Caribbean Journal of Science, Vol. 40, No. 3, 392-396, 2004

First Record of the Rudist Bivalve *Mitrocaprina tschoppi* (Palmer) from the Maastrichtian of Jamaica

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ABSTRACT.—The large plagioptychid rudist bivalve *Mitrocaprina tschoppi* (Palmer) is recorded from the Guinea Corn Formation (Late Maastrichtian) of central Jamaica. This is the first record of this species outside of Cuba. *M. tschoppi* occurs in rhythm D6 of the Guinea Corn Formation, *Macgillavryia* Bed 1, together with a rudist assemblage including *Praebarrettia sparcilirata* (Whitfield), *Macgillavryia nicholasi* (Whitfield), *Chiapasella trechmanni* Mitchell & Gunter, *Plagioptychus zansi* Chubb, *Titanosarcolites* sp.; *Titanosarcolites* cf. *alatus* Chubb and *Antillocaprina* cf. *occidentalis* (Whitfield). The pallial canals of the Jamaican specimens are identical to the Cuban material, but the Jamaican specimens are larger (about one and a half times the size).

KEYWORDS.—Biostratigraphy, systematic palaeontology, plagioptychid, Cretaceous.

Small plagioptychid rudists are common in the Maastrichtian shallow-water limestones of the Caribbean region with many species recorded from Jamaica and Cuba (Palmer 1933; Mac Gillavry 1937; Chubb 1971; Rojas et al. 1995). Large species are rare and limited to *Plagioptychus jamaicensis* (Whitfield) from Jamaica and *Mitrocaprina tschoppi* (Palmer) from Cuba (Whitfield 1897; Mac Gillavry 1937; Chubb 1971). *Plagioptychus jamaicensis* left valve attains 20 cm in diameter. The species is remarkably rare, and Chubb (1971) only had two specimens to study. *Mitrocaprina tschoppi* left valve is up to 8 cm in diameter (Mac Gillavry 1937). It contains four layers of pallial canals – an inner double-layer of polygonal canals and two outer layers of radially elongated canals (Mac Gillavry 1937). In this paper, *M. tschoppi* is reported and described from Jamaica for the first time, and is compared with similar Caribbean plagioptychid rudists.

The Guinea Corn Formation represents the *Titanosarcolites*-bearing limestone of central Jamaica and is of late Maastrichtian age (Steuber et al. 2002). Based on variations in clastic:carbonate ratios, Mitchell (1999) divided the Guinea Corn Formation into units labeled A to G. A succession of rudist and coral marker beds was correlated across central Jamaica, and it is now possible to match most sections of the formation with the "standard succession" of Mitchell (1999); e.g., see Mitchell and Gunter (2002).

Mitrocaprina tschoppi was collected from two localities (Fig. 1): a loose specimen in a scree slope below the Guinea Corn Formation at Coffee Piece and two specimens *in situ* from bed D6 in the type Guinea Corn succession at Grantham (Fig. 2 Coffee Piece NE of Mitchell 1999). Here they are associated with a rich fauna, including *Praebarrettia sparcilirata* (Whitfield), *Macgillavryia nicholasi* (Whitfield), *Chiapasella trechmanni* Mitchell & Gunter, *Plagioptychus zansi* Chubb, *Titanosarcolites* sp.; *Titanosarcolites* cf. alatus Chubb and *Antillocaprina* cf. *occidentalis* (Whitfield), which represents the *Praebarrettia* Bed of Mitchell (1999).

SYSTEMATIC DESCRIPTIONS

All material is preserved in the collections of the University of the West Indies Geology Museum (UWIGM numbers).

Family Plagioptychidae Douvillé, 1888

Genus *Mitrocaprina* Boehm, 1895

Type Species.—*Coralliochama bayani* Douvillé, 1888, designated by Boehm, 1895.

Mitrocaprina tschoppi (Palmer, 1933)
Fig. 3; Pl. 1

1933 *Plagioptychus tschoppi*: Palmer, p. 103, pl. 10, figs. 1-3.

1937 *Mitrocaprina tschoppi* (Palmer); Mac Gillavry, p. 158, pl. 5, fig. 7; pl. 7, figs. 1, 4-5, 7-8; pl. 8, figs. 4, 7.

Diagnosis.—A large species of *Mitrocaprina* with a large convex left valve which is larger than the right valve. Four layers of pallial canals in the left valve – two polygonal inner layers and two radially elongated outer layers.

