What can we learn from the impacts of rapid climate change on past societies?

January 19 2023

Credit: Pixabay/CC0 Public Domain

A comprehensive new study led by Professor Gwen Robbins Schug at UNC Greensboro traces the impact of rapid climate change events on humans over the past 5,000 years and offers lessons for today's

policymakers. The meta-analysis of approximately a decade's worth of bioarchaeology data was published today as a *Proceedings of the National Academy of Sciences* perspective article by a team of 25 authors representing 21 universities.

"In recent years, bioarchaeologists—who examine human remains to understand past populations—have begun focusing on the impact of climate change events on past societies," Dr. Robbins Schug says. "We have found evidence that—despite popular misconceptions—environmental migration, competition, violence, and societal collapse are not inevitable in the face of rapid climate change."

Schug and her collaborators assessed human skeleton data and findings from 37 bioarchaeology studies of populations living from 5,000 years ago to 400 years ago. The societies represented spanned the globe, hailing from present-day America, Argentina, Chile, China, Ecuador, England, India, Japan, Niger, Oman, Pakistan, Peru, Thailand, and Vietnam.

They found that climate change has been most destructive for hierarchical, urban societies when they lacked flexibility to respond to environmental challenges. "Increased reliance on agriculture can be a problem," Robbins Schug says. "Small, interconnected rural communities with high utilization of local resources and diverse dietary sources from herding, small-scale farming, hunting, fishing, and gathering were more resilient."

The researchers also learned that, when pressured by climate change events, urban societies with high levels of economic inequality were at highest risk for infectious disease and violence. "Diseases and violence spread," Schug says. "If you want to protect a society, large segments of a population cannot be left vulnerable. It's a zero-sum game."

As the world warms, the scientists hope their current and future findings can help policymakers set priorities that reduce pandemic diseases, poverty, hunger, and violence.

"Successful strategies," Schug says, "will support rural livelihoods, encourage diverse practices for obtaining food and other resources, foster equitable distribution, retain our capacity to mobilize when circumstances require, and encourage mutually beneficial relationships among groups and species."

More information: Gwen Robbins Schug et al, Climate change, human health, and resilience in the Holocene, *Proceedings of the National Academy of Sciences* (2023). DOI: 10.1073/pnas.2209472120

Provided by University of North Carolina at Greensboro