

# A NEW CORAL FROM THE BUCATUNNA CLAY (MIDDLE OLIGOCENE) OF ALABAMA

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## ABSTRACT

A new ahermatypic coral, *Paracyathus macneili* is described, illustrated, and compared. The species occurs in the Bucatunna Clay Member of the Byram Formation, and is considered a guide fossil of that member. A condensed stratigraphic account of the Byram Formation is also presented.

## GENERAL REMARKS

On 12 March 1962, the writer collected several highly fossiliferous samples of the Bucatunna Clay in two headwater tributaries of Rock Pit Branch, located 3.2 miles southwest of the town of Monroeville, Monroe County, Alabama. The Bucatunna Clay, which is the upper member of the Byram Formation, contains numerous micromollusks and an assortment of macrofossils; among the latter is a hitherto undescribed coral for which the name *Paracyathus macneili* is proposed.

Two well preserved specimens of *Paracyathus macneili* were found—the holotype in the east-flowing headwater tributary of Rock Pit Branch, and the paratype 0.35 miles to the southeast, near the headwaters of Rock Pit Branch itself. These locations may be spotted on Plates 1 and 2 of John B. Ivey's report on the geology and ground water in the Monroeville area, Alabama, in Bulletin 66 of the Geological Survey of Alabama, 1957.

The Bucatunna Clay in the two streams visited consists of "dark-blue-gray to brown massive, blocky clay, locally containing lenses of clayey, glauconitic sand. These lenses usually contain abundant micro- and macrofossils . . . Wells a short distance southwest of Monroeville, in the Mexia area, penetrate more than 50 feet of Bucatunna." (Ivey, 1957, p. 88, 89). At least 22 feet of the Bucatunna are exposed in the first of the two streams mentioned above, and there the Clay rests conformably on a hard, orange to brown, fossiliferous limestone. This limestone, some 5 feet or so in thickness, is the Marl Member of the Byram Formation, and grades below into the hard, gray, fossiliferous

Glendon Limestone, or basal member of the Byram. The contact between the Bucatunna Clay and Marl Member is at stream level, the water flowing underground into the limestone. The holotype of *Paracyathus macneili* was collected in the Bucatunna about 150 feet upstream from, and 2 feet stratigraphically higher than, the top of the Marl Member.

In the second stream, the paratype of *Paracyathus macneili* was collected in a highly fossiliferous sand lens of the Bucatunna, approximately 250 feet downstream from the headwaters of Rock Pit Branch. Here, according to my notes, at least 20 feet of Bucatunna are exposed, with the fossiliferous lens occurring near the base, a foot or so above water level. This lens is estimated to lie about 20 feet above the contact with the Marl Member, and indicates that *Paracyathus macneili* has a vertical range of 20 feet or more from the base of the Bucatunna upward. The Bucatunna in the Monroeville area is overlain disconformably by the Citronelle Formation, an unfossiliferous deposit of sand, gravel, and clay, possibly Pliocene in age.

The Bucatunna Clay Member was first described by Blanpied and others (1934, p. 12-16, correlation chart) in southeastern Mississippi. It was later recognized in southwestern Alabama by MacNeil (1944, p. 1316, 1332-1341; 1946, p. 51, 52, 55), by Murray (1952, p. 700, 702), and by Ivey (1957, p. 84-90, pl. 12). The fossils illustrated on Plate 12 of the last reference were identified by MacNeil, and include the coral discussed in the present paper. The Bucatunna Clay in Mississippi was first assigned an early Miocene age on the basis of "the erosional break at the base of the Bucatunna Member and the Miocene character of the overlying Chickasawhay members" (Blanpied, 1934, p. 16). However, in the correlation chart of Blanpied's paper, prepared by Hanna and Gravell, the Bucatunna is shown in the middle of the Oligocene. Today (see Keroher and others, 1966, p. 511) the Bucatunna, on the evidence of the Mollusca it contains and

on the Foraminiferida in the Glendon Limestone, is believed to be Oligocene in age; its medial position in that epoch has been determined by its stratigraphic relationship.

