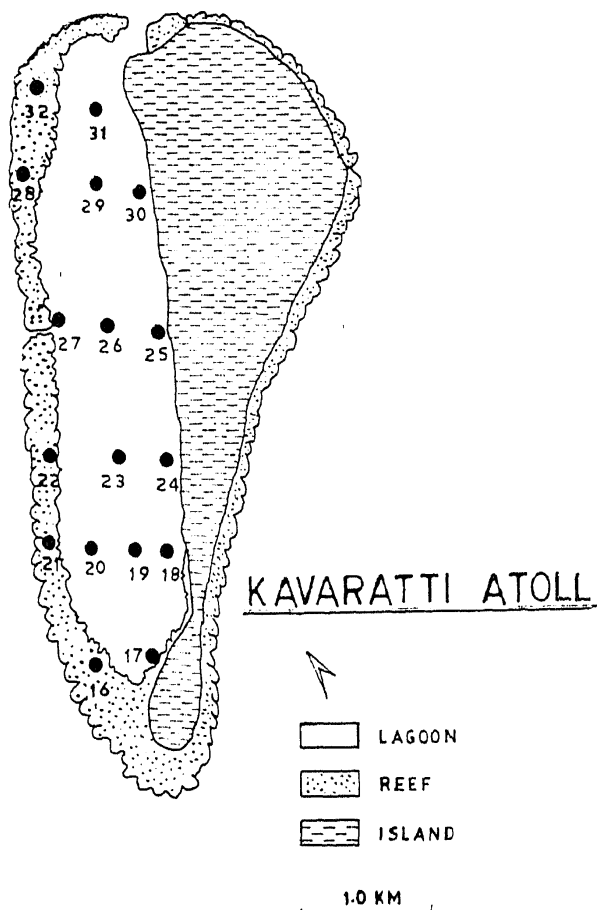


FIG. 1. Kavaratti Atoll showing the locations of sampling stations.

It is about 200 km from the southwest coast of India, and is oriented in the north-south axis, having an island to the east and a shallow lagoon enclosed by a coral reef on the west. The length of the lagoon is about 4.5 km and about 1.2 km width having an average depth of 2 m. The enclosing reef is about 300 m wide with a 60 m gap at its northwest point forming the main entrance

to the lagoon. This lagoon is very shallow one with a maximum depth of about 4 m.

The bottom water temperature in the lagoon ranges from 30.6° C to 32.5° C with an average temperature of about 31.5° C and salinity ranges have been recorded as low as 33‰ and as high as 53‰. The highest salinities found at the vicinity of the 60 m gap inlet through which oceanic waters enter the lagoon.

The lagoon is an area of biogenic (carbonate) sedimentation, sediment looks pure white in colour owing to the high concentration of calcium carbonate and non-existence of river discharge from the main land which would have resulted in the contamination of sediment silt, clay, etc.

As a part of the research programme of INSA on the investigation of the Arabian Sea Islands, the samples of both the beach and lagoon were collected, the mode of collection of beach samples was by hand scooping and lagoon sample by a grab.

The samples were dried and studied for foraminiferal content under the stereo-binocular microscope.

List of species encountered in the samples is given below following the systematic classification used by Cushman<sup>2</sup>.

#### Family : AMPHISTEGINIDAE

Genus : AMPHISTEGINA d'Orbigny, 1826

*Amphistegina lessoni* d'Orbigny

*Amphistegina lessoni* d'Orbigny, Phleger and Parker, 1951, *Geol. Soc. Amer. Mem.* 46, pt. 2, p. 26, pl. 13, figs. 13, 14; pl. 14, fig. 1.

*Amphistegina radiata* (Fitchell and Moll)

*Amphistegina radiata* (Fitchell and Moll), Said, 1949, *Cushman Found. Foram Research. Special Publ.* 26, p. 38, pl. 4, fig. 10.

*Nautilus radiatus* Fitchell and Moll, 1798, *Testacea Microscopica*, p. 58, pl. 8, figs. a-d.

*Amphistegina madagascariensis* d'Orbigny

*Amphistegina madagascariensis* d'Orbigny, Todd, 1965, *U.S. Natl. Mus. Bull.* 161, pt. 4, p. 34, pl. 11, fig. 3; pl. 12, figs. 1, 2.

#### Family : PENEROPLIDAE

Genus : PENEROPLIS MONTFORT, 1808

*Penroplis pertusus* (Forsk.)

*Nautilus pertusus* Forskal, 1775, *Descriptiones animalium*, p. 125, Copenhagen.

Genus : MARGINOPORA BLAINVILLE, 1830

*Marginopora vertebralis* Blainville, 1834

*Marginopora vertebralis* Blainville, 1834, *Manual d' Actinologie on de Zoophytologie*, p. 412, pl. 69, fig. 6.

*Amphisorus hemprichii* Ehrenberg, 1838, *Akad. Wiss. Berlin Abhandl.*, p. 134, pl. 3, fig. 3.

Family: PLANORBULINIDAE

Genus: PLANORBULINA d'Orbigny, 1826

*Planorbulina mediterraneans* d'Orbigny

*Planorbulina mediterraneans*, Brady, *Rep. Voy. Challenger Zoology*, 9, p. 656, pl. 92, figs. 1-3.

Genus: PLANORBULINELLA Cushman

*Planorbulinella larvata* (Parker and Jones)

*Planorbulina larvata* (Parker and Jones), 1865, *Philos. Trans.* 155, p. 380, pl. 19, fig. 3.

