

A new record of the Paleocene larger foraminifer *Ranikothalia catenula* in the Wagwater Formation of eastern Jamaica

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ABSTRACT. The larger foraminifer, *Ranikothalia catenula* Cushman and Jarvis, is reported for the first time from an unnamed limestone unit in the Ginger River Member of Wagwater Formation of eastern Jamaica. This species indicates a Late Palaeocene age for this limestone unit. The presence of this species demonstrates that the Wagwater trough was already an active open marine graben during the Late Paleocene.

1. INTRODUCTION

Paleocene larger foraminifers have only been reported from the eastern end of Jamaica (Jiang and Robinson, 1987; Robinson and Jiang, 1990). The distinctive form *Ranikothalia catenula* Cushman and Jarvis 1932, is used as an index for rocks of a Paleocene age (Robinson, 1969; Robinson et al., 1972). It has been reported from the Chepstow and Nonsuch formations of eastern Jamaica as well as from limestone lenses at the base of the Richmond Formation towards the southern end of the Wagwater Belt (Robinson in Zans et al., 1963; Jiang and Robinson, 1987).

This paper describes a new occurrence of this important foraminiferan that was discovered during field mapping in the southwest Wagwater Belt of eastern Jamaica in 2002.

2. GEOLOGY

The geology of the Wagwater and Richmond formations in the Wagwater Belt of eastern Jamaica has been described by Green (1977) and Mann and Burke (1989). Mann and Burke (1989) introduced a series of members for these formations, and this scheme is followed here.

Within the southwest part of the Wagwater Belt, along the Irish Town main road, at Wiltshire (GPS: 018°02.653 N, 076°43.189 W) a thick succession of the Ginger River Member of the Wagwater Formation (Mann and Burke, 1989) crops out. It contains two discontinuous, nodular limestone units (Figure 1). Microfossils have not previously been recorded from these limestone units, and Mann and Burke (1989) considered that the lower conglomeratic beds of the Wagwater Formation in this region were of Paleocene age since they were overlain by the Pencar River Member of latest Paleocene to earliest Eocene age (Jiang and Robinson, 1987).

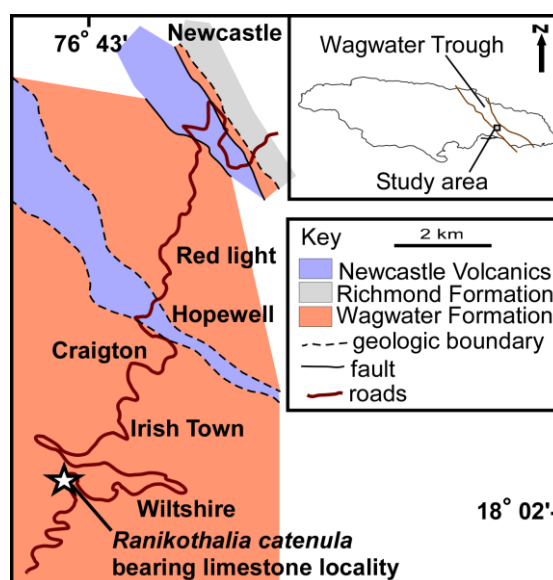


Figure 1. A, General location of the Wagwater Belt, eastern Jamaica. B, Simplified geology map of the southwestern section of the Wagwater Belt, showing the location of the *Ranikothalia catenula* bearing limestone.

One of these limestone units (Figure 2) is bioclastic and contains scattered fossils. The fossils include corals, algae, thick-shelled oysters, *R. catenula* (Figure 3) together with other foraminiferal fragments. This bioclastic limestone on the Irish Town road is lithologically similar to massive impure limestones seen elsewhere in the Wagwater Belt, such as, the Halberstadt Limestone (Matley, 1951) and the Woodford Limestone (Chubb, 1953).

3. RANIKOTHALIA

Ranikothalia catenula has been described by Cushman and Jarvis (1932), Cole (1969) and Jiang and Robinson (1987). It can be distinguished from

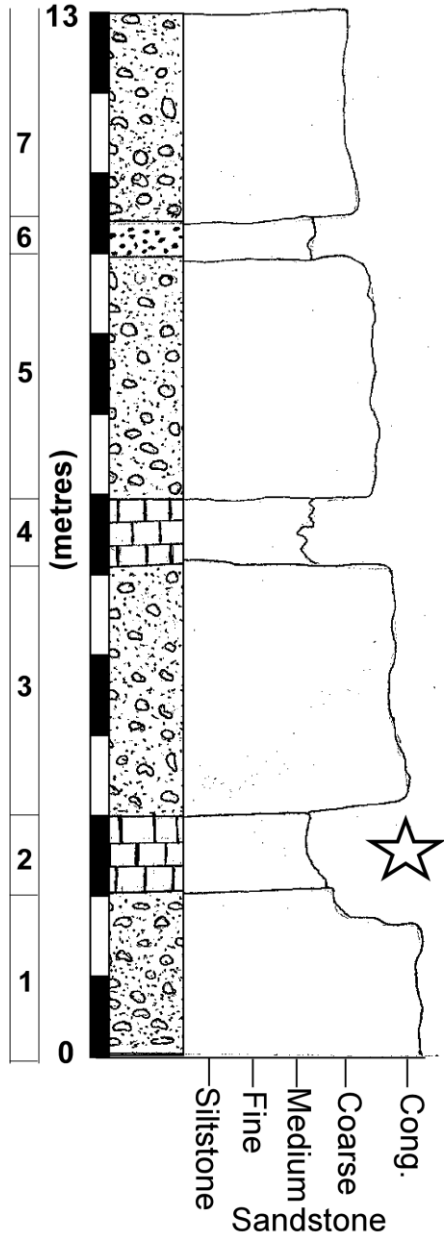


Figure 2. Logged section showing limestone unit of the Ginger River Member of the Wagwater Formation exposed on the Irish Town road (GPS: 018°02.653 N, 076°43.189 W). Star = *R. catenula* horizon.

