A new coprolite ichnofauna from the Upper Pennsylvanian (Missourian) Tinajas locality, central New Mexico

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Pennsylvanian strata in NM are interbedded marine and nonmarine sediments deposited in basins of the ancestral Rocky Mountain orogeny that contain several significant fossil localities in the central part of the state. The Kinney Brick Quarry, NMMNH locality 345, in the Manzanita Mountains of Bernalillo County, preserves a diverse body-fossil fauna and vertebrate coprofauna. The Tinajas locality, NMMNH locality 4667, is in the Tinajas Member of the Atrasado Formation (upper Missourian) in Socorro County. A lacustrine black shale at the locality yields a diverse fossil biota of vertebrates, invertebrates, plants and coprolites. The Tinajas locality yields at least six morphotypes of coprolites, at least three of which are distinct enough to be described as new ichnotaxa. The most distinctive morphotype is represented by two examples that are ovoid in cross section, between 15 and 20 mm long and up to 11 mm wide and contain a large number of conchostracan valves. This is an undescribed form of coprolite. The majority of coprolites represent spiral forms, and four morphotypes can be distinguished: (1) large, heteropolar coprolite that has approximately 10 evenlyspaced spirals – there is only one example of this anomalously large and distinct morphotype and it was found at a separate locality from the rest of the collection; (2) small, heteropolar ovoid coprolites with one-to-two, weakly-developed spirals at the anterior pole – two specimens; (3) short, broad, heteropolar coprolite with an acutely tipped anterior pole known from only one specimen; and (4) an elongate cylindrical morphotype with a spiral cross section also only known from one specimen. In addition, there are a variety of ovoid coprolites with widths subequal to lengths and up to 12 mm long. The Tinajas locality has a diverse ichthyofauna of acanthodians (*Acanthodes* spines and bones), a xenacanth (*Orthocanthus* tooth), palaeonisciforms (Elonichthyidae, Haplolepidae and cf. Platysomidae scales and bones) and sarcopterygians (scales, teeth, skull elements of *Greiserolepis* or *Megalichthyes* and cf. *Strepsodus*). Possible attributions of the coprolites are: (1) conchostracan-bearing forms produced by acanthodians; (2) spiral coprolites produced by xenacanths or sarcopterygians; and (3) ovoid forms produced by palaeonisciforms.

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paleontology, fossils, coprolites, ichnofaunas

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