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New vertebrate microfossils expand the diversity of the chondrichthyan and actinopterygian fauna of the Maastrichtian–Danian Hornerstown Formation in New Jersey

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The abundance of shark and actinopterygian fossils in the Cretaceous and Paleogene strata of the Atlantic Coastal Plain is well documented; but much remains unknown about the survivorship patterns of these major components of shallow marine faunas in the western Atlantic through the K/Pg mass extinction. To shed light on this subject, we describe an assemblage of new actinopterygian, chondrichthyan, and reptilian microfossils recently recovered from the Maastrichtian Navesink and Maastrichtian–Danian Hornerstown formations at the Jean and Ric Edelman Fossil Park at Rowan University in Mantua Township, New Jersey. The new microfossils clarify extinction patterns across the K/Pg, create temporal and geographic range extensions for several taxa, and expand the known fauna of this regionally-rare and important K/Pg-boundary locality. We report 11 new additions to the vertebrate fauna of Edelman Fossil Park, the first Paleocene record of *Saurocephalus lanciformis*, the first Cretaceous records of *Paralbula marylandica* and *Palaeogaleus vincenti* , and the first recovery of gar and dercetid fish remains from the Paleocene in New Jersey (the last indicating that these fish survived the K/Pg extinction in the western Atlantic). Geographic range extensions include: *Notidanodon brotzeni* into the Western Hemisphere, *Saurocephalus* into northeastern North America and *Phyllodus paulkatoi* to the eastern coast of North America. A dentary of a juvenile alligatorid, *Bottosaurus harlani*, indicate that the mandible exhibited isometric growth through ontogeny. Our findings generally agree with other studies that these groups were significantly impacted by the extinction event, that extinctions were selective, and recovery was slow. This wealth of novel insights garnered from microfossils in this study highlights their critical importance for elaborating past faunas and illuminating the character of ancient ecosystems. We therefore recommend microsieving as a fruitful method for future faunal studies of shallow-marine strata and predict that such efforts will frequently yield similar important insights.

Key words: Actinopterygii, Chondrichthyes, microfossils, K/Pg, Hornerstown Formation, Edelman Fossil Park, New Jersey, USA.

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