Study suggests some population shifts during early and late Holocene were due to climate changes

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Bronze bead necklace Stage: Holocene Bronze age 1800-1500 BC . Credit: Didier Descouens/Wikipedia/CC BY-SA 4.0

(Phys.org)—A team of researchers from University College London and the University of Plymouth, both in the U.K., has found evidence that suggests at least some of the population shifts that have occurred over the past several thousand years in Britain and Ireland were likely due to climate change rather than human activities. In their paper published in *Proceedings of the National Academy of Sciences*, the group describes analyzing data from thousands of prior research efforts to create charts of population swings during the early and late Holocene, and then comparing what they found to climate research data from the same time periods.

Prior research has shown that there have been several population shifts in Britain and Ireland over the past several thousand years—populations tended to rise to a peak and then drop, presumably because of overtaxing resources, disease or warfare. But in this new effort, the researchers suggest that climatic changes may have been responsible for at least some of the population changes. To come to this conclusion, the team looked at data from prior research efforts that were focused on studying artifacts.

Radiocarbon dating was typically used on samples of bone, charred or waterlogged wood, and seeds found at excavations sites. The group used the data to create charts showing population changes over time. But they also broke the region into four categories: Southeast England, Northwest England and Wales, Scotland and Ireland. By noting population changes between the regions, the group detected common patterns as well as patterns that were unique for each.

They suggest that when all of the regions experienced similar populations shifts, it was most likely due to an external factor, which, they further suggest, was likely climate change. They point out, as one

example, that prior climate research indicates that there was a period of higher densities of salt in the Greenland Ice Sheet, which happened to coincide with one of the drops in population across Britain and Ireland. The researchers suggest that it was likely an increase in North Atlantic storms that led to the saltier ice, which in turn implied rainier weather across the region. That would have made growing crops more difficult, leading to less available food—and a subsequent drop in population.

More information: Andrew Bevan et al. Holocene fluctuations in human population demonstrate repeated links to food production and climate, *Proceedings of the National Academy of Sciences* (2017). DOI: 10.1073/pnas.1709190114

Abstract
We consider the long-term relationship between human demography, food production, and Holocene climate via an archaeological radiocarbon date series of unprecedented sampling density and detail. There is striking consistency in the inferred human population dynamics across different regions of Britain and Ireland during the middle and later Holocene. Major cross-regional population downturns in population coincide with episodes of more abrupt change in North Atlantic climate and witness societal responses in food procurement as visible in directly dated plants and animals, often with moves toward hardier cereals, increased pastoralism, and/or gathered resources. For the Neolithic, this evidence questions existing models of wholly endogenous demographic boom–bust. For the wider Holocene, it demonstrates that climate-related disruptions have been quasi-periodic drivers of societal and subsistence change.