*Planorbulinella larvata* Cushman, 1933, *Cushman Lab. Foram Research Publ.* 4, pl. 29, figs. 5 a, b.

Family: CYMBALOPORIDAE

Genus: CYMBALOPORETTA Cushman, 1928

*Cymbaloporetta bradyi* (Cushman)

*Cymbalopora poeyi* (d'Orbigny) var. H. B. Brady, 1884, *Challenger Rep., Zoology*, 9, p. 637, pl. 102, figs. 14 a-d.

Family: VALVULINIDAE

Genus: CLAVULINA d'Orbigny, 1826

*Clavulina angularis* d'Orbigny

*Clavulina angularis* d'Orbigny, 1826, *Annales sci. nat.* 7, p. 268, pl. 12, fig. 7.

*Clavulina pacifica* Cushman

*Clavulina pacifica* Cushman, 1924, *Carnegie Inst. Washington Pub.* 342, p. 22, pl. 6, figs. 7-11.

*Clavulina angularis* H. B. Brady, 1884 (part, not d'Orbigny), *Challenger Rept., Zoology*, 9, p. 396, pl. 48, figs. 22-24.

Family: CALCARINIDAE

Genus: CALCARINA d'Orbigny, 1826

*Calcarina hispida* H. B. Brady

*Calcarina hispida* H. B. Brady, 1876, *Quart. Jour. Micros. Sci.*, 16, p. 406; *Challenger Rept., Zoology*, 9, p. 713, pl. 108, figs. 8-9, 1884.

*Calcarina quoyi* d'Orbigny, 1826, *Annales sci. nat.*, tome 7, p. 276, no. 6, *nomen nudem*.

It is a typical lagoonal one, Cushman *et al.*<sup>3</sup> have reported from the top of a corall knoll in BIKINI lagoon.

Family: MILIOLIDAE

Genus: QUINQUELOCULINA d'Orbigny

*Quinqueloculina parkeri* (H. B. Brady)

"*Quinqueloculina* with oblique ridges" Parker, 1858, *Trans. Micros. Soc. London*, 6, p. 57, pl. 5, fig. 10.

*Miliolina parkeri* H. B. Brady, 1884, *Quart. Jour. Micros. Sci.*, 21, p. 46.

*Quinqueloculina parkeri* Cushman, 1932, *U.S. Natl. Mus. Bull.* 71, pt. 6, p. 15, fig. 3.

*Quinqueloculina atlantica* Boltovskoy

*Quinqueloculina atlantica* n. sp. Boltovskoy, Closs and Barberina, 1962, *Chui-Arangua*, p. 24, pl. 5, fig. 4.

*Quinqueloculina moyenensis* Collins

*Quinqueloculina moyenensis* Collins, 1953, *Pleist. Fairy*, p. 98, pl. 1, fig. 1.

*Quinqueloculina poeyana* (d'Orbigny)

*Quinqueloculina poeyana* d'Orbigny, 1840, *Cuba*, p. 166, pl. 11, figs. 25-27.

Genus: MILIOLINELLA Wiesner, 1931

*Miliolinella subrotunda* (Montagu) forma *labiosa*  
*Triloculina subrotunda* (Montagu), 1959, *Amazonas*, p. 108.

*Triloculina labiosa* (d'Orbigny), d'Orbigny, 1840, *Cuba*, p. 157, pl. 10, figs. 12-14.

*Miliolinella suborbicularis* (d'Orbigny)

*Triloculina suborbicularis* d'Orbigny, 1840, *Cuba*, p. 156, pl. 10, figs. 9-10.

*Miliolinella sublineata* (Brady)

*Miliolina circularis* var. *sublineata* Brady, 1884, *Rep. Voy. Challenger, Zool.*, 9, p. 169, pl. 4, fig. 7.

*Miliolinella sublineata* Asano, 1951, *III Cat. Jap. Tert. Small. Foram.*, pt. 6, p. 10, figs. 70-72.

The present material has yielded about 20 species of benthonic foraminifera. The sediments of both beach and lagoon contain abundant and well-preserved specimens of diversified fauna. The species of family Miliolidae are predominant both in abundance and diversity. Nine species out of total twenty species encountered belong to this family. The *Marginopora vertebralis* (Blainville) is abundantly distributed in the lagoon, and the size of the test was found to be considerably big attributable to the favourable hydrographical conditions existed in the area. The other species with less frequencies can be grouped as follows: Species of *Clavulina*, *Elphidium*, *Amphistegina*, *Planorbulina*, *Cymbaloporetta*, *Calcarina*, *Spiroloculina* and *Miliolinella*.

The species of *Calcarina* and *Marginopora* are believed to be largely reef dwellers as it was noticed on the reefs at Onotoa by Cloud<sup>4</sup>, at Bikini by Cushman *et al.*<sup>3</sup> in the Pacific Islands.

This present assemblage of foraminifera is typical of coral reefs. Besides foraminifera, Gastropods, Pteropods, Pelecypods and Ostracodes were also present in the material.

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1. Chapman, F., *Proc. Zool. Soc.*, 1895, p. 1.
2. Cushman, J. A., Cited in *Foraminifera*, Harvard University Press, Cambridge, Mass., 1948, p. 1.
3. —, Todd, Ruth and Post, R. J., *U.S. Geol. Survey Prof. Paper*, 1954, 260, 319.
4. Cloud, P. E., Jr., *Atoll Research Bull.*, 1952, 12, 1.