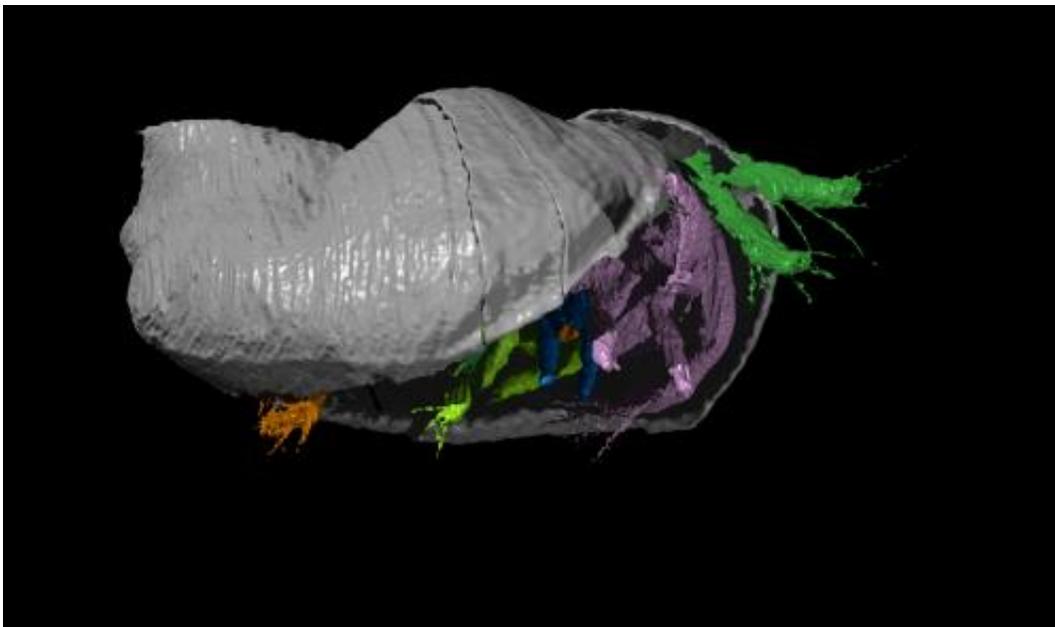


New to science: Find from 425 million years ago with body, limbs, eyes, gills and alimentary system preserved

December 11 2012



This is an oblique frontal view of *Pauline avibella*. Credit: David J. Siveter, Derek E. G. Briggs, Derek J. Siveter, Mark D. Sutton and Sarah C. Jomun

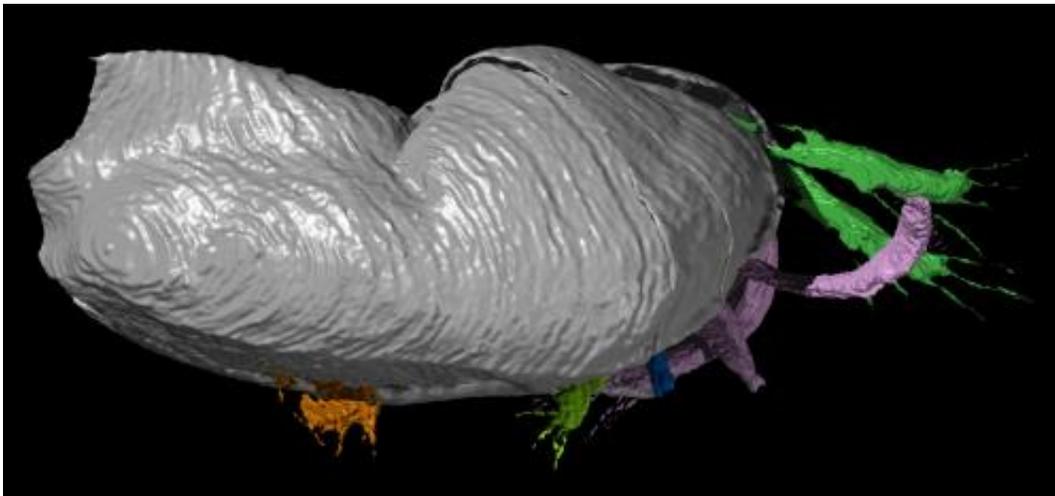
An international team of researchers have made an extremely rare discovery of a species of animal - related to crabs, lobsters and shrimps – that is new to science.

Scientists from the universities of Leicester, Oxford, Imperial and Yale

have announced their discovery of a new and scientifically important [fossil species](#) of [ostracod](#) in the journal, [Proceedings of The Royal Society B](#).

The discovered species, which is up to 10 millimetres long, is special because it is exceptionally well preserved, complete with not only the shell but also the soft parts – its body, limbs, eyes, gills and alimentary system. Such discoveries are extremely rare in the [fossil](#) record.