PARACYATHUS MACNEILI, n. sp.

Text-figs. 1-6

*Balanophyllia* aff. *B. caulifera* (Conrad). MACNEIL in IVEY, 1957, p. 90, 107, Pl. 12, fig. 9.

There are two coralla in the collection, both attached at the base. Specimen OBC-1a, the holotype, is solitary and subtrochoid; specimen OBC-1b, the paratype, consists of two corallites, a larger tympanoid form and a small conical bud developed from the end zone of the former. The holotype is elongate conical and slightly curved, the sides gently expanded and constricted alternately to near the base, the base flared over a shell (pelecypod?) to which it is adherent. The base of the larger corallite of specimen OBC-1b is also attached to a shell, probably a gastropod; however, the calice of that corallite is so broken and poorly preserved, that although I think it may well be a mature *Paracyathus macneili*, I cannot be certain. On the other hand the smaller corallite does seem to be an immature form of *Paracyathus macneili*, and in its mode of growth appears to be a "bud" of the larger corallite. The lower end of the small corallite is imbedded in the side of the larger but is separated elsewhere.

The calice is subcircular in the young, broadly and regularly oval in the adult, on which the calicular margin is curved outward a little. On the holotype there are 48 septa in four complete cycles, all of the septa exsert in varying degree, dentate along the free margin, and papillate on the sides. The primary and secondary septa are subequal and thickly laminar, with summits more broadly rounded and more strongly exsert than the others; third cycle septa are somewhat smaller than the principals, and the quaternaries slightly smaller than tertiaries. In contrast with the evenly rounded upper half, the lower half of the septa of the first three cycles is erose or paliform along the free margin. The septa of the first two cycles, and to a lesser degree those of the third, are very slightly convex; on the convex side, the upper row of papillae or granules ascend from the wall, then merge to

form a ridgelet which runs subparallel with, and a little below, the free margin of the exsert portion of the septum; farther within, the ridgelet merges with and parallels the margin rendering it unequally bipartite, with the true margin the more prominent. There is a tendency for this same process to develop weakly on the concave side of the principal septa, and on those the septal margin may be tripartite. These ridgelets, however, are not present on the younger and smaller corallite of the paratype which has only 38 septa and is obviously immature.

