

SEDIMENTOLOGY AND GEOLOGICAL EVOLUTION OF THE  
LATE CRETACEOUS-PALEOCENE SUCCESSION,  
RIO GRANDE VALLEY, BLUE MOUNTAIN INLIER,  
NORTH EAST, JAMAICA

A Thesis

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## ABSTRACT

### Sedimentology and Geological Evolution of the Late Cretaceous-Paleocene succession, Rio Grande Valley, Blue Mountain Inlier, Northeast Jamaica

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Detailed mapping and logging of the Late Cretaceous-Paleocene succession in the northern Blue Mountains, eastern Jamaica, has produced a revised geological map and tectonic evolution for the area. A review of the correlation of this Volcanic Back Arc and Post Arc Succession with analogous successions elsewhere in Jamaica, Puerto Rico and Hispaniola is given.

The geologic history is related to the eastwards motion of the Caribbean Plate following collision between the Nicaragua Rise and the Yucatán Block in the Late Campanian/early Maastrichtian. The geological evolution of the area is divided into pre-rift, syn-rift and post-rift stages.

The Campanian to Early? Maastrichtian pre-rift sequence consists of andesitic volcanics and associated marine limestones and clastics. In the northern part of the study area, the succession consists of the Bonnie View Andesite (Campanian? porphyritic pyroxene and plagioclase andesite) with pillow structures and the fault bounded Providence Formation (calcareous poorly sorted conglomerates and graded sandstones, siltstones, shales and mudstones with Campanian ammonites). In the central study area the succession was deposited closer to an active island arc volcano and consists of a thick andesitic pile (including the Bellevue Formation) with a thin early Middle Campanian marine incursion (Back Rio Grande Formation) and is overlain by ?Early Maastrichtian rudist-bearing limestones and associated proximal volcanoclastics (Rio Grande Formation).

The Bowden Pen Formation (latest Maastrichtian?) represents the base of the syn-rift sequence by poorly sorted conglomerates and sandstones deposited in alluvial fans and proximal submarine fans as the rift system developed. This is succeeded by a coarsening upwards (rift-filling) sequence of abyssal turbiditic sandstones and shales passing up into thick sandstones (Moore Town Formation).

Post-rift deposition is marked by a change to carbonate deposition in the late Paleocene, and cessation of uplift on the rift's margins and westward migration of rifting to the Wagwater Trough.

Keywords: Jamaica; Cretaceous; Paleocene; Sedimentology; ichnology and geological history.