Material.—Three specimens from Jamaica. One loose specimen from the Guinea Corn Formation, Coffee Piece (UWIGM.RUD.2004.3) with the umbo region of the left valve extensively bored by *Entobia* isp. Two specimens from upper rhythm D6, Guinea Corn Formation, Grantham (Coffee Piece NE) (UWIGM. RUD.2004.1-2).

Description.—Right (attached) valve generally exogyrifom in shape. Attachment area small, posterior side flat and separated from the anterior side by a sharp ridge at an angle of about 90°. Valve expands rapidly in diameter towards the aperture. Surface marked by rough growth lines. Inner layer thin and poorly preserved; outer layer thick, up to 7 mm, and composed of compact, non-cellulose calcite.

Left (free) valve strongly inflated, umbo rounded and strongly overhanging the right valve. Outer shell layer thin. Inner layer thick with four rows of pallial canals. The inner two rows are composed of large polygonal pallial canals up to 7 mm maximum size. The pallial canals in the outer row are a little larger than those in the inner row. The inner two rows of pallial canals consist of narrow radially elongated canals, the outermost row being narrower and

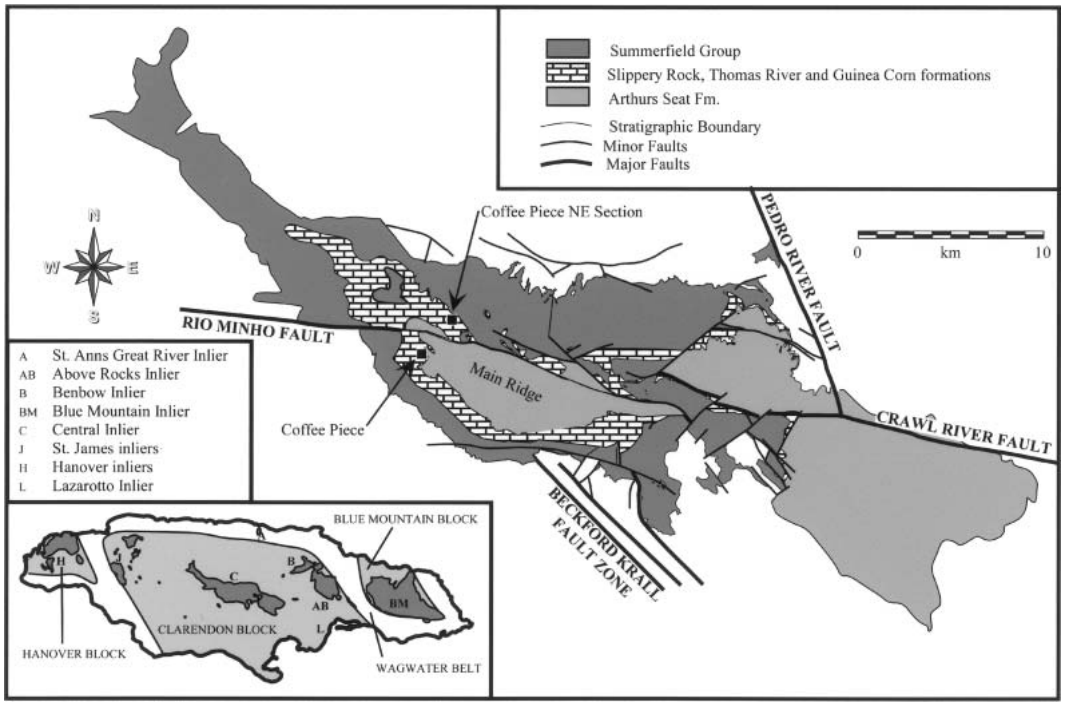

FIG. 1. Localities from which specimens of *Mitrocaprina tschoppi were* collected in the Central Inlier of Jamaica.

