LATE TRIASSIC - EARLY JURASSIC DINOSAUR ICHNOFAUNAS, EASTERN NORTH AMERICA AND SOUTHERN AFRICA

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ABSTRACT

Ichnotaxa are abundant in Late Triassic - Early Jurassic strata of eastern North America and southern Africa. This is particularly pronounced in the Newark Supergroup and Stormberg Group, and has been documented by several authors. The ichnofaunas of the Newark Supergroup and Stormberg Group are distinct from one another, with the former being dominated by shallow-water ichnofaunas and the latter by deeper-water ichnofaunas. The ichnofaunas of the Newark Supergroup and Stormberg Group are further distinguished by their mineralogy, with the former being dominated by quartz and the latter by feldspar.

INTRODUCTION

Recent and ongoing stratigraphic studies have enabled a high-resolution ichnologic framework for the Newark Supergroup, allowing correlation between individual rift basins from North Carolina to Nova Scotia (e.g., Olsen et al., 2000). These tectonic events preserved a very continuous record from the Carnian through the Lower and Middle Triassic. The Triassic-Jurassic boundary has been identified palynologically by a particular set of dinoflagellate cysts (Fowell et al., 1994). Trace fossils are extremely abundant and often well preserved. Both the trace fossils and the microflora demonstrate a major mass extinction occurred at the end of the Triassic (e.g., Olsen et al., 1987).

CENTRAL ATLANTIC MARGIN RIFT SYSTEM, LATE TRIASSIC

The Newark Supergroup footprints have been the subject of scientific study since 1836. The ichnology of these footprints has been revised many times, notably by Lull (1953), but is nonetheless still a state of flux. Contemporaneous strata ("Stormberg") in southern Africa are well known for their skeletal fauna, but footprints also occur. Ellenberger's 1972, 1974 research into footprints from the Stormberg resulted in an almost completely independent ichnologic scheme, leading to an almost complete reshuffle of ichnologic terms from the Triassic and Jurassic. The Stormberg ichnofauna is dominated by shallow-water ichnofaunas, with the Newark Supergroup ichnofauna dominated by deeper-water ichnofaunas.

CONCLUSIONS

The Newark Supergroup and Stormberg Group share many ichnogenera in common (e.g., Anomopus, "graellisaurid", Bactrochopus, Brachychothorax, Ocnosaurus, and Batrachopus). Unfortunately, the most useful taxa are restricted geographically (e.g., Anoplosaurus - North America; Triasopus - Newark). Patterns of ichnofaunal change seen in the Newark Supergroup are mirrored in the Stormberg Group (e.g., Brachychothorax and Ocnosaurus are restricted to Triassic strata, Embretosaurus, Anomopus and Ocnosaurus first appear in the Early Jurassic).

REFERENCES

The list of references includes multiple authors and publications, covering the ichnologic and stratigraphic studies of the Newark Supergroup and Stormberg Group. The references are cited extensively throughout the text, providing a comprehensive overview of the ichnologic and stratigraphic framework of these two important geologic provinces.