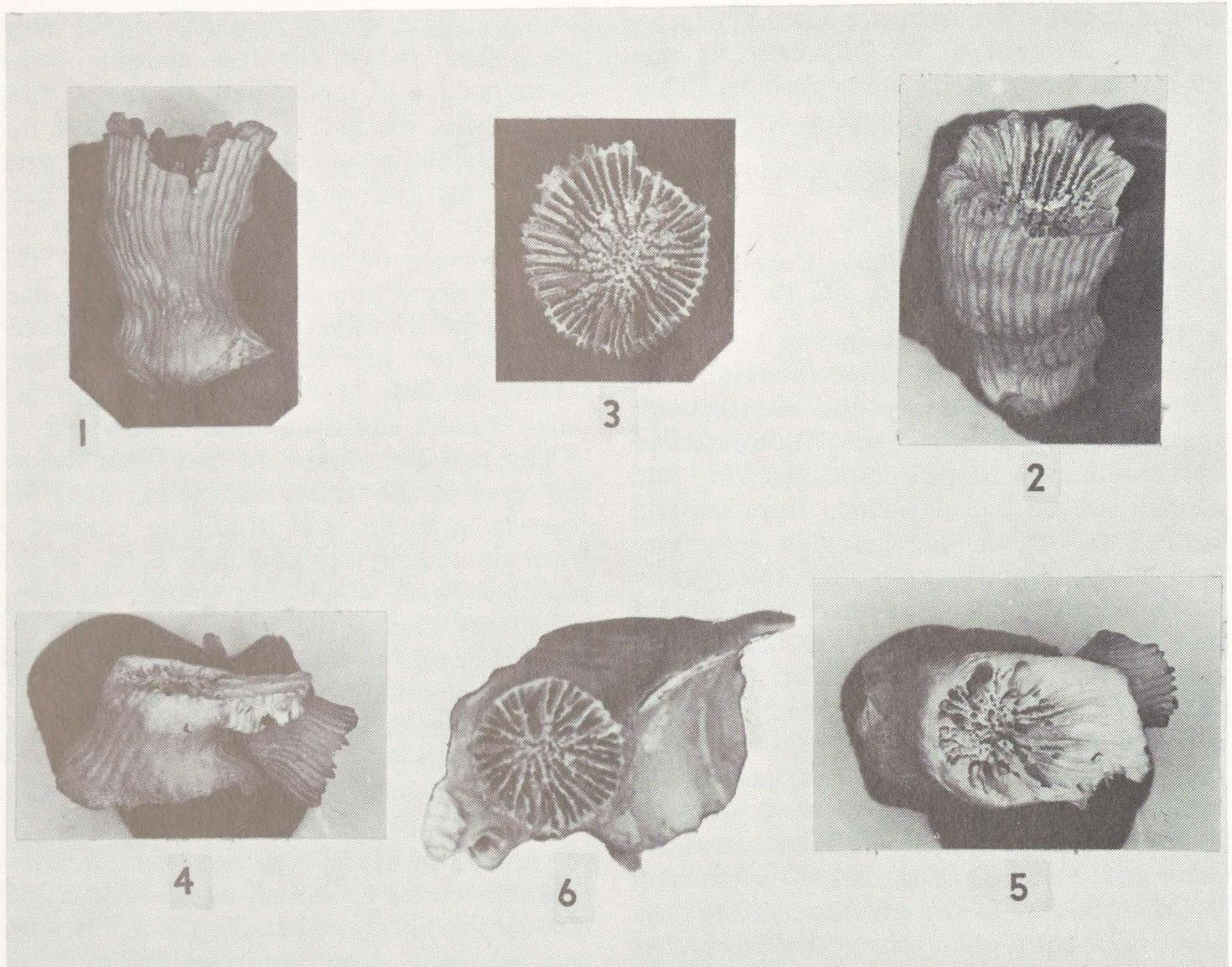
The pali are prominent and occur before the septa of the first three cycles. They are coarsely granular and frondose, extending from about half way down the calice to the columella with which they merge; on some septa they reflect the lobate nature of the lower margin but on others they are present in a single column to the edge of the columella. In general the pali are thicker above than below.

Although each costa corresponds with a septum, the costae are not particularly differentiated by septal size, and on both specimens the costae are nearly equal. The costae may be sharply crested and separated by wide and relatively deep intercostal furrows, or gently rounded and separated by narrow and shallow interspaces. Toward the base the costae may become disjointed and irregular on the solitary corallum, or where corallites are joined, the costae may be swirled and confluent. Like the septa, the crest and sides of the costae are closely granulose.

The columella is relatively broad, papillose, deep, and porous.

*Measurements.* — Holotype (OBC-1a): height 14 mm, calice diameters 9.7 mm × 8.3 mm, depth of calice 6 mm, septa 48. Paratype (OBC-1b): parent corallite (worn down) height 6.5 mm, calice diameters 10 mm × 7 mm; bud height 5.3 mm, calice diameters 5.3 mm × 5 mm, septa 38; corallum length 14 mm, width 9.5 mm, height 7 mm.

