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Fires set by Ice Age hunters destroyed forests throughout Europe

Date: December 1, 2016
Source: Leiden University
Summary: Large-scale forest fires started by prehistoric hunter-gatherers are probably the reason why Europe is not more densely forested, researchers report.
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Forest fire (stock image).
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Large-scale forest fires started by prehistoric hunter-gatherers are probably the reason why Europe is not more densely forested. The finding -- by an international team, including climate researcher Professor Jed Kaplan of the University of Lausanne and archaeologist Professor Jan Kolen of Leiden University -- was published Nov. 30 in the journal *PLOS ONE*.

Deliberate or negligent

This research has generated new insights on the role of hunters in the formation of the landscape. It may be that during the coldest phase of the last Ice Age, some 20,000 years ago, hunter-gatherers deliberately lit forest fires in an attempt to create grasslands and park-like forests. They probably did this to attract wild animals and to make it easier to gather vegetable food and raw materials; it also facilitated movement. Another possibility is that the large-scale forests and steppe fires may have been the result of the hunters' negligent use of fire in these semi-open landscapes.

Large-scale impact of humans on landscape

The researchers combined analyses of Ice Age accumulations of silt and computer simulations with new interpretations of archaeological data. They show that hunters throughout Europe, from Spain to Russia, were capable of altering the landscape. This first large-scale impact of humans on landscape and vegetation would have taken place more than 20,000 years before the industrial revolution. The Ice Age is often presented as an era of extreme cold and snow that was ruled by mammoths, bison and giant bears. But the researchers show that humans were also capable of having a significant impact on the landscape.

Layers of ash

Searching for evidence of this human impact explains why there are conflicting reconstructions for this period. Reconstructions of the vegetation based on pollen and plant remains from lakes and marshland suggest that Europe had an open steppe vegetation. But computer simulations based on eight possible climate scenarios show that under natural conditions the landscape in large areas of Europe would have been far more densely forested. The researchers conclude that humans must have been responsible for the difference. Further evidence has been found in the traces of the use of fire in hunting settlements from this period and in the layers of ash in the soil.

Previous Leiden research already suggested human intervention

The team from Lausanne was made up of climate researchers and ecologists Jed Kaplan, Mirjam Pfeiffer and Basil Davis. Archaeologists Jan Kolen and Alexander Verpoorte from Leiden University also worked on the research. An earlier publication by Leiden's Human Origins research group, that was published in *Current Anthropology*, had already suggested that hunter-gatherers from the Stone Age may well have modified the natural environment considerably through their use of fire. The new publication in *PLOS ONE* confirms this hypothesis and may be one of the earliest examples of large-scale human impact on the landscape throughout the whole of Europe.

The research was financed by the European Research Council (ERC) and the Swiss National Science Foundation (SNSF) in the case of the team from Lausanne, and the European HERCULES research programme in the case of the Leiden researchers.

Story Source:

Materials provided by **Leiden University**. Note: Content may be edited for style and length.

Journal Reference:

- Jed O. Kaplan, Mirjam Pfeiffer, Jan C. A. Kolen, Basil A. S. Davis. **Large Scale Anthropogenic Reduction of Forest Cover in Last Glacial Maximum Europe.** *PLOS ONE*, 2016; 11 (11): e0166726 DOI: 10.1371/journal.pone.0166726

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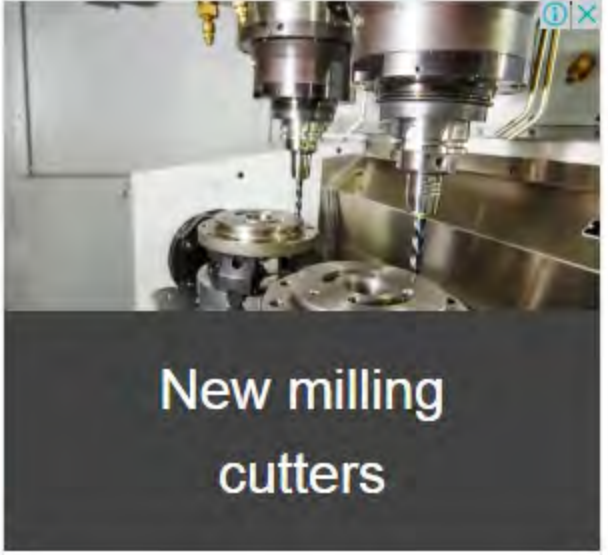
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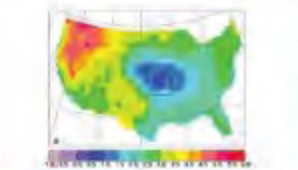
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