

Researcher works on gender, temperature link in reptiles

January 23 2008

An Iowa State University researcher who spent four years in Australia studying reptiles is having his findings published in the journal *Nature* this week.

Dan Warner, a researcher in the ecology, evolution and organismal biology department, has been working with the jacky dragon, a lizard found in Australia, to discover if egg incubation temperature and gender affects the viability of the lizards.

In mammals, gender is determined by the chromosomes an embryo inherits from the father -- Y dictates the offspring will be male, X means female. The mother always contributes an X chromosome.

In some species of reptiles, the gender of the offspring is determined by the temperature the embryos experience during development.

Warner's research explored whether the temperatures at which the lizards were born was the best climate for each of the two genders.

"This was a hypothesis that was proposed in 1977," said Warner. "But no one had conducted a complete experimental test of the hypothesis until now."

Warner tracked males and females born at different temperatures and measured how well they reproduced. Because some temperatures only produce one gender, Warner had to reverse the sex of some of the

embryos using hormones.

In the jacky dragon, males were born at around 77 to 86 degrees, while females were born at temperatures both above and below that range.

Warner found that jacky dragons, both male and female, thrive when they are born at the right temperatures for their gender.

“Males reproduce more when they are exposed to the right egg incubation temperatures for them, 25 to 30 degrees Celsius (77-86 F),” said Warner. “The same is true for females when born at their ideal temperatures.”

The study’s findings may have grave consequences for the species if temperatures increase in the parts of Australia where the jacky dragons call home.

“We may see a sex ratio shift towards one sex,” said Warner. “And that may threaten population viability.”

Warner also notes that species may have a way of adapting.

“The lizards may compensate by moving to cooler places, digging nests deeper in the sand or other ways to stay cooler,” said Warner.

Source: Iowa State University

Citation: Researcher works on gender, temperature link in reptiles (2008, January 23) retrieved 25 April 2024 from <https://phys.org/news/2008-01-gender-temperature-link-reptiles.html>

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