

# Hidden or extinct? Genome analysis of 120-year-old torpedo ray specimen confirms species status

November 14 2023, by Stephanie Mayer-Bömoser

---



Since its discovery at the end of the 19th century, the torpedo ray species *Torpedo suessii* has never been sighted again by scientists—only the three historical specimens in the fish collection at the Natural History Museum Vienna are known. Credit: NHM Wien

There are always little treasures to be found in museum collections—that's what makes them so valuable for research. With today's methods of analysis, new, detailed findings can be elicited from archives that are often centuries old.

Scientists from the Natural History Museum Vienna, Austria, and the LOEWE Center for Translational Biodiversity Genomics (TBG) in Hesse, Germany, have now analyzed the genetic data of a rare and presumably already extinct species of torpedo ray. It was collected, preserved, and described during the second Austro-Hungarian deep-sea expedition in the Red Sea between 1897 and 1898, but has never been observed again since. The new results confirm that the torpedo ray *Torpedo suessii* is a separate species within the genus.

Torpedo rays are known to be able to paralyze their prey using an [electric organ](#) made of converted muscles. Their electric shock has even caused divers to lose consciousness. Otherwise, they are sluggish fish that swim slowly or bury themselves in the sand or mud of the seabed. The eleven known species are found in temperate and tropical seas and vary in shape, color, and size between 15 and 180 centimeters.

The now genomically analyzed *Torpedo suessii*, named after the Austrian geologist and pioneer of the Vienna High Spring Water Pipeline Eduard Suess (1831–1914), is a very rare species. It was first described by the Viennese ichthyologist and curator of the fish collection at the Natural History Museum Vienna Franz Steindachner (1834–1919) after an expedition to the Red Sea—including Yemen—which he led scientifically.

The research trips on the SMS *Pola* organized by the Austrian Academy of Sciences at the end of the 19th century were aimed, among other things, at the zoological exploration of various bodies of water, including the eastern Mediterranean and the Adriatic.

"This specimen is a real rarity for us, as only the three historical specimens of the species *Torpedo suessii* in our collection are known. Since its discovery, the [fish species](#) has never been sighted again by scientists—despite its striking skin pattern, which is reminiscent of the spots of a giraffe with up to eight large dark brown spots with lighter outlines on a light brown background," reports Associate Professor Dr. Anja Palandačić, Collection Manager of the Fish Collection at the NHM Vienna.

"We therefore assume that *Torpedo suessii* is extinct. The results of our genome analysis confirm that it should be regarded as a separate species within the torpedo ray family," continues Palandačić. She is the first author of the study [published](#) in the journal *Zoologica Scripta*.

"In view of the increasing threat to [marine ecosystems](#) and the fish communities living in them due to [climate change](#) and pollution, it is crucial to take stock of marine biodiversity in order to protect it. With our genome analyses and the resulting information on species, we want to gain a better understanding of biodiversity on Earth and thus contribute to its conservation," says Dr. Carola Greve, Head of Laboratory at the LOEWE Center TBG.

"Of course, [rare species](#) or unique samples such as those of the *Torpedo suessii* from [museum collections](#) are particularly valuable for our analyses and subsequent species comparisons. Analyzing samples that were collected more than a hundred years ago and have been kept in the collections ever since requires great care during laboratory work and is a special event—especially when a species can also be genomically identified," says Greve.

**More information:** Anja Palandačić et al, From historical expedition diaries to whole genome sequencing: A case study of the likely extinct Red Sea torpedo ray, *Zoologica Scripta* (2023). [DOI: 10.1111/zsc.12632](https://doi.org/10.1111/zsc.12632)

Provided by Senckenberg Gesellschaft für Naturforschung

Citation: Hidden or extinct? Genome analysis of 120-year-old torpedo ray specimen confirms species status (2023, November 14) retrieved 30 April 2024 from <https://phys.org/news/2023-11-hidden-extinct-genome-analysis-year-old.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.