

Stonehenge's Altar Stone origins reveal advanced ancient Britain

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The Altar Stone at Stonehenge. Credit: English Heritage

New research led by Curtin University has revealed Stonehenge's

monumental six-ton Altar Stone, long believed to originate from Wales, actually hails from Scotland. The study titled "A Scottish Provenance for the Altar Stone of Stonehenge" was [published](#) in the journal *Nature*.

Furthermore, the findings point to the existence of unexpectedly advanced transport methods and societal organization at the time of the stone's arrival at its current location in southern England about 5,000 years ago.

Curtin researchers studied the age and chemistry of [mineral](#) grains within fragments of the Altar Stone, which is a 50cm thick sandstone block measuring 5 x 1 meters, that sits at the center of Stonehenge's iconic stone circle in Wiltshire.

Lead author Ph.D. student Anthony Clarke from the Timescales of Mineral Systems Group within Curtin's School of Earth and Planetary Sciences said analysis of the age and chemical composition of minerals within fragments of the Altar Stone matched it with rocks from northeast Scotland, while also clearly differentiating them from Welsh bedrock.

"Our analysis found specific mineral grains in the Altar Stone are mostly between 1,000 to 2,000 million years old, while other minerals are around 450 million years old," Mr. Clarke said.

"This provides a distinct chemical fingerprint suggesting the stone came from rocks in the Orcadian Basin, Scotland, at least 750 kilometers away from Stonehenge.

"Given its Scottish origins, the findings raise fascinating questions, considering the technological constraints of the Neolithic era, as to how such a massive stone was transported over vast distances around 2600 BC.

"This discovery also holds personal significance for me. I grew up in the Mynydd Preseli, Wales, where some of Stonehenge's stones came from. I first visited Stonehenge when I was one year old and now at 25, I returned from Australia to help make this scientific discovery—you could say I've come full circle at the stone circle."

Study co-author Professor Chris Kirkland, also from the Timescales of Mineral Systems Group at Curtin, said the findings had significant implications for understanding ancient communities, their connections, and their transportation methods.

"Our discovery of the Altar Stone's origins highlights a significant level of societal coordination during the Neolithic period and helps paint a fascinating picture of prehistoric Britain," Professor Kirkland said.

"Transporting such massive cargo overland from Scotland to southern England would have been extremely challenging, indicating a likely marine shipping route along the coast of Britain.

"This implies long-distance trade networks and a higher level of societal organization than is widely understood to have existed during the Neolithic period in Britain."

The research was performed in collaboration with Aberystwyth University, The University of Adelaide and University College London.

Co-author Professor Richard Bevins from Aberystwyth University said the findings overturned what had been thought for the past century.

"We have succeeded in working out, if you like, the age and chemical fingerprints of perhaps one of the most famous of stones in the world-renowned ancient monument," Professor Bevins said.

"While we can now say that this iconic rock is Scottish and not Welsh, the hunt will still very much be on to pin down where exactly in the north-east of Scotland the Altar Stone came from."

Co-author Dr. Robert Ixer of the UCL Institute of Archaeology said the findings were genuinely shocking, but if plate tectonics and atomic physics were correct, then the Altar Stone is Scottish.

"The work prompts two important questions: why and exactly how was the Altar Stone transported from the very north of Scotland, a distance of more than 700 kilometers, to Stonehenge?"

More information: Lucien Wilkinson, A Scottish provenance for the Altar Stone of Stonehenge, *Nature* (2024). [DOI: 10.1038/s41586-024-07652-1](https://doi.org/10.1038/s41586-024-07652-1).
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Provided by Curtin University

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