UC SANTA BARBARA

THE Current

February 21, 2018
Julie Cohen

Lizard Love

Anolis lizards have a thing or two to teach humans about love — or in scientific speak, sexual selection — at least when it comes to territoriality.

Decades of behavioral research on the lizard's mating systems have resulted in near-unanimous agreement among scientists that the males maintain restricted, static territories to defend exclusive mating access to females within these territories and are consequently polygamous.

However, recent genetic data shows that female Anolis sagrei — a brown lizard native to Cuba and the Bahamas but well established in Florida — also have multiple partners.

UC Santa Barbara behavioral ecologist Ambika Kamath and colleague Jonathan Losos of Washington University in Saint Louis eschew the framework of territoriality. Rather, they quantify movement patterns of the lizards and estimate encounters between potential mates. Their finding: The species' movement behavior can be more dynamic than previously thought, leading females to frequently encounter multiple males and suggesting the possibility that female mate choice may be an important selective force.

Kamath's and Losos' research is published in the Proceedings of the Royal Society B.

"Understanding animals' movement patterns and the encounters they bring about is a key step in characterizing a population's mating system and essential for determining how behavior both facilitates and is subject to sexual selection,"

explained Kamath, a postdoctoral scholar in UCSB's Department of Ecology, Evolution, and Marine Biology. "The movement patterns of these lizards revealed not only that a majority of males (60 percent) encountered multiple females but also that most females (78 percent) encountered multiple males over the first three months of the breeding season. This suggests potentially complex mating patterns with ample scope for female choice."

The researchers characterized sexual selection by examining the predictors of male reproductive success at two levels. First, they asked whether the number of potential mates encountered by males was associated with their phenotype (the spatial extent of their movement and body size). Second, Kamath and Losos tested three hypotheses to understand the phenotypic differences between potential and actual mates: if females bear offspring sired by males they encounter more frequently; if males encountered later in the breeding season are more likely to sire offspring than those met earlier; and if females disproportionately bear offspring sired by larger males.

"Consistent with previous genetic descriptions of anole mating systems, most females — 64 to 81 percent — bore offspring sired by more than one male," Kamath said. "In addition, we found that sexual selection favored males that were bigger and moved over larger areas, though the effect of body size cannot be disentangled from last-male precedence."

According to Kamath, these findings raise questions about research assumptions. "If these lizards are not territorial like previously thought, how do we understand the decisions they make?" she asked. "Are there frameworks we can use to think about individuals' decisions that would enable us to predict patterns of selection, both natural and sexual? Our research leaves the field wide open in terms of finding better ways that don't rely on constraining frameworks such as territoriality for describing animals' social lives."

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we

draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.