Digging into the temporal diversification of the fossorial snake family Uropeltidae

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Introduction
Environmental factors play a key role in mediating diversification by triggering shifts in range size and creating the ecological setting for lineages to diversify.

Several studies have shown that paleoclimate have had a pronounced effect on diversification (e.g. Birds – Claremont and Cوضوع, 2015; Insects – Condamine et al., 2016; Spiny-rayed fish – Near et al., 2012; Amphibians – Roelant et al., 2007; Mammals – Stadler, 2011).

Fossil environments are structurally simple and relatively stable compared to above ground environmental fluctuations (Neves, 1979; Konlaw, 1999; Scheffers et al., 2014).

How paleoenvironment has influenced temporal diversification in fossorial taxa is not understood.

Investigated temporal diversification in Uropeltidae, a highly specialized group of fossorial snakes found in the moist forests of peninsula India and Sri Lanka

Materials and methods

**Results**

Divergence Dating

Fig 5: Divergence tree of the Asian anilioids (Uropeltidae) using TESS and RPANDA. Calculated vertical lines major geological events, while thick horizontal lines indicate speciation. The bars represent maximum age estimates.

Table 1: Parameter estimates for the birth-death model with uniform variable rates and 95% confidence intervals.

Table 2: Parameter estimates for the birth-death model with uniform variable rates and 95% confidence intervals.

Conclusions

Asian anilioids originated in the upper cretaceous (ca. 82Ma) and Uropeltidae split from its sister during the Palaeocene – Eocene boundary (ca. 55Ma).

Temporal diversification was punctuated by a decrease in diversification rates from the Miocene associated with expansion of grasslands and contraction of forests.

High relative extinctions during periods of environmental fluctuation. However, low relative extinctions for periods of extinction.

Diversification rates correlated with paleotemperature. Rate of change of extinction rates higher than rates of change of speciation rate.

Literature cited


