

Giant fossil predator provides insights into the rise of modern marine ecosystem structures

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An international team of scientists has described a fossil marine predator measuring 8.6 meters in length (about 28 feet) recovered from the Nevada desert in 2010 as representing the first top predator in marine food chains feeding on prey similar to its own size. A paper with their description will appear the week of January 7, 2013 in the early electronic issue of *Proceedings of the National Academy of Sciences*.

Scientists who studied the fossil include lead author Dr. Nadia Fröbisch and Prof. Jörg Fröbisch (both at Museum für Naturkunde Leibniz-Institut für Evolutions- und Biodiversitätsforschung), Prof. P. Martin Sander (Steinmann Institute of Geology, Mineralogy, and Paleontology, Division of Paleontology, University of Bonn), Prof. Lars Schmitz (W. M. Keck Science Department, Claremont McKenna, Pitzer, and Scripps Colleges, Claremont, California) and Dr. Olivier Rieppel (The Field Museum, Chicago, Illinois).

The 244-million-year-old fossil, named *Thalattoarchon saurophagis* (lizard-eating sovereign of the sea) is an early representative of the ichthyosaurs, a group of marine reptiles that lived at the same time as dinosaurs and roamed the oceans for 160 million years. It had a massive skull and jaws armed with large teeth with cutting edges used to seize and slice through other [marine reptiles](#) in the Triassic seas. Because it was a meta-predator, capable of feeding on animals with bodies similar in size to its own, *Thalattoarchon* was comparable to modern orca

whales.

Remarkably, only eight million years prior to the appearance of *Thalattoarchon*, a severe extinction at the end of the [Permian period](#) killed as many as 80 to 96 percent of species in the Earth's oceans. The rise of a predator such as *Thalattoarchon* documents the fast recovery and evolution of a modern ecosystem structure after the extinction.

"Everyday we learn more about the biodiversity of our planet including living and [fossil species](#) and their ecosystems" Dr. Fröbisch said. "The new find characterizes the establishment of a new and more advanced level of ecosystem structure. Findings like *Thalattoarchon* help us to understand the dynamics of our evolving planet and ultimately the impact humans have on today's environment."

"This discovery is a good example of how we study the past in order to illuminate the future," said Dr. Rieppel of The Field Museum.

The ichthyosaur was recovered from what is today a remote mountain range in central Nevada. Most of the animal was preserved, including the skull (except the front of the snout), parts of the fins, and the complete vertebral column up to the tip of the tail. Supported by a grant from the National Geographic Society's Committee for Research and Exploration, the team of paleontologists took three weeks to unearth the ichthyosaur and prepare it for its transport by helicopter and truck out of the field.

Provided by Field Museum

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