

## **Shark diversity at the K/Pg boundary in Austria – A tale of extinction and hidden survival**

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Deep-sea environments are thought to provide potential refuge environments during catastrophic events for chondrichthyans. Although the K/Pg boundary represents one of the five mass extinction events in the Phanerozoic, little is known about its consequences over elasmobranch evolution and ecological structure of shark faunas. Here, we present an extensive study of deep-marine sediments, spanning the Cretaceous-Palaeogene boundary in Waidach, near Salzburg (Austria). The sediments comprise shelf deposits from the south Helvetic Nappe System and were deposited at a supposed palaeolatitude of 30°N. The detailed sampling of nine horizons, which represents in total about 1,500 kg of sediment, revealed more than 2,000 ichthyoliths representing teeth and dermal denticles of cartilaginous and bony fish. Considering the limited knowledge on the immediate aftermath of the impact or the cascade of changing environmental conditions on chondrichthyans at the K/Pg boundary, this study provides essential and unique high-resolution documentation of changes in shark diversity spanning this crucial time-interval. Thus, these extraordinarily rich assemblages further allow for precise snapshots unlocking the magnitude of demise on deep-water sharks and the time span for faunal recovery on a regional scale with a special emphasis on dogfish sharks (Squaliformes). These predominately deep-dwelling sharks diversified in the Late Cretaceous, making this location a hotspot for studying the evolution and diversification of this group in the Tethyan realm.