

# The Sydney Basin in the Triassic—A Review of the Geology, Flora and Fauna, and Ecosystems. The Narrabeen Group

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**ABSTRACT.** The aim of this report is to provide a framework within which future earth science researchers of the Sydney Basin in the Triassic Period can work to rapidly access information relevant to their particular field of study. Information on the geology, flora and fauna and ecosystems has been extracted and summarized from an extensive range of papers published from the late 1800s to present day. In many cases the taxonomic classification of specimens has changed over the years as more data has come to light. The history of these changes has been noted. This information is backed by specimen lists and illustrated by images of selected specimens sourced from the extensive palaeontological collection of the Australian Museum, augmented by additional images from the collection of the Geological Survey of New South Wales. The major Triassic geological structures of the Sydney Basin are the Narrabeen Group, the Hawkesbury Sandstone and the Wianamatta Group. This report provides a consolidated review of data presently available for the Narrabeen Group. Future reports will cover the Hawkesbury Sandstone and the Wianamatta Group in a similar manner.

## Introduction

As early Australian European settlement first occurred in the Sydney Basin there has been considerable work carried out in earth sciences in this area since the 1800s. The opening up of industries such as quarrying, and the construction of railways and roads, required geological investigations and revealed evidence of the life forms that existed during the formation of the Sydney Basin geological structures. This work peaked during the period between the 1930s and the 1980s and contributed to the understanding of the formation of Gondwana, tectonic movement, ancient climate and the Triassic ecosystem of the Sydney Basin.

The major Triassic geological structures of the Sydney Basin are the Narrabeen Group, the Hawkesbury Sandstone and the Wianamatta Group. This review draws together work in the earth sciences carried out on the Narrabeen Group. To do this, a brief discussion of the geology of the Narrabeen

Group is set out while the fossil evidence is described in detail. At the conclusion of this report there is a discussion of the ecosystems that can be deduced from the accumulation of the fossil data described.

The Narrabeen Group consists of formations laid down in the Early Triassic Period, immediately after the Permian mass extinction. It comprises a range of shales, sandstones, claystones, siltstones and conglomerates produced over a lengthy period during which delta deposition occurred from the north, intermittent marine incursions occurred and sedimentary deposits from the Gerringong Volcanics spread from the east. The result was a complex series of formations up to 800 m thick of lithic conglomerate, quartz-lithic sandstone, and red, green, and grey shale (Herbert, 1980a).

The core section of this report, “Flora and Fauna”, is a summary description of every taxon described or identified in the Narrabeen Group. The history of their taxonomic nomenclature and their changes is set out with the reasons for

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