Snakes' Habitat Gap Might Have Natural and Human Causes

An article, published in the current issue of Herpetologica, studies the gap in the distribution of the Alameda Striped Racers. Researchers found that both the natural environment and the urbanization in this area influenced this distribution pattern.

Lawrence, Kansas (PRWEB) August 10, 2016 -- Herpetologica – When there is a gap in the distribution of a species, there are usually two causes: either the species moved on or human activities forced the population out. Researchers have found that both can occur, sometimes at the same time. Determining which scenario is a bigger factor might be a key to restoring habitats and preserving species.

The current issue of the journal Herpetologica features the results of a study on Alameda Striped Racers (Coluber lateralis euryxanthus), a threatened subspecies in the East San Francisco Bay area. The authors of this study wanted to learn about the historical movement patterns of the species so they could identify the most important areas for habitat restoration.

Genetic diversity in a species can be affected by a number of influences, especially when the habitat is near urban areas. Although it can be difficult to determine cause and effect, this information can be crucial as land managers work to protect and restore threatened and endangered populations. This information is particularly important in areas where managers are attempting to strike a balance between conservation and development. The researchers used microsatellite and DNA data to learn more about the genetic continuity of Alameda Striped Racers. They were particularly interested in genetic differences among various land management units, and took tissue samples from snakes in a dozen locations and studied the collected genetic data.

The researchers found that Alameda Striped Racers population had a ring-shaped distribution pattern. The main habitat gap was found to be located in the center of the Livermore Valley. The researchers were not surprised by the species isolation, given the locations of freeways and urban sprawl in the area as well as the snakes’ sensitivity to urban habitats. However, they learned that the habitat itself was not ideal for Alameda Striped Racers long before 20th-century development began. Even though the landscape has changed because of development, climate patterns have persisted, making the gap area unsuitable for the species.

The factors underlying the discovered patterns point to the same conclusion: the low-lying areas in the East Bay drive the development of the snakes’ population structure. “There is essentially no suitable habitat for C. lateralis within the Amador–Livermore Valley at the present time—virtually all of it is urbanized,” the authors noted. “Reduced genetic diversity . . . might reflect evolutionary and demographic artifacts of life at the range edge, rather than a conservation concern.”

Full text of the article “Historical Habitat Barriers Prevent Ring-Like Genetic Continuity Throughout the Distribution of Threatened Alameda Striped Racers (Coluber lateralis euryxanthus)” Herpetologica, Vol. 72, No. 3, 2016, is now available.

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