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A relict stem salamander: Evidence from the Early Cretaceous of Siberia

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The early evolution of salamanders, which are one of the three living groups of lissamphibians, is not well known. Both stem- and crown-group salamanders first appeared in the Middle Jurassic (Bathonian), but subsequently had different evolutionary histories: stem salamanders were thought to have gone extinct in the Late Jurassic, while crown salamanders persist to the present day. Here, I report the discovery of an indeterminate stem salamander in the Lower Cretaceous (Aptian–Albian) Ilek Formation of Western Siberia. This is new evidence that the most basal salamanders survived beyond the Jurassic–Cretaceous boundary and co-existed with crown-group salamanders during approximately the first 40 million years of the known history of salamanders. The recognition of stem salamanders in the Early Cretaceous of Western Siberia adds to the inventory of taxa that suggest this area was a refugium for various groups of vertebrates with Jurassic affinities.

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