

STUDIES ON INDIAN CORALS—2.

**REPORT ON A NEW SPECIES OF *GONIOPORA* AND THREE NEW SPECIES OF
PORITES (SCLERACTINIA, PORITIDAE)* +**

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IN the present paper, which forms the second in the series,[±] four new species of corals belonging to the family Poritidae, from the seas around India are described. One is a *Goniopora* and the rest are *Porites*. The *Goniopora* and two of the *Porites* described here are based on Bernard's (1905, 1906) forms, while one of *Porites* is original. The classification given below is that of Vaughan and Wells (1943) as modified by Wells (1956). All the specimens mentioned herein will be deposited in the Reference Collection Museum of the Central Marine Fisheries Research Institute, Mandapam Camp.

Superfamily PORITICAE GRAY, 1842

Family PORITIDAE GRAY, 1842

Genus ***Goniopora*** de Blainville, 1830

Goniopora de Blainville, *Dict. Sci., Nat.* LX, p. 359.

Type species : *Goniopora pedunculata* de Blainville.

Generic characters : Corallum encrusting, massive, columnar or rarely ramose. Septa as a rule in three cycles. Septa and wall porous. Columella and pali present.

Goniopora nigra n. sp.

(Pl. I, figs. 1, 2)

Goniopora Great Barrier Reef (15)¹⁴.

(*Goniopora queenslandia quarta decima*). Bernard, 1906, p. 153, Pl. 8, fig. 5.

The following description is based on a study of several samples collected from Palk Bay and Gulf of Mannar around Mandapam.

Description : Corallum primarily encrusting, final growth form pulvinate. Larger colonies 50 cm. or so in diameter. Living layer 1 to 3 cm. thick in different colonies.

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+ Extracted from the Ph.D. Thesis approved by the University of Kerala.

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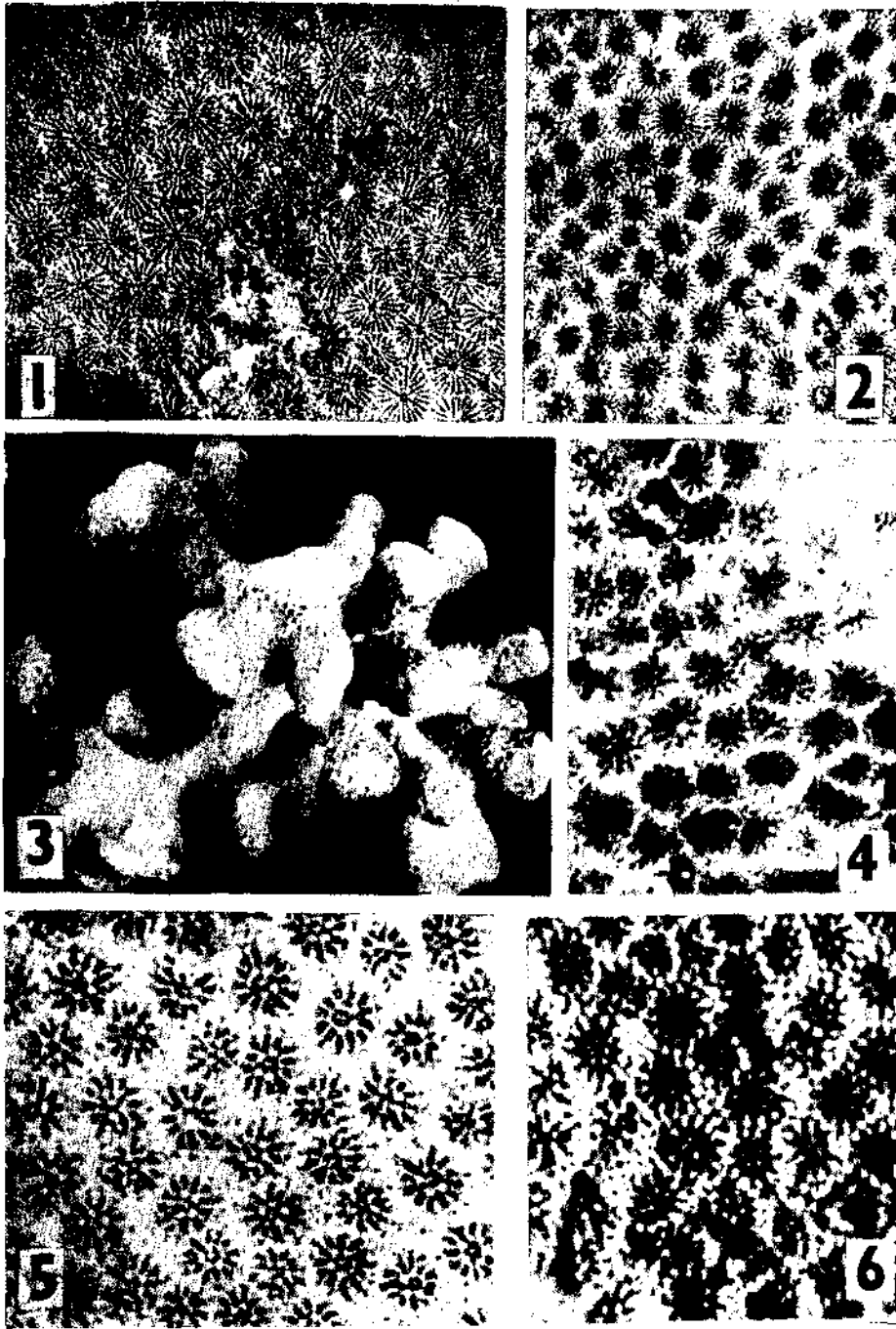


