

Researchers investigating whether historic epidemic holds the key to climate change plague risk

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Scientists are taking a trip back to the Byzantine Empire to examine whether future climate change could increase the chances of a pandemic such as the bubonic plague.

A team of researchers will examine mud samples from Lake Nar in central Turkey, which was the [epicentre](#) of the Plague of Justinian that wiped out up to a quarter of the population of the Eastern Mediterranean region between AD541 and AD750.

The project, led by Plymouth University and funded by the Natural Environment Research Council (NERC), will look for evidence of [climate change](#) taking place at the time of the [outbreak](#), and which has been subsequently preserved in the sediment.

Project leader Professor Neil Roberts, of the School of Geography, Earth and Environmental Sciences, said the core samples taken from the lake could offer a window into the past and generate a huge amount of insight into how the plague affected the [civilisation](#).

He said: “The muds at the bottom of Nar are annually-banded, similar to tree rings, and this enables us to reconstruct year-by-year variations in climate.

“[Sediment](#) core samples from Nar show that the onset of the plague

coincided with a very large switch from a drier to a wetter climate. The wetter climate would have increased the numbers of rats and other flea-carrying rodents, which in turn carry the plague bacterium.”

The team at Plymouth will work with colleagues at Nottingham and Birmingham Universities, as well as the NERC Isotope Geosciences Laboratory at the British Geological Survey, over the next 20 months. Together they’ll conduct chemical analysis on the [core samples](#) to reconstruct how fast the climate changed and whether there was any lag between this and the spread of the disease.

The cores will also tell them, indirectly, about the consequences of the plague for rural agriculture, via the different types of pollen that are preserved. For example, did the reduction in human population lead to a fall in the proportion of pollen from crop plants, such as cereals and fruit trees? Finally, they will compare their results with information from historical texts which record the date and place of plague outbreaks, to see how well they match up.

Professor Roberts said that the story of the Justinian Plague would help to model potential scenarios in the future. He said: “Many diseases like the bubonic plague, but also flu and malaria, are limited by environmental factors, including climate. If these natural controls alter in the future, then pandemics can become more likely.

“A warmer and wetter climate could lead to disease-carrying creatures which thrive in warm, moist environments spreading to new regions.”

Provided by University of Plymouth

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