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# The larger Foraminifera of Trinidad (West Indies)

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*Key words:* Larger Foraminifera, Trinidad, Early Cretaceous to Miocene, biostratigraphy, taxonomy

## ABSTRACT

The present investigations are a follow up to Vaughan & Cole's Preliminary Report on the Cretaceous and Tertiary Larger Foraminifera of Trinidad, British West Indies. They are based on considerable additional faunal material and more advanced stratigraphic information for dating the investigated Cretaceous to Miocene sediments that contain larger foraminifera. Special attention is paid to the Late Eocene transgression in the San Fernando area where it took place in two phases, and to a transgressive interval (Marabella marl) between the Late Eocene and the Oligocene. So far this interval could not be recognized by means of planktic foraminifera but stands out clearly for its larger foraminifera. As such it is correlatable over great distances in the Caribbean region. 24 localities that contain larger foraminifera are described. Their locations are shown on Figure 1. Special attention in the study of the Trinidad larger foraminifera was given to the San Fernando area (Fig. 2–4) which is of particular interest for the abundance of larger foraminifera and their detailed stratigraphic record.

120 taxa were investigated with their ranges shown on distribution charts (Fig. 5–7). They are illustrated on Plates 1–30.

The following taxa are described as new: *Operculina bontourensis*, *O. bontourensis* var. *ornata*, *Operculinoides ocalanus* var. *decoratus*, *O. suteri*, *Heterostegina indicata*, *Lepidocyclina (Polylepidina) nitida*, *L. yurnagunensis* var. *inflata*, *L. sanfernandensis* var. *depressata*, *L. asterocolumnata*, *Eoconuloides senni* var. *conicus*, *Helicolepidinoides intermedius*, *Amphistegina farallonensis*.

## ZUSAMMENFASSUNG

Die vorliegenden Untersuchungen sind eine Ergänzung zu Vaughan & Cole's Preliminary Report on the Cretaceous and Tertiary Larger Foraminifera of Trinidad, British West Indies (1941). Sie stützen sich auf bedeutendes zusätzliches Faunenmaterial und fortgeschrittenere stratigraphische Information zur Datierung der untersuchten Kreide- bis Miozänsedimente, die Grossforaminiferen enthalten. Figur 1 zeigt die besprochenen 24 Lokalitäten. Wegen der Häufigkeit von Grossforaminiferen und ihrer stratigraphischen Bedeutung wurde besonders Gewicht auf die obereozäne Transgression im Gebiet von San Fernando gelegt (Fig. 2–4). Diese erfolgte hier in zwei Phasen sowie einem transgressiven Abschnitt (Marabella Mergel) zwischen Obereozän und Oligozän. Dieser konnte bisher mittels planktonischer Foraminiferen nicht festgestellt werden, während er mit Grossforaminiferen klar erkennbar ist. Als solcher kann er in der karibischen Region über grosse Distanzen verfolgt werden.

Die stratigraphische Verbreitung der 120 untersuchten Taxa ist auf den Figuren 5–7 dargestellt. Sie sind auf den Tafeln 1–30 illustriert.

Die folgenden Taxa werden als neu beschrieben: *Operculina bontourensis*, *O. bontourensis* var. *ornata*, *Operculinoides ocalanus* var. *decoratus*, *O. suteri*, *Heterostegina indicata*, *Lepidocyclina (Polylepidina) nitida*, *L. yurnagunensis* var. *inflata*, *L. sanfernandensis* var. *depressata*, *L. asterocolumnata*, *Eoconuloides senni* var. *conicus*, *Helicolepidinoides intermedius*, *Amphistegina farallonensis*.

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## NOTE

Bramine Caudri completed her manuscript on the larger foraminifera of Trinidad consisting of 501 typewritten pages, 30 plates and 7 figures and range charts in 1985. Together with the illustrated specimens the manuscript was deposited for eventual publication at the Museum of Natural History, Basel. Because of its size, in particular the systematic part, it proved difficult to fund its publication. It was therefore decided to condense its size without however losing pertinent data including illustrations and charts. Basically the reductions affected the systematic part. While the newly proposed taxa remain fully documented, synonymy lists, detailed descriptions and discussions of already published forms were curtailed. In numerous instances reductions concerned taxa that were already treated by Caudri in her 1975 Soldado Rock publication. For additional information references to this paper is therefore recommended, and also to the Preliminary Report on the Cretaceous and Tertiary Larger Foraminifera of Trinidad British West Indies by Vaughan & Cole (1941). Together with these two publications Caudri's present contribution substantially complements the documentation on the systematics and the stratigraphic distribution of the larger foraminifera of the main island of Trinidad and nearby Soldado Rock. An original unabbreviated copy of Caudri's manuscript is deposited in the geological library of the Museum of Natural History, Basel, where it is available for consultation. The manuscript as published here was edited by H.M. Bolli in collaboration with J.P. Beckmann.

## 1. Introduction

Vaughan & Cole's comprehensive work of 1941 on Trinidad larger foraminifera was presented as «preliminary» because the material at their disposal consisted of rather haphazardly collected samples without a sufficient stratigraphic background. Today, we have more advanced information on the stratigraphy and moreover are now more alert to the important factor of reworking. Consequently we are in a better position to report on the occurrence of the larger foraminifera and their place in the stratigraphic sequence of Trinidad.

Our material consists of a great number of samples collected over many years by geologists of the former Trinidad Leaseholds Ltd. (T.L.L.), later taken over by Texaco Trinidad, Inc. and now nationalized. The collection was supplemented by the Shell subsidiary United British Oilfields of Trinidad (U.B.O.T.), a number of other oil companies and by the Government Geological Survey.

Our collection did not comprise the specimens described by Vaughan & Cole (1941) which are deposited at the U.S. National Museum, Washington D.C. However, from many of the localities mentioned by these authors duplicate material was left in the laboratory at Pointe-a-Pierre, where the greater part of the technical work for this paper was carried out. Most of the examined material is now stored at the Museum of Natural History in Basel where it is catalogued under the numbers C 31049–31259 and C 35911–36130. Also stored there are detailed fossil lists for each locality.