*Localities.*—Holotype (OBC-1a): east-flowing headwater tributary of Rock Pit Branch in the SW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> SW<sup>1</sup>/<sub>4</sub> Sec. 4, T6N, R7E, of the Monroeville quadrangle, Monroe County, Alabama. Bucatunna Clay, about 2 feet above contact with the Marl Member of the Byram Formation. Paratype (OBC-1b): near headwaters of Rock Pit



Text figures 1–6. *Paracyathus macneili*, n. sp. Figs. 1–3 (holotype),  $\times 2.5$ . Fig. 1, side view; fig. 2, upper view; fig. 3, calice. Figs. 4–6 (paratype),  $\times 2$ . Fig. 4, corallum in normal growth position showing parent corallite and bud; fig. 5, calicular view of parent; fig. 6, calicular view of bud.

Branch in the SW $\frac{1}{4}$  SE $\frac{1}{4}$  SW $\frac{1}{4}$  Sec. 4, T6N, R7E, Monroeville quadrangle. Bucatunna Clay, an estimated 20 feet above contact with the Marl Member of the Byram Formation. Collections by Norman E. Weisbord, 12 March 1962.

*Formation and Age.*—Bucatunna Clay Member of the Byram Formation. Middle Oligocene.

*Comparisons.*—This species is undoubtedly the one illustrated by Ivey (1957, pl. 12, fig. 9) and designated by MacNeil as *Balanophyllia* aff. *B. caulifera* (Conrad). The type specimens in the Florida State University collection from the type locality are relatively well preserved and seem to me to be a new species in the genus *Paracyathus* which I am pleased to name *Paracyathus macneili* after Francis Stearns MacNeil.

*P. macneili* is characterized by the sub-

sidiary ridgelet along the free margin of the principal septa, and by its prominent pali. It is similar to *Paracyathus granulatus* Vaughan (1900, p. 107, pl. 8, figs. 15–15b) from the lower Eocene at Woods Bluff, Alabama, but among other differences the pali are much less prominent than in the Bucatunna form.

*Repository.*—The holotype and paratype of *Paracyathus macneili* are presently held in the Department of Geology, Florida State University, Tallahassee, Florida.

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## PALEONTOLOGICAL NOTES

### A PECCARY FROM THE PLEISTOCENE OR HOLOCENE OF MISSISSIPPI

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Fossil peccaries have not been reported previously from Mississippi or Louisiana. O. P. Hay (1923) indicates no finds in these states on his map of the distribution of Pleistocene peccaries in eastern North America. Arata (1964) stated that:

Although peccaries are known from the Pleistocene of Texas, Arkansas and Florida, and may well have occurred in Louisiana, no material to substantiate their presence has been reported to date.

Daryl P. Domning (1969) does not mention peccaries in his list of species of fossil vertebrates reported from Louisiana and Mississippi except for a mistaken report by Brown (1938) which was corrected by Arata (1964).

In December, 1969, geology student Randle E. Roberts, Jr. found the peccary bones here reported partially buried below almost three feet of soil in a road cut on the Mississippi State University campus behind the biology building. Only two elements were found, although digging was done in an effort to find more. The elements, which Roberts states were found buried within three inches of each other, are diagnostic metapodials III and IV, and, although dis-

articulated, apparently belonged to the same extremity. Because of the lack of comparative material it has not been determined whether the bones are metatarsals or metacarpals. After examining the bones, Dr. Clayton E. Ray, Division of Vertebrate Paleontology, U. S. National Museum, Washington, D. C., confirmed their identification as peccary material.

Figure 1 shows what remains of the peccary metapodials after 9 mm of the proximal end including the articulating surface, had been removed from the longer fossil in order to make chemical tests. The original length was 89 mm. The shaft of the other metapodial was broken when found. The well-preserved condition of the distal epiphyses indicates the specimen belonged to a mature peccary. These specimens have been given the catalogue number 53I1<sup>1</sup> and will be in the possession of the Dunn-Seiler Geological Museum at Mississippi State University.

<sup>1</sup> 53 refers to Oktibbeha County which is 53rd in the state alphabetically, I is the symbol for fossil peccary, and 1 indicates that this peccary bone is the first to be found in Oktibbeha County.