

DETERMINING THE BIOTIC EFFECTS OF THE LATE TRIASSIC (NORIAN) MANICOUAGAN IMPACT EVENT

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The Manicouagan impact produced a crater in Quebec that originally had a diameter of 100km, and has been dated to 214 ± 1 Ma (Norian, *i.e.* Late Triassic). This impact crater is the second-largest confirmed crater of the Phanerozoic, second only to the Chicxulub impact event of the end-Cretaceous. Unlike the Chicxulub impact, no significant biotic response has yet been correlated to the Manicouagan impact. Impact events of this magnitude are predicted to cause major environmental perturbations distally by injecting dust and volatile materials into the upper atmosphere, which rains out over a larger area and causes a variety of deleterious problems for the global biota.

Two potential explanations for this disparity of biotic effects from Chicxulub and Manicouagan are explored in this research: (1) paleoecological communities of the Norian were more resilient or resistant to impact-induced environmental perturbations, or (2) the paleoecological record of the Norian is not resolved enough to determine the extent of the biotic response to Manicouagan. Recently, the duration of the Norian has been drastically expanded to include nearly half of the Triassic based on new U-Pb dates. The new boundary dates for the Norian allow for better correlation of biostratigraphic groups with geologic events and regional paleoecology. With this research, we collected bulk samples from shallow marine sedimentary rocks in west-Central Nevada to generate abundance data and for geochemical analyses (rare elements and isotopic chemostratigraphy). This data will contribute to basic knowledge of Triassic paleoecology and serve as a database for determining distal effects of Manicouagan.