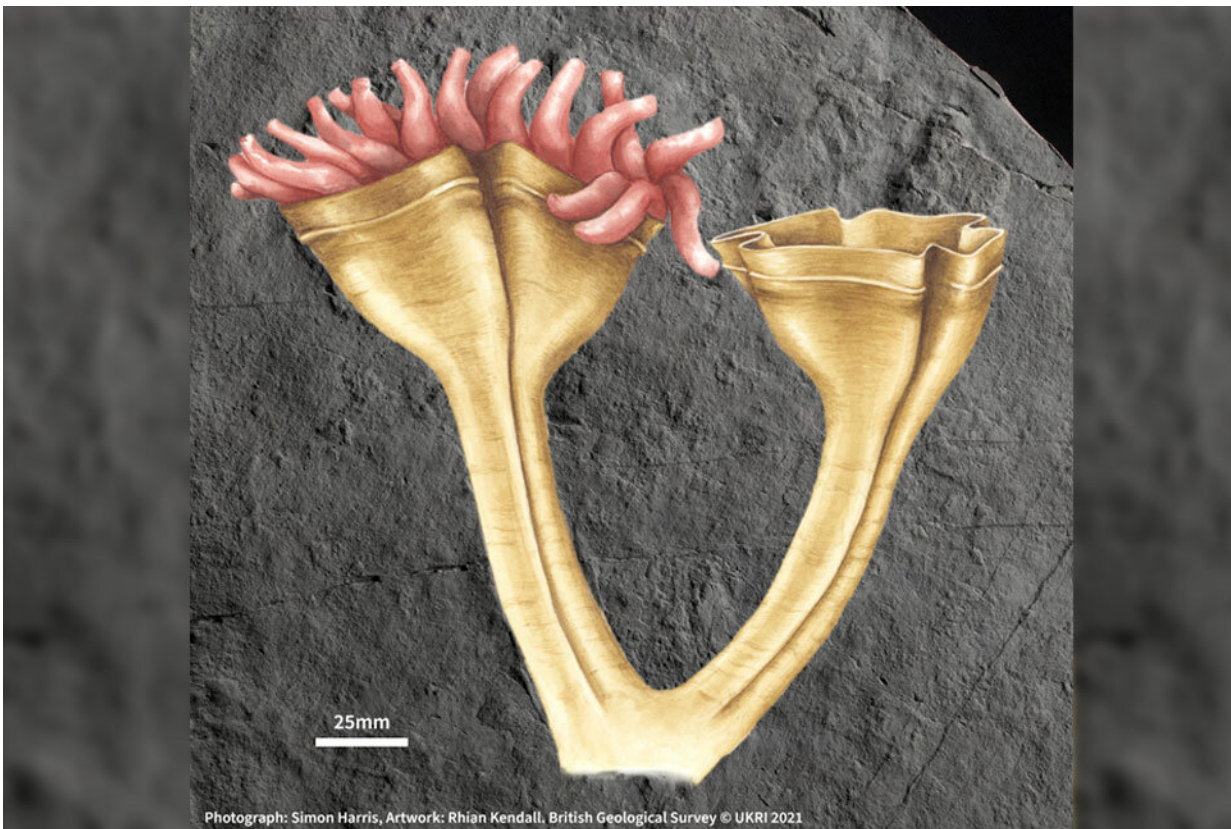


# 560-million-year-old fossil is earliest known animal predator

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Artist's impression of the new fossil. Credit: BGS/UKRI

Geologists have found the fossil of the earliest known animal predator. The 560-million-year-old specimen is the first of its kind, but it is related to the group that includes corals, jellyfish and anemones living on

the planet today.

The paleontologists who discovered it have named it *Auroralumina attenboroughii* in honor of Sir David Attenborough. The first part of its name is Latin for "dawn lantern," in recognition of its great age and resemblance to a burning torch.

It was found in Charnwood Forest, near Leicester in England, which is famous for its fossils. In 1957, a fern-like impression in stone turned out to be one of the oldest fossilized animals, *Charnia masoni*.

Sir David Attenborough "truly delighted" with his new namesake, saying, "When I was at school in Leicester I was an ardent fossil hunter. The rocks in which *Auroralumina* has now been discovered were then considered to be so ancient that they dated from long before life began on the planet. So I never looked for fossils there. A few years later a boy from my school found one and proved the experts wrong. He was rewarded by his name being given to his discovery. Now I have—almost—caught up with him and I am truly delighted."

Sir David is referring to Roger Mason, after whom *Charnia masoni* was named.

## **When did modern groups appear?**

The discovery of *Auroralumina*, reported in *Nature Ecology and Evolution*, throws into question when modern groups of animals appeared on Earth. Dr. Phil Wilby, paleontology lead at BGS, is one of the scientists who made the find. He says, "It's generally held that modern animal groups like jellyfish appeared 540 million years ago, in the Cambrian Explosion, but this predator predates that by 20 million years.

It's the earliest creature we know of to have a skeleton. So far we've only found one, but it's massively exciting to know there must be others out there, holding the key to when complex life began on Earth."

## When and where was it found?

Paleontologists still flock to the forest to examine its Ediacaran Period fossils, aged between 635 and 538.8 million years. In 2007, Phil Wilby and others from BGS spent over a week cleaning a 100 m-square rock surface with toothbrushes and pressure jets. They took a rubber mold of the whole surface and captured the impression of over 1000 fossils—and one stood out from the crowd.

Dr. Frankie Dunn from the Oxford University Museum of Natural History carried out the detailed study. She says, "This is very different to the other fossils in Charnwood Forest and around the world. Most other fossils from this time have extinct body plans and it's not clear how they are related to living animals. This one clearly has a skeleton, with densely packed tentacles that would have waved around in the water capturing passing food, much like corals and [sea anemones](#) do today. It's nothing like anything else we've found in the fossil record at the time."

Dunn calls the specimen a "lonely little [fossil](#)" and thinks it originated from shallower water than the rest of the fossils found in Charnwood. "The [ancient rocks](#) in Charnwood closely resemble ones deposited in the [deep ocean](#) on the flanks of volcanic islands, much like at the base of Montserrat in the Caribbean today. All of the fossils on the cleaned rock surface were anchored to the sea floor and were knocked over in the same direction by a deluge of volcanic ash sweeping down the submerged foot of the volcano, except one: *A. attenboroughii*. It lies at an odd angle and has lost its base, so appears to have been swept down the slope in the deluge."

*A. attenboroughii* was dated at BGS's headquarters in Keyworth, Nottingham, using zircons in the surrounding rock. Zircon is a tiny radioactive mineral that acts as a geological clock: it assesses how much uranium and lead are present. From that, geologists can determine precisely how old the rock is.

The "Cambrian Explosion" was remarkable. It's known as the time when the anatomy of living animal groups was fixed for the next half a billion years.

"Our discovery shows that the body plan of the cnidarians [corals; jellyfish; sea anemones, etc.] was fixed at least 20 million years before this, so it's hugely exciting and raises many more questions," says Dr. Dunn.

**More information:** F. S. Dunn et al, A crown-group cnidarian from the Ediacaran of Charnwood Forest, UK, *Nature Ecology & Evolution* (2022). [DOI: 10.1038/s41559-022-01807-x](https://doi.org/10.1038/s41559-022-01807-x)

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