

LIVING ON THE EDGE – DIVERSITY PATTERNS OF HYBODONTIFORM SHARK-LIKE CHONDRICHTHYANS PRIOR TO THE BIOTIC TURNOVER AT THE JURASSIC–CRETACEOUS TRANSITION

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The Late Jurassic marks a crucial time interval in the history of life leading to dramatic episodes of global environmental perturbation at the Jurassic–Cretaceous boundary, which significantly changed the faunal composition of many vertebrate communities in both the terrestrial and marine realms. Among marine vertebrates, hybodontiform shark-like chondrichthyans, which form a supposed sister group to the elasmobranch crown (i.e., modern sharks, skates and rays), witnessed a diversity decline in marine ecosystems from the Early Cretaceous onwards before they predominately occurred in continental environments, where they flourished and adapted to a wide range of ecological niches until they finally went extinct at the end of the Cretaceous. However, the controlling factors underlying post-Jurassic hybodontiform diversity dynamics remain unresolved. Hybodontiforms, whose fossil record is dominated by isolated teeth, have been reported from various European Late Jurassic localities so far. Our knowledge of hybodontiforms, however, still is very insufficient so that their diversity, ecology and distribution prior to the Jurassic–Cretaceous transition remain poorly understood. Nevertheless, this is of utmost importance for unravelling the response of these iconic shark-like chondrichthyans to the biotic turnover at the Jurassic–Cretaceous boundary. We provide a synopsis of the European Late Jurassic fossil record of hybodontiforms including a historically collected tooth assemblage from the Kimmeridgian of Poland and well-preserved but largely unstudied skeletal material from the Kimmeridgian of Normandy, the Kimmeridge Clay Formation of England and the Solnhofen Archipelago of Germany, and discuss their significance for better understanding Mesozoic chondrichthyan life prior to the Jurassic–Cretaceous boundary. Late Jurassic hybodontiform communities are dominated by large-bodied taxa of higher trophic position, indicating quite uniform distributional patterns characterized by epipelagic forms that were able to cross deeper marine areas. Although less well understood, small-bodied hybodontiforms appear to have been more diverse taxonomically and ecologically and even more widely distributed than previously thought.