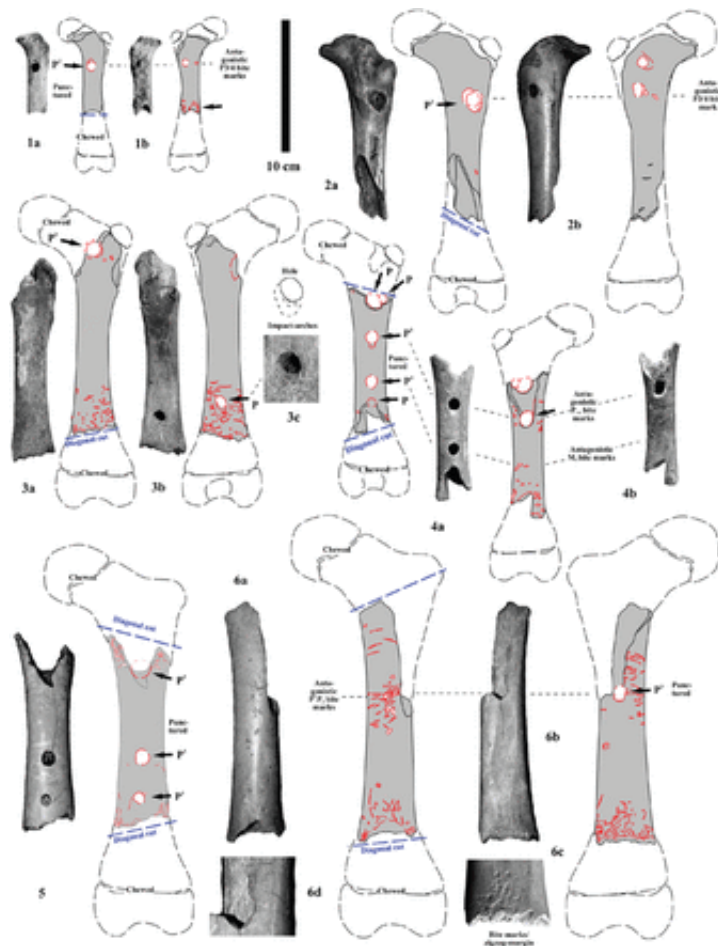


# Are Neanderthal bone flutes the work of Ice Age hyenas?

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'Bone flutes' found across Europe in caves are more likely to be the scavenged remains of cave bears finds this study. Credit: Cajus G. Diedrich

A study in Royal Society Open Science says that so called 'Neanderthal

bone flutes' are no more than the damaged bones of cave bear cubs left by scavengers during the Ice Age.

The paper suggests that the 'flutes', which are often attributed as being the oldest musical instruments in the world, were misidentified when they were first discovered in the 1920s. The author of the paper, Cajus G. Diedrich, says the bones are the damaged remains of bear cubs left by the teeth of Ice Age spotted hyenas.

The cave bear bones, discovered in cave systems in Eastern Europe, appear to have aligned holes drilled into their lengths which makes them resemble broken flutes. In past work researchers have identified the holes as matching with a musical diatonic scale sequence, among the most widespread of musical scales known, and cited this as evidence that the bones are early [musical instruments](#). Some musicians have even been able to create music from replicas of the bones.

Other researchers doubted the human origin of the markings on the bones and here Dr. Diedrich argues that his analysis of the markings and holes suggests that they were made by scavengers trying to get to the nutritious bone marrow inside the bone shafts.

The researcher analysed bone material from Weisse Kuhle Cave where there was a large cave bear den. Puncture marks are only present on the bones of cubs. Compared to adult bones, cub bones would have been more elastic and therefore more likely to puncture rather than break under pressure. In addition, the results showed that the position of the holes on the 19 cub femurs tested were predominantly on the thinner side of the bone and that where there are holes on both sides of the bones the holes match up with the damage upper and lower jaw bone crushing teeth in the skull of a hyena could do. The paper also says that the oval shaped holes in the bone shafts would match with the oval marks a crushing premolar tooth of a hyena would leave.

As well as seeing how well the marks fitted with the hypothesis that a hyena scavenger could be to blame for the mysterious holes, the study addressed whether the marks matched well with human drilled holes. The researcher found that there are no signs of drill marks or stone tool marks on the margins of the holes which would have resulted from human tool use. A reconstruction of the drilling process didn't replicate the marks seen on the [bone](#) flutes either.

To this evidence the researcher adds that the dating of the 'flutes' as 'Neanderthal' even places them in the wrong period of history. They match instead with the Late Palaeolithic period which came after Neanderthal had died out.

**More information:** "Neanderthal bone flutes': simply products of Ice Age spotted hyena scavenging activities on cave bear cubs in European cave bear dens" *Royal Society Open Science* , [DOI: 10.1098/rsos.140022](https://doi.org/10.1098/rsos.140022)

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