

Of teeth and spines: The riddle of *Strophodus*' (Hybodontiformes, Chondrichthyes) validity

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Extinct shark-like chondrichthyans of the order Hybodontiformes, which encompass numerous described species of Palaeozoic to Mesozoic age, are characterized *inter alia* by rather robust bodies with two dorsal fins supported by convex spines. The hybodontiform fossil record is by far dominated by their teeth and spines, which commonly display morphological characters that are either ambiguous or broadly distributed among these chondrichthyans, rendering the interpretation of hybodontiform taxonomy and systematics difficult.

The genus *Asteracanthus* apparently was one of the most common Mesozoic hybodontiforms, as teeth and spines traditionally referred to this taxon have been reported almost worldwide from Middle Triassic to Late Cretaceous strata so far. *Asteracanthus* was erected by Louis Agassiz during the first half of the 19th century based on isolated dorsal fin spines characterized by prominent star-like tubercles from the European Middle and Late Jurassic. Later, Arthur Smith Woodward synonymized *Strophodus*, a genus originally introduced by Agassiz for prominent durophagous crushing teeth of Triassic to Jurassic age, with *Asteracanthus* based on associated teeth and spines he described from the Middle Jurassic of England. This taxonomic scheme has generally been accepted for more than 100 years until now, although articulated material has never been found.

We present a new hybodontiform skeleton with dentition from the Late Jurassic (Tithonian) of Germany exhibiting an unexpected combination of characters: tuberculate dorsal fin spines reminiscent of *Asteracanthus ornatissimus* (type species) and multicuspid grasping teeth similar to those traditionally referred to '*Hybodus obtusus*'. In an attempt to evaluate the significance of this enigmatic specimen for better understanding Mesozoic hybodontiform taxonomy and systematics, we compared its dorsal fin spines to the type material of *Asteracanthus ornatissimus* and those described by Woodward using qualitative and quantitative approaches, providing evidence that Agassiz's *Strophodus* in represents a valid taxon.