

Palaeoecology, palaeogeographic and stratigraphic distributions of *Saurostomus esocinus* AGASSIZ: a large pelagic pachycormid fish (Pachycormiformes) from the Toarcian of Europe

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Pachycormiformes represent a diverse monophyletic group of neopterygian fishes with a stratigraphic range from the Early Jurassic (Toarcian) to Late Cretaceous. Early radiation of the group in the Toarcian gave rise to a trophically disparate clade which include teuthophagous, piscivorous and gigantic filter feeding forms. *Saurostomus esocinus* is a large pelagic pachycormid, with a standard length reaching up to 1.8 m from the Early Toarcian black shale deposits of Germany, Luxembourg, France, and two horizons in the United Kingdom including the Strawberry Bank Lagerstätte. Despite historic records originating as far back as 1843, the anatomy, palaeoecology and stratigraphic range of *Saurostomus esocinus* has remained poorly documented. Anatomical re-description of the skeleton has revealed functional specializations for pelagic fast-swimming, notably the shape and placement of the fins, a streamlined body, reduced squamation and presence of a 'pre-caudal scaly keel' on the caudal peduncle, interpreted as functionally convergent to the lateral keel scales in extant tunas. Examination of exceptionally preserved stomach contents has revealed a diet entirely composed of loligosepiid and diplobeliid coleoids, leading us to reject previous assumptions of a piscivorous diet in *Saurostomus*. *Saurostomus* ranges from the upper *semicelatum* Subzone to the lower *elegans* Subzone (beds ϵII_1 – ϵII_6) of the Posidonienschiefer Formation. Body size and relative abundance were plotted against stratigraphy, with the highest values of both peaking immediately after the onset of the T-OAE in the lower *exaratum* Subzone (bed ϵII_4). Environmental changes resulting from the T-OAE appear to have resulted in increased body size and abundance of *Saurostomus*, although whether this was driven by biotic changes (e.g., increased prey availability) or abiotic changes (e.g., oceanic warming) is unclear.