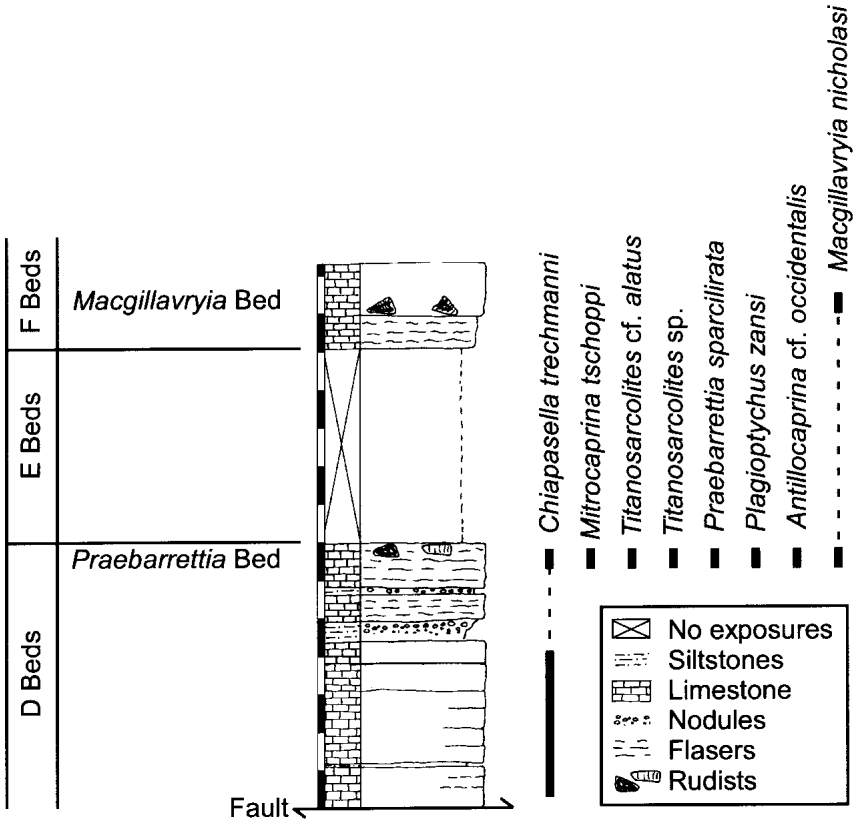

FIG. 2. Logged section through the Guinea Corn Formation at Coffee Piece NE showing distribution of rudists. Scale bar in meter intervals.

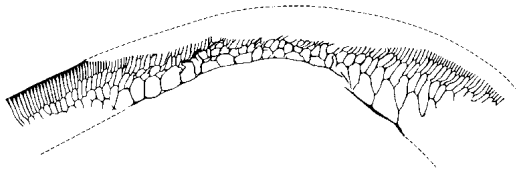

FIG. 3. Camera Lucida drawing of pallial canals in ventral shell wall of *Mitrocaprina tschoppi* from Coffee Piece (RUD.2004.3). Section is cut 25 mm from the commissure ×1.

longer than the inner row (Fig. 3). Dentition and ligament poorly visible.

Measurements.—UWIGM.RUD.2004.3 (Coffee Piece Specimen), right (attached) valve 13.5 cm dorsal-ventral diameter, 8 cm in posterior-anterior diameter, and 4.5 cm high; left (free) valve up to 5.5 cm high. UWIGM.RUD.2004.1 (Grantham, Coffee Piece NE), right valve measures 12 cm dorsal-ventrally, 8 cm posteriorly-anteriorly, and is 7.5 cm high; left valve 7 cm high. UWIGM.RUD.2004.2 (Grantham, Coffee Piece NE), right valve measures 12 cm dorsal-ventrally, 9.5 cm posteriorly-anteriorly, and is 7.5 cm high, left valve incomplete.

Age.—The Jamaican material collected from Grantham comes from bed D6 (*Macgillavryia* bed 1). Strontium ($^{87}SR/^{86}SR$) isotopic values indicates that this is late Late Maastrichtian in age (Steuber et al. 2002). *M. tschoppi* in Cuba is also of probable Maastrichtian age (Rojas et al. 1995).

Discussion.—The Coffee Piece and Grantham specimens show differences in the shape of the shells. The Coffee Piece specimen is more strongly elongated in a dorsal-ventral diameter than the Grantham specimens. The pallial canals of the specimens are identical and the three specimens are regarded as conspecific.

