Vertebrate Body Fossils from the Upper Pennsylvanian (Lower Wolfcampian) Bursum Formation, East of Socorro, New Mexico

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The Upper Pennsylvanian (lower Wolfcampian) Bursum Formation east of Socorro, New Mexico, has been interpreted as the transition between underlying Upper Pennsylvanian shallow marine carbonate-dominated deposits and overlying Lower Permian continental red beds of the Abo Formation. Composed of interbedded marine carbonates and nonmarine red beds, exposures of the Bursum Formation produce a diverse assemblage of vertebrate body fossils. These include teeth of the dipnoan Sagenodus; teeth of the chondrichthians Deltodus, Hybodus, Acrodus and Petalodus; a partial clavicle of the temnospondyl amphibian Eryops; diadectid jaw fragments; a bolosaur? jaw fragment; a partial embolomere centrum; and various cranial and postcranial elements of the sphenacodontid eupelycosaur Sphenacodon. Vertebrate-body-fossil-producing beds in the Bursum Formation east of Socorro are stratigraphically high in the formation, occurring in the uppermost 5-10 meters. Facies that yield fossil bone vary from fluviol-deposited mudrocks and sandstones to marine-influenced carbonate conglomerates, with the majority of the fossil bones recovered from the latter. Despite the Bursum Formation being older and having a greater abundance of marine sediments than the Abo Formation, both units produce a tetrapod fauna that includes diadectids and eryopids and that is sphenacodontid dominated. However, the relatively numerous and diverse marine shark’s teeth from the Bursum differentiate its vertebrate fauna from that of the Abo Formation. The similarity of tetrapod taxa recovered from the Bursum and Abo formations east of Socorro shows that, despite changes from a mixed marine/nonmarine environment to a fully terrestrial environment, many taxa persisted from the Late Pennsylvanian into the Early Permian.

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