

How ancient bee burrows led to a better understanding of Neanderthals

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Wild flowers at Shanidar Cave, photographed May 5, 2023. Credit: C.O. Hunt

The Shanidar cave sits in the Zagros mountains of the Kurdish autonomous region of Iraq, in a border region between Iran and southeast Türkiye. Within the cave is one of the longest-debated collections of Neanderthal remains.

Researchers at Liverpool John Moores University, the University of Cambridge, and the University of London collaborated to reinvestigate one of the site's most debated findings, the "Flower Burial." Pollen found in a Neanderthal burial has been previously hypothesized to be evidence of a floral grave offering.

In a paper, "Shanidar et ses fleurs? Reflections on the palynology of the Neanderthal 'Flower Burial' hypothesis," [published](#) in the *Journal of Archaeological Science*, the team lays out the case for the pollen found in the grave sites being of non-human placement, likely by bees.

Through his excavations in Shanidar Cave in the 1950s and 1960s, Ralph Solecki put forward the "Flower Burial" hypothesis. According to this hypothesis, the Neanderthal known as Shanidar 4 was placed on a bed of flowers, possibly for medical reasons, as a mark of affection, or as a sign of respect.

This hypothesis had a transformative impact on the understanding of Neanderthals, challenging their previous characterizations as entirely brutish and suggesting they were capable of empathy and care.

The discovery of pollen in the burial pits suggested the possibility of funerary offerings to Solecki. He notes that some of the local workers liked to wear flowers on their belts and that the pollen could have arrived

by way of the excavation team, though this was eventually ruled out.

Based on previous illustrations by French archaeologist Arlette Leroi-Gourhan of the pollen around the Shanidar 4 Neanderthal showing flattening and corrosion, consistent with it being ancient, the researchers discount the possibility that Solecki and his colleagues introduced the pollen. Instead, they conclude that the pollen is likely to be approximately contemporary with the Neanderthal with which it is associated.

Mystery solved

The analysis concludes that the presence of taxonomically mixed clumps is inconsistent with the clumps of pollen from the deposition of whole flowers. Instead, the researchers suggest it is far more likely that the taxonomically mixed pollen was collected and deposited by bees.

The burrows of solitary bees can be found in less-trampled areas of the cave floor today. Individual bees can collect multiple floral pollen species as they forage, and their burrows are common to the cave, making them an ideal suspect for the pollen clumps.

Most burrows are described as sub-vertical to vertical and shallow (

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