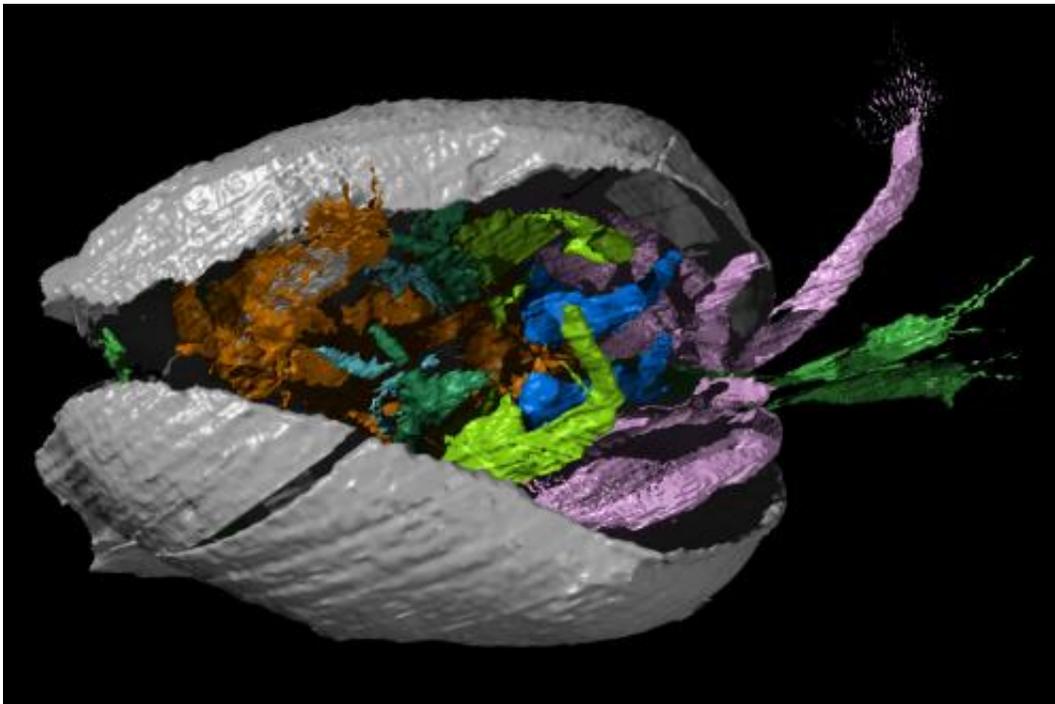
The discovery of the tiny shelled arthropod was made in 425 million year old rocks in Herefordshire, Welsh Borderland. The rocks at the site date to the Silurian period of [geological time](#), when southern Britain was a sea area on a small continent situated in warm, southerly subtropical latitudes. The ostracods and associated [marine animals](#) living there were covered by a fall of [volcanic ash](#) that preserved them frozen in time.



This is the right lateral view of the fossil *Pauline avibella* . Credit: David J. Siveter, Derek E. G. Briggs, Derek J. Siveter, Mark D. Sutton and Sarah C. Joomun.

Professor David Siveter, of the University of Leicester Department of Geology, said: "The two ostracod specimens discovered represent a genus and species new to science, named *Pauline avibella*. The genus is named in honour of a special person and avibella means 'beautiful bird', so-named because of the fancied resemblance of a prominent feature of the shell to the wing of a bird."

"Ostracods are the most abundant fossil arthropods, occurring ubiquitously as bivalved shells in rocks of the last 490 million years, and are common in most water environments today. The find is important because it is one of only a handful preserving the fossilised soft-tissues of ostracods. Its assignment to a particular group of ostracods based on knowledge of its biology is at odds with its shell form, thus urging caution in interpreting the classification of fossil ostracods based on shell characters alone."



This shows the ventral view of the fossil *Pauline avibella*. Credit: David J. Siveter, Derek E. G. Briggs, Derek J. Siveter, Mark D. Sutton and Sarah C.

Joomun

"The preservation of soft-parts of animals is a very rare occurrence in the fossil record and allows unparalleled insight into the ancient biology, community structure and evolution of animals - key facts that that would otherwise be lost to science. The fossils known from the Herefordshire site show soft-part preservation and are of global importance."

The fossils were reconstructed 'virtually', by using a technique that involves grinding each specimen down, layer by layer, and photographing it at each stage. Ten millimetres is relatively tiny, but at an incremental level of 20 μm (micrometres) that yields 500 slices, which can then be pieced together in a computer to provide a full, three-dimensional image of each fossil, outside and in.

Professor Siveter added: "Fossil discoveries in general help elucidate our own place in the tree of life. This discovery adds another piece of knowledge in the jigsaw of understanding the diversity and evolution of animals."

"It is exciting to discover that a common group of fossils that we thought we knew a lot about may well have been hood-winking us as to their true identity, which we now realise because we have their beautifully fossilised soft-parts. A case of a 'wolf in sheep's clothing.'"

More information: Siveter DJ, Briggs DEG, Siveter DJ, Sutton MD, Joomun SC. 2012 A Silurian myodocope with preserved soft-parts: cautioning the interpretation of the shell-based ostracod record. *Proc R Soc B* 20122664. [dx.doi.org/10.1098/rspb.2012.2664](https://doi.org/10.1098/rspb.2012.2664)

Provided by University of Leicester

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