

ABSTRACT

Numerous new taxa of vertebrate microfossils based on isolated teeth and jaw fragments are identified from the Upper Triassic Tiki Formation of the Rewa Gondwana Basin, India, after standardizing the extraction protocols, which involved systematic exploration for microsites, bulk sampling, and wet and dry sieving. The study area is located near the village of Tihki in the Shahdol District of Madhya Pradesh, where the formation is best exposed. Five microsites are assessed for microfossils, of which one locality has yielded most of the vertebrate microfossils collected. The study has recovered a new lonchidiid *Pristisodus tikiensis*, varied xenacanthids comprising two species of the genus *Mooreodontus*, and a new genus characterized by bicuspid tooth morphology. The bony fishes include a new species of the dipnoan genus *Ptychoceratodus*, a possible *Gnathorhiza* species, and the actinopterygian genus *Saurichthys*. Two different species of *Saurichthys* are identified based on crown proportion, robustness, and curvature, extent of the acrodin cap and nature of ornamentation. Multiple small conical teeth containing deep vertical furrows extending from the base towards the apex are assigned to the metoposaurid temnopondyls. Twelve distinct tooth morphotypes belonging to various archosauriforms such as *Galtonia*, *Protecovasaurus*, stagonolepidid, and other forms including theropods of indeterminate affinity are identified. Late Triassic rhynchocephalians are described for the first time from India and comprise new species of the basal genera, *Clevosaurus* and *Gephyrosaurus*, and a new sphenodontian. A new species of the non-mammalian cynodont *Rewaconodon* and a new mammaliomorph are also recovered from the Tiki Formation. The new mammaliomorph genus exhibits a multicuspid tooth morphology, which is more advanced than that of the non-mammalian cynodonts but contains an undivided root with distinct longitudinal groove on labial and lingual sides. The current study has revealed a rich and diverse Late Triassic vertebrate fauna, especially for the aquatic and land habitats, which otherwise would have remained unknown. This is also reflected by the estimated diversity indices, where the land and aquatic fauna show high taxic diversity with all the species equally distributed. The Tiki landscape was dominated by different types of herbivores and carnivores/omnivores belonging to different types of tetrapods, whereas the aquatic realm was rich in various types of freshwater sharks and bony fishes. Upper Triassic palaeobiogeographic distribution shows remarkable similarity of the Indian fauna with that of the Laurasian countries, where the Tiki and southwestern equatorial region of North America form sister area. This may be explained by similarity in palaeoclimatic conditions between the two widely separated areas and possibility of biotic exchange along the Tethyan shorelines of the southern hemisphere.

Keywords: Archosauriforms, Gondwana, Palaeobiogeography, Rhynchocephalia, Tiki Formation, Upper Triassic, Vertebrate.