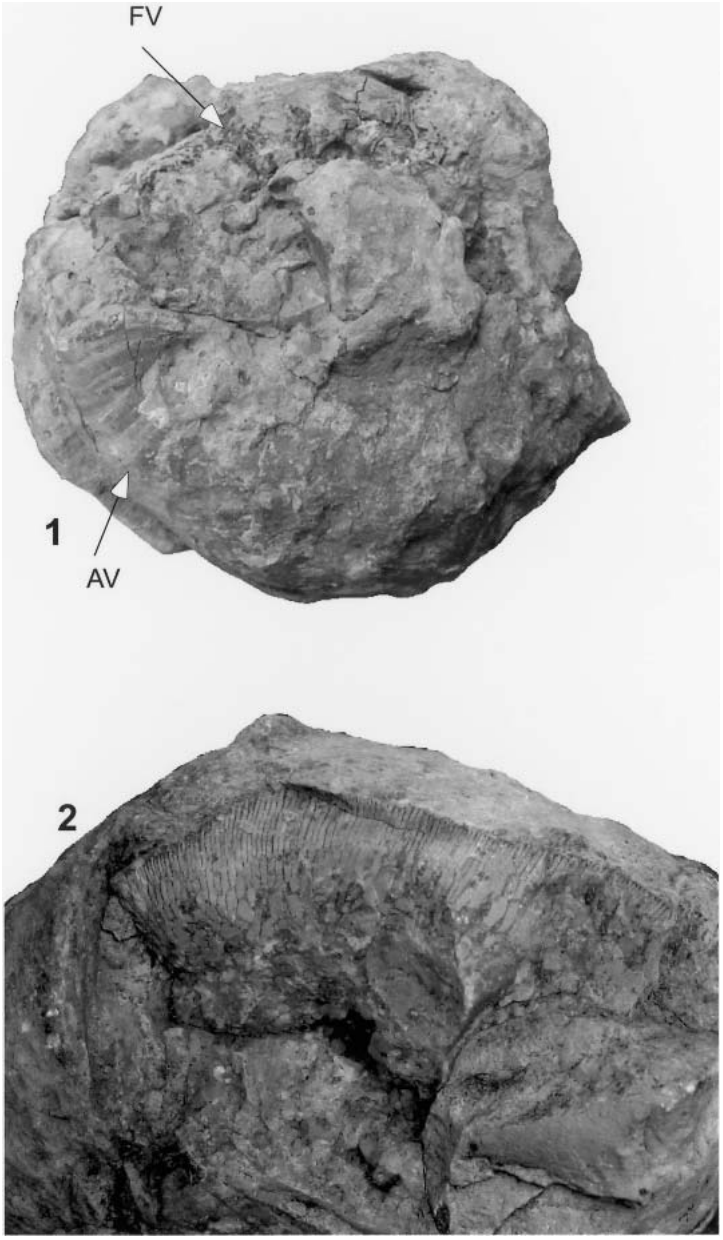

PLATE 1. Specimens of *Mitrocaprina tschoppi*. 1, RUD.2004.1, showing attached valve (AV) and crushed free valve (FV), ×0.5; 2, RUD.2004.2, Detail showing pallial canals in ventral shell wall, ×1. Both specimens from Grantham (Coffee Piece NE).

The Jamaican material shows similarities to that described by Mac Gillavry (1937) from Cuba. Both sets of samples have four rows of pallial canals, with the innermost two rows polygonal, and the outer two, radially elongated. The maximum diameters of the polygonal canals in the innermost row are also closely similar (7 mm in the Jamaican material; 6 mm in the largest Cuban specimen). The Jamaican material only differs from the Cuban material in size. The largest Cuban specimen has a maximum

diameter of 8 cm (Mac Gillavry 1937), whereas the largest Jamaican specimen has 13.5 cm. The Cuban specimens also have a large attachment area – they are attached to specimens of *Antillocaprina*. In contrast the attachment areas of the Jamaica specimens appear to be small. The differences in the size of the attachment areas are not considered of taxonomic importance, and are regarded as substrate specific. Since all other taxonomically important characters are similar between the Jamaican and Cuban specimens (i.e., the pallial canal systems), the Jamaican material is placed in *M. tschoppi* herein.

The only other species of *Mitrocaprina* recorded from Jamaica is *M. multicanaliculatus* Chubb. This is a small species with 6 to 8 rows of polygonal pallial canals in the left valve which distinguishes it from *M. tschoppi*.

The only other large plagioptychid from Jamaica, *Plagioptychus jamaicensis*, contains radial plates that are not divided to form pallial canals and is also considerably larger than *M. tschoppi.*

The new material described from Jamaica demonstrates that *M. tschoppi* had an extended geographical range in the Maastrichtian of the Caribbean region. These large plagioptychids seem rare, and we hope that further collecting may extend the ranges of these taxa to other areas of the Caribbean.

Acknowledgements.—We thank J. M. Pons for reviewing this paper.

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