Treasure trove of marine fossils from 'Cambrian explosion' found in China

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Digging up a Qingjiang Fossil on a bank of the Danshui River, near its junction with the Qingjiang River, Hubei Province, China. Credit: Dong King Fu

A team of researchers from Northwest University and Guizhou University, both in China and one from the U.S., has found and partially excavated a new treasure trove of marine fossils from the "Cambrian explosion" in southern China. In their paper published in the journal *Science*, the group describes what has been found thus far. Allison Daley, with the University of Lausanne, has published a Perspective piece on the work by the team in China in the same journal issue.

The Cambrian period was a time during which most of the early ancestors of all animals came to exist—scientists believe it occurred from approximately 560 million years ago to approximately 540 million years ago. The emergence of such a wide variety of phyla in such a short time has led to use of the term "Cambrian explosion" to describe it. Research on the period began in earnest back in 1909, when scientists discovered a site known as the Burgess Shale was discovered—they found fossils there that were so well preserved that such things as eyes and internal body were visible. Since that time, other sites have been found, as well—all in shale beds. In this new effort, the researchers report on the discovery of a new site close to the Danshui River, which the researchers refer to as the Qingjiang biota—and initial reports suggest it could provide the best collection of Cambrian fossils to date.

The researchers have been hard at work unearthing fossils for four years already, and have found dozens of species, half of which have never been seen before. But the best news is that the fossils are better preserved than at other sites—the researchers have clear examples of soft-bodied creatures, for example, and detailed soft body parts.

The researchers note that a lot of things had to go right for the fossils to be so well preserved. It would have been very deep underwater approximately 550 million years ago—at such depths, there was very little oxygen to sustain organisms that would have decomposed the bodies of animals that fell to the bottom of the sea. Those bodies were

covered by millions of years of sediment before conditions changed and the area was pushed up to become land. And over the course of all those years, the area would have been very stable—no volcanoes or earthquakes disrupting the ground.

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More information: Dongjing Fu et al. The Qingjiang biota—A Burgess Shale–type fossil Lagerstätte from the early Cambrian of South China, *Science* (2019). DOI: 10.1126/science.aau8800

Allison C. Daley. A treasure trove of Cambrian fossils, *Science* (2019). DOI: 10.1126/science.aaw8644