

Turtles alter nesting dates due to temperature change

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Turtles nesting along the Mississippi River and other areas are altering their nesting dates in response to rising temperatures, says a researcher from Iowa State University.

Fred Janzen, a professor in ecology, evolution and organismal biology, has studied turtle nesting habits and also accumulated research going back decades in order to track the habits of the turtles to find out when they make nests and lay eggs.

"The results have been astonishing," says Janzen. "In some cases such as regional populations of red-eared sliders, they are now nesting three weeks earlier than they did in the early 1990s. That is the fastest response to climate change of any species that I know of."

The turtles that changed their nesting habits were not only young turtles that are nesting for the first time, said Janzen, but were also older turtles that were changing their habits. This trait, called plasticity, helps animals alter their behavior in the short term until inherited behavior takes over.

"What we found was that in the late 1980s, painted turtles started nesting in early June, now it is on the order of 10 days or more earlier," said Janzen. "These behaviors are showing how the plasticity of the species is helping them survive, but we are wondering what the limit is to their ability to adapt."

Janzen's research took a broad look at the entire species and not just

turtle populations that are on the fringe of where the animals can live. Janzen feels this aspect of the collaborative study gives the results added credibility.

Most studies look at populations on the outer limits of a species' environment, and Janzen and his colleagues set out to study the entire species of the turtle populations.

"I think it's human nature to study populations on the margins and not from the center," he said. "And I'm not saying those studies are wrong. In fact I am very confident they are right. But I wanted us to study the entire species. So we said 'What if we looked at the entire range of a species and not just one population at the extremes.'"

Janzen and his collaborators studied mud turtles, sliders, snapping turtles and painted turtles that live in South Carolina, Nebraska, and along the Mississippi River between Iowa and Illinois.

An aspect of the study that surprised Janzen was the gender of the offspring.

The gender of turtle offspring, as with many reptiles, is typically determined by the temperature of the ground where they lay their eggs.

Janzen predicted that with warming temperature, the phenomenon of temperature-dependent sex determination would cause a disproportionate number of females since warmer conditions produce that gender.

Just the opposite seems to be happening. Male babies are outnumbering the females.

"Warmth produces females, so we thought we'd have more females,"

said Janzen. "But what we think is happening is, since the air feels warmer, the turtles are nesting earlier. But the ground is still cold, so the cold ground is causing us to get more males."

Janzen thinks that the overabundance of males will stress the species. Combined with the adult females being forced to change nesting habits, the stresses could mean the species is under real pressure to adapt swiftly, a pace not popularly considered to characterize turtles, he said.

Source: Iowa State University

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