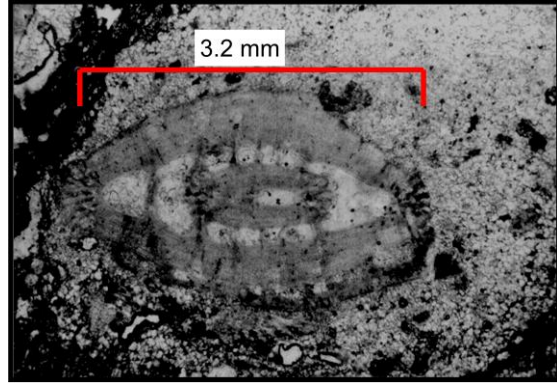


Figure 3. Photomicrograph showing off-center axial view of *Ranikothalia catenula*.

other nummulitid genera by its large size (1.5-3.0 mm), its planispiral coil of chambers, its septal canal, and the coarse, rough edges of its the outer chambers (Cushman and Jarvis, 1932).

The type species of *Ranikothalia*, *Nummulites nuttalli* Davies comes from the Upper Paleocene, Ranikot Formation at Jhirak, Sind, Pakistan. Bolli (1952) and Bronnimann (1952) recorded *R. catenula* from the Soldado section, Trinidad, and correlated this occurrence with the lower part of the Lizard Springs Formation, Trinidad. Subsequently this was assigned to the Late Palaeocene based on planktic foraminifers (Bronnimann, 1952). In Cuba, (Central San Antonio, Havana Province), various species of *Ranikothalia* were described (Caudri, 1996). We, however regard *R. antillea* Caudri, *R. tobleri* Vaughan and Cole and *R. soldadensis* Vaughan and Cole as junior synonyms of *R. catenula*. Thus, *R. catenula* occurs in the Late Paleocene of both Pakistan and the Caribbean. Its occurrence in the Ginger River Member therefore confirms a late Paleocene age for this part of the Wagwater Formation.

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REFERENCES

- Bolli, H. M. 1952. Note on the Cretaceous-Tertiary boundary in Trinidad, B.W.I., with remarks on the problem of the determination of some Paleocene Globorotaliae. *Journal of Paleontology*, **26**, 669-675.
- Bronnimann, P. 1952. Trinidad Paleocene and Lower Eocene Globigerinidae. *Bulletin American Paleontology*, **34**, 133-182.
- Caudri, C. M. 1996. The larger Foraminifera of Trinidad (West Indies). *Ecologiae geologicae Helvetiae*, **89**, 1137-1307.
- Chubb, L. J. 1953. A subsidence in the mountains of Jamaica. *Colonial Geology and Mineral Resources*, **3**, 127-132.
- Cole, W. S. 1969. Internal structure, stratigraphic range

- and phylogenetic relationships of certain American Eocene foraminifera. *Cushman Foundation for Foraminiferal Research Contributions*, **20**, 77-86.
- Cushman, J. A., and Jarvis, P. W. 1932.** Upper Cretaceous foraminifera from Trinidad. *U.S. National Museum Proceedings*, **80**, Article, 14, 1-60.
- Green, G.W. 1977.** Structure and stratigraphy of the Wagwater Belt, Kingston, Jamaica. *Overseas Geology and Mineral Resources Bulletin*, **48**, 21 pp.
- Jiang, M.-J., and Robinson, E. 1987.** Calcareous nannofossils and larger foraminifera in Jamaican rocks of Cretaceous to early Eocene age. In: **Ahmad, R., (ed.)**, *Proceedings, of a Workshop on the Status of Jamaican Geology*. *Geology Society of Jamaica Special Publication*, 24-51.
- Mann, P., and Burke, K. 1989.** Traverse intra-arc rifting: Paleogene Wagwater Belt, Jamaica. *Marine and Petroleum Geology*, **7**, 410-427.
- Matley, C.A. 1951.** *The Geology and Physiography of the Kingston District*. Crown Agents, London, 139 pp.
- Palmer, D.K. 1934.** Some large fossil foraminifera from Cuba. *Memorias de la Sociedad Cubana de Historia Natural, Habana*, **8**, 253-264.
- Robinson, E. 1969.** Stratigraphic ranges of some larger foraminifera in Jamaica *Transactions, 4th Caribbean Geological Conference, Port of Spain, Trinidad, 1965*, 189-194 (dated 1968).
- Robinson, E., and Jiang, M.M.-J. 1990.** Paleogene calcareous nannofossils from western Portland, and the ages and significance of the Richmond and MooreTown Formations of Jamaica. *Journal of Foraminiferal Research*, **23**, 47-65.
- Robinson, E., Lewis, J.F., and Cant, R.V. 1972.** Field guide to aspects of the geology of Jamaica. In: **Donnelly, T.W. (ed.)**, *International Field Institute Guide Book to the Caribbean Island-Arc System*. American Geological Institute, Washington, D. C., 48 pp.
- Zans, V. A., Chubb, L. J., Versey, H. R., Williams, J. B., Robinson, E., and Cooke, D. L. 1963.** Synopsis of Jamaica: An explanation of the 1958 provisional geological maps of Jamaica. *Bulletin of the Geological Survey of Jamaica*, **4**, 1-72.

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