

CAPTIVATING CHINESE CAMBRIAN FOSSILS

Guts, gills, and ganglia perfectly preserved!

Philip Bell

FROM TIME to time, digging down into rocks during major civil engineering projects leads directly to new scientific discoveries. Beginning in 2020, with road construction in Hunan Province (central China), workers soon uncovered a treasure trove of exquisite fossils in the shale rocks. Under the auspices of the Chinese Academy of Sciences (CAS), an expert scientific team from several universities has worked hard to catalogue the findings. So far, they have found over 50,000 fossils, representing 153 different animal species, 59% of them new to science.¹ The assemblage has been named the *Huayuan biota* after the county in Hunan where they are found.

A fossil 'liquorice allsorts'

In biological classification (taxonomy), a phylum is the third highest rank, below domain and kingdom. Examples of animal phyla are: Arthropoda (insects, spiders, crustaceans), Mollusca (octopuses, squids, snails), Cnidaria (jellyfish and relatives), and Chordata (includes all vertebrates). The extraordinary variety within the Huayuan haul of fossils represents 16 groups at phylum level. Arthropod species are dominant, but scientists have described 33 species of Porifera (sponges). There are species of Cnidaria, Ctenophora (comb jellies), and



Mollusca (e.g., brachiopods). And they found six new genera of tunicates (sea squirts and salps), plus various hemichordates (acorn worms and relatives). The most abundant, wholly soft-bodied creatures are Cambroernids, now-extinct animals that had coiled bodies and tentacles (e.g., bottom left of fig. 2).

The Chinese paleontologists (fossil experts) say that this diverse Huayuan fossil assemblage is a whopping 512 million years (Ma) old. They are said to have existed a while after a claimed biological boom of organisms called the Sinsk event, 513 Ma ago. This date was within the Cambrian. In evolutionary terms, that's the geological period spanning 541–485 Ma ago.

However, finding such a variety of animals entombed together points to a

unique geological event. It had to result in the mass burial of these many different creatures. Moreover, the wonderful fine details of the fossils themselves favour a different explanation from the deep-time, evolutionary story.

Breathtaking delicate details

The team of paleontologists led by Professor Maoyan Zhu² could not contain their excitement when these findings were released to the world in early 2026:

What makes the Huayuan Biota so important is the exceptional way in which the soft tissues have been preserved. These fossils capture delicate animals—early relatives of everything from worms and jellyfish to chordates—in fine detail, showing features like guts, nerves, and gills. This provides an unprecedented snapshot of a complete ancient ecosystem.³

Their delight is hardly surprising. In their scientific paper, they found evidence of guts, gills, ganglia (nerve clusters), and more! In some organisms, the entire alimentary canal, including

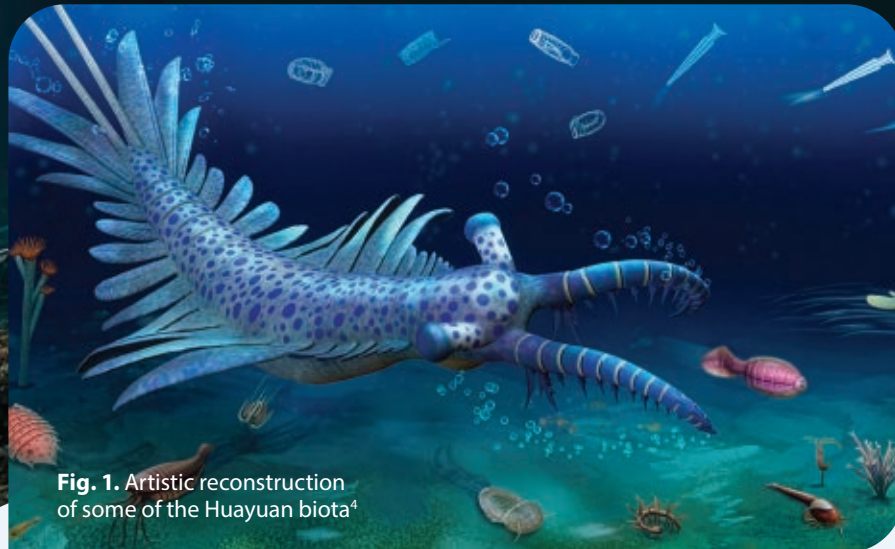


Fig. 1. Artistic reconstruction of some of the Huayuan biota⁴

Image by YANG Dinghua & Scientific Visualization Team at ScienceNet.cn



Image by YANG Dinghua

Fig. 2. Soft-bodied fossils from the Huayuan biota

the mid-gut, was discernible, as well as digestive glands. Delicate gill lamellae and associated vascular appendages for gas exchange and respiration could be seen. In some arthropods, they found brains and ganglia. In other fossils, they could see parts of the cardiovascular system, or feeding appendages (like mandibles and labrums). Various limbs for locomotion, as well as muscle bundles, were preserved, and the fine details of compound eyes.¹

There have been similar discoveries in recent years, including in China. In 2019, scientists reported splendid fossils of jellyfish, sponges, algae, anemones, worms, and arthropods in the rocky banks of the Danshui river (Hubei Province). Allegedly 518 Ma old, guts, muscles, gills, and eyes were clearly discernible. Martin Smith, Associate Professor of Palaeontology at Durham University (UK), waxed lyrical:

[The] preservational quality is mind-blowing . . . If you sent a time traveller back to the Cambrian period armed with a camera and an x-ray machine, the images they'd come back with would be nothing compared to these fossils, which preserve detail finer than a human hair.⁵

What sorts of conditions and processes are required to explain these

paleontological facts from China's Hunan and Hubei provinces? The answer is straightforward.

High-speed interment

For organisms to be preserved so perfectly, the dead animal must firstly be protected from scavengers. Secondly, oxygen should be excluded as far as possible, to limit decomposition and decay through the action of bacteria and fungi. The CAS scientists believe the creatures were overwhelmed by a submarine mudflow, which makes very good sense. This is how the lead author of the *Nature* paper was quoted in *New Scientist* magazine:

Zeng says the reason for the exquisite preservation found at the site is that *the animals were buried very quickly* under a slurry of fine mud. The soft parts of animals are preserved in extraordinary detail, including walking legs, antennae and tentacles, respiratory organs such as gills, the pharynx and guts in many animals and even eyes and neural tissues (emphasis added).⁶

Exactly! Very rapid burial is the only explanation that fits the facts. Despite the claimed 512 Ma date, the exquisite preservation says otherwise. Rapid

burial and entombment by a major flood is a perfect explanation for the fine details seen in these captivating fossils. And that is wonderfully consistent with the conditions we would expect from the global Flood described in Genesis 6–8. ■

References and notes

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