

## 14.5 million-year-old shark-attack on manatee documents oldest predator-prey interaction

**Researcher of the NHM Vienna identified a fossilized skeleton of a manatee. The bones bear rare fossil bite marks and teeth of a tiger shark were also found next to the skeleton. What do these fossils tell us about life 14.5 million years ago?**

Teeth and bones are often the only evidence of ancient life that “survive” the transition from the bio- to the lithosphere becoming fossils. The reconstruction of past environments and their inhabitants relies exclusively on well-preserved fossils, which in rare cases even reveal evidence of predator-prey interactions several million years ago. Based on bite marks on a 14.5-million-year-old manatee skeleton from the Styrian Basin in Austria, a new study has unearthed the oldest such interaction between tiger sharks and manatees.

The well-preserved manatee skeleton was found by Gerhard Wanzenböck (Bad Vöslau) and excavated by a team of the Palaeontological-Geological Department of the Joanneum Graz (Styria) in 2012. However, only the subsequent precise preparation of Norbert Winkler (Joanneum Graz) revealed the extraordinary rare find: Bite marks on the fossilized bones!

A scientific team led by Iris Feichtinger and Ursula Göhlich from the Natural History Museum identified the causal agent of the bite marks as the extinct tiger shark *Galeocerdo aduncus* and the victim as a juvenile manatee of the extinct genus *Metaxytherium*. The associated teeth possess the unique tooth morphology of the genus *Galeocerdo*, which is reflected by an unambiguous pattern of bite marks. Similar bite marks were reproduced experimentally to demonstrate the direct evidence that tiger sharks fed upon the juvenile *Metaxytherium*.

“The tiger shark literally gritted his teeth on the manatee’s carcass”, says study leader Iris Feichtinger. “This snapshot into a world 14.5 million years before today offers rare insights into environmental conditions and animal behaviour at that time, which provide vital information for a better understanding and reconstruction of the past.”

**The study was published in the international Journal Historical Biology:**

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