

The First Late Triassic Pistosaur from North America

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Two recently discovered vertebrae collections from the Gabbs Formation in New York Canyon, Nevada, USA are among the first Late Triassic pistosauroid fossils reported from North America. Pistosauroidea were a group of long-necked secondarily aquatic reptiles that belong to the clade sauropterygia. Pistosauroids first evolved in the Triassic Period but later became an integral part of the Mesozoic marine ecosystem as the iconic plesiosaurs during the Jurassic and Cretaceous Periods. Our findings include a single small centrum from near the Triassic/Jurassic boundary and a block of similarly sized associated vertebrae from the early Rhaetian. The vertebrae exhibit a uniquely pistosauroid external morphology. The centrum is antero-posteriorly narrow but dorso-ventrally tall with gently amphicoelous faces. The histology revealed through micro-CT scanning, is also diagnostically pistosauroid. In sagittal cross-section, a denser layer of bone is visible along the faces of the centrum, while a unique V-shaped texture extending from the base of the neural canal is visible in transverse cross-section. The New York Canyon locality has long been renowned as a reference section for the Late Triassic and Triassic/Jurassic boundary but has only recently become a focus for vertebrate research. The Gabbs Formation at this locality is a relatively shallow marine environment and ranges from mid ramp to inner ramp. Vertebrate material has been noted throughout New York Canyon, nearly all of which has been identified as ichthyosaur, but these discoveries have shown the potential for the area as an important site for Late Triassic sauropterygians which have a poor record globally and were previously unknown from North America. Despite the limited nature of this new material, it is significant in providing evidence of the presence of pistosauroids in the Late Triassic of Eastern Panthalassa and helps fill in the exceptionally sparse history of sauropterygians in the Triassic of cordilleran North America.