FIG. 1. *Goiniopora nigra* n. sp. from Manauli Island, calices from the growing edge of a colony $\times 3$.
 FIG. 2. Same, calices from the top of the colony $\times 3$.
 FIG. 3. *Porites minicoiensis*, holotype from Minicoy $\times 1$.
 FIG. 4. Same, calices $\times 8$.
 FIG. 5. *Porites mannarensis*, calices from the basal part of a colony from Manauli Island $\times 6$.
 FIG. 6. *Porites exserta*, from Manauli Island, calices $\times 8$.

Calices exhibit two distinct facies. The young encrusting as well as the growing edge of the corallum possess neatly polygonal, generally pentagonal calices (Pl. I, fig. 1) exactly resembling Bernard's (1906) Plate 8, fig. 5. Larger ones 3×3 mm. in size, flush with the surface, with very thin intercorallite wall. On the top of the corallum calices become rounded and smaller, 1.5 to 2 mm. in diameter and 1 to 1.5 mm. deep, (Pl. I, fig. 2) with intercorallite wall thickened upto 1 mm.

Septa 24 in number. In shallow polygonal calices they are long, straight, appearing as if a 'long row of coarse, irregular granules, broad and sometimes appearing doubled near the wall but tapering away to minute single granule near the centre'. 6 to 10 such granules (septal teeth) are present along the length of a septum. In deeper and rounded calices septa narrow, vertically descending at first and then broadening below to reach the columella. The septal teeth in deeper calices are less prominent and irregular in size. Interseptal loculi equal or wider than the thickness of septa. Septal sides granular.

Columella a single upright style with granulations; joined to the septal ends by radii. Palar formula complete; pali rising slightly above the columella; less prominent in deeper calices.

Colour: Living corallum exhibit an unbleachable, mild, sepia ink colour; which extends to half the thickness of the living layer.

Localities: Mandapam (Palk Bay); Manauli Island; Hare Island (Gulf of Mannar). A fairly common species around Mandapam.

Distribution: Palk Bay and Gulf of Mannar around Mandapam; Queensland.

Remarks: The specific name refers to the colour of the corallum. The species displays bewildering variation in its calicular characters especially in size and shape. Only two extreme forms are shown in the accompanying figures. Any worker who has not studied the species in the field and he who bases his conclusions only on fragments, is liable to make two or three 'species' out of it. The present species seems to be a primitive member of the genus. Its relation with some of the fossil forms described and figured by Bernard (1903) from the Paris Basin is at once evident.

Genus *Porites* Link, 1807

Porites Link, 1807. *Natur. Samml. Rostock*, p. 162. (cited after Vaughan and Wells, 1943).

Type species: *Porites polymorphus* Link.

Generic characters: Corallum encrusting, massive, or ramose. Corallites small, close together typically with 12 septa. Septa arranged as a dorsal directive, four pairs of laterals and a ventral triplet with or without a trident formation. Pali present. Columella usually a single style. Corallum porous.

Porites minicoiensis n. sp.

(Pl. I, figs. 3, 4)

Description of the holotype: Corallum unattached—free—ramose, with a crowded cluster of small branches radiating from a central elongated body. Greater dia-

meter of the colony about 7 cm. Branches 1.5 to 2.5 cm. long, upto 10 mm. thick at the base. Tip of branches expanded with small nodules.

Corallites polygonal, calices moderately deep and funnel-shaped, 1.25 to 1.5 mm. in diameter, shallower at the basal parts of the branches and at the central body where they are flush with the surface. Wall thin at the top of the branches getting thicker below.

Septa thickened at the wall, wedge-shaped, the members of the ventral triplet generally fusing to form a trident. Septal faces highly granular with very narrow interseptal loculi. Edges of septa with 3 to 4 secondarily frosted serrations which make the interior of the calices appear highly spinose. Well defined septal denticles other than these serrations are absent. Outer synapticular ring fused to the wall; inner deep seated and hidden from view.

Pali not prominent, confusing with the septal serrations. The axial fossa very small, filled with solid coenenchyme the centre of which is occupied by a flattened, highly frosted tubercle—the columella.

Colour : Washed and dried corallum yellowish-brown.

Type locality : Minicoy. The author is informed that this species is fairly common at Minicoy where colonies often lie in sandy bottom in shallow waters.

The species is named after the locality from where the type is collected.

Remarks : *P. minicoiensis* n. sp. appears to be quite different from any other species of ramose *Porites* hitherto described. The present specimen agrees in certain respects to Bernard's (1905) *Porites amirantes* (3)³ and *P. providence* (2)¹.

