

Rodent size linked to human population and climate change

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You probably hadn't noticed -- but the head shape and overall size of rodents has been changing over the past century. A University of Illinois at Chicago ecologist has tied these changes to human population density and climate change.

The finding is reported by Oliver Pergams, UIC research assistant professor of biological sciences, in the July 31 issue of [PLoS One](#).

Pergams said that such size-and-shape changes in mammals, occurring around the world in less than a century, are quite substantial.

He had done earlier studies on a century's worth of anatomic changes between two geographically isolated rodents -- Channel Island deer mice from coastal California and white-footed mice northwest of Chicago -- and noted fast change among both.

"I suspected they weren't unique examples," he said. "I wondered whether these changes were occurring elsewhere, whether they were global in nature, and what some of the causes may be."

Pergams examined specimen rodents from museums around the world, including the big collections held at Chicago's Field Museum and the Smithsonian in Washington. Altogether, he recorded more than 17,000 body and skull measurements from 1,300 specimens from 22 locations in Africa, the Americas and Asia. The animals were collected from 1892 to 2001, and Pergams compared those from before 1950 to those

collected after.

He also compared specimens gathered from sparsely populated islands to those from the mainland, where human populations were denser.

Pergams found both increases and decreases in the 15 anatomic traits he measured, with changes as great as 50 percent over 80 years. Ten of the 15 traits were associated with changes in [human population](#) density, current temperature, or trends in temperature and precipitation.

"Rapid change, contrary to previous opinion, really seems to be happening quite frequently in a number of locations around the world," Pergams said. "There seem to be significant correlations with 'people-caused' parameters, such as population density and anthropologically-caused [climate change](#)."

While Pergams' study was by no means comprehensive, it was the first attempt of its kind to examine data on mammals from many global locations to find links between morphological change and variables such as population density and changing climate.

"Species can adapt quickly to rapid environmental changes -- quicker than many people have thought, especially for mammals," said Pergams. "Those mammals that can adapt quickly have a much higher chance to survive big environmental changes caused by humans. Understanding which species and populations have the greatest ability to change has a crucial impact on being able to conserve biodiversity."

Source: University of Illinois at Chicago ([news](#) : [web](#))

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