***Porites mannarensis* n. sp.**

(Pl. I, fig. 5)

Porites Ceylon (22)⁷. (*P. ceylonica septima*). Bernard, 1905, p. 202, Pl. 30 fig. 2; Pl. 35, fig. 22.

Description : Corallum globular or subhemispherical, lying practically free. Surface lobulated. In globular specimens invariably the remains of *Acropora* on which the colony initially started its growth is retained. In others the basal part is expanded. Three globular coralla, 16, 17 and 20 cm. respectively in greater diameter, along with part of a hemispherical colony 40 cm. in basal diameter are preserved. The surface lobulations are 2 to 3 cm. in height and width.

Calices are about 1 mm. in diameter, in one colony they are still smaller and are only 0.75 mm. ; moderately deep, angular and thin walled on the top of the corallum rounded and thick walled below. The wall at the top of the corallum is reticular and porous, but it become thicker and the mural denticles become coarser and more prominent towards the basal part. The laterals of the ventral triplet remain free of each other, though often they come closer, without a true trident formation. Septa thin, side smooth in young calices, moderately granular in older ones. Septal denticle scarcely recognisable at the top of the corallum, but are moderately

developed below. They are low, slender, smooth and always stand below the level of the pali. Interseptal loculi wider than the septa. Outer synapticular ring near the wall, inner below the pali crown. Pali 8, more prominent towards the lower part of the corallum. Pali of the lateral pairs of septa are larger with weak granulation.

Columella a deep seated, low, style joined to the septa by radii. In some cases the fossa gets filled, with a tubercle in the middle.

Colour : Living as well as washed and dried coralla exhibit a deep brown colour.

Localities : Manauli Island, Pulli Island, and Hare Island in the Gulf of Mannar. Also Rameswaram (Bernard).

Remarks : This species is of much interest because of its tendency, to get attached to the branches of *Acropora* at the initial stage of its growth. When the *Porites* attain a considerable size their substratum breaks leaving the colony free. In some cases, the basal part later get expanded so as to get themselves a better foothold on rocks. The present author had the opportunity to study several specimens belonging to this species, but none of the colony was found really attached. The species is fairly common in the Gulf of Mannar near Mandapam. Bernard's (1905) figure (Pl. 30, fig. 2) appears to show calices from the top of the colony. In the present paper calices from the basal part of a corallum is figured.

***Porites exserta* n. sp.**

(Pl. I, fig. 6)

Porites Ceylon (22)¹⁸.

(*Porites ceylonica tertia decima*). Bernard, 1905, p. 208, pl. 31, fig. 4 ; Pl. 35, fig. 23.

Bernard's (*loc. cit.*) specimen is from the subfossilised reef at Rameswaram. Part of a corallum found attached to a semifossilised *Porites* brought ashore measures 8×8 cm. in greater spread and 3 cm. thick at the broken edge. A few calcareous tubes of *Polychaetes* are found on the top of the corallum which causes small protuberances, but for which the surface is level.

Calices shallow, rather ill-defined, polygonal or rounded; 0.6 to 0.9 mm. in diameter. The nature of the intercorallite wall is unique in the present species. As stated by Bernard (*loc. cit.*) it " consists of a zigzag thread joining tall, erect and rather stout radial flakes with smooth edges and sides. These represent both wall-trabeculae and exsert septa. Down the sides these septa are less and less exsert till they do not rise above the level of the surface ; the appearance of fresh synapticular junctions tends to make the wall reticular, and at the same time the smoothness of the elements is lost, and frosted swellings or granules appear "

The full number of septa can be recognised in some calices, whereas in others the septal number is rather irregular often the secondaries being incomplete. When the septal number is complete the laterals of the triplet remain free without a trident formation. A septal denticle is visible near the wall trabeculae, but always stands below the level of the exsert septa. Inter septal loculi wide, septal faces usually

smooth but sometimes with granulations. Outer synapticular ring near the wall and often incomplete ; inner below the pali surrounding a deep axial fossa.

Pali five, one each at the ends of the lateral pairs of septa and one on the ventral directive ; subequal, well developed and secondarily frosted ; stand below the level of the septal denticles.

Columella usually absent leaving a deep open fossa at the central part of the calyx. Section of the coral shows a loose, porous reticulum with vertical and horizontal bars.

Colour : Living coral greenish brown.

Locality : Manauli Island, Gulf of Mannar.

Remarks : Bernard's specimen is reported to have a nodular growth as is well illustrated in his Pl. 35, fig. 23. The present specimen however, is only a fragment probably chipped off from a large colony. In calicular and septal characters the present specimen perfectly agrees with Bernard's description. The tall septal flakes rising like scales above the level of the surface is a unique feature of the species. The species name refers to the exert nature of the septa.

SUMMARY

A new species of *Goniopora* viz. *nigra* and three new species of *Porites* viz. *minicoiensis*, *mannarensis* and *exserta*, from the seas around India are described and their affinities are discussed.

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