

Moving animals not a panacea for habitat loss, study finds

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Gopher tortoises are federally listed as a threatened species in the western part of their range and prefer open-canopied longleaf pine forests, which now cover only two percent of their historic range. Credit: Tracey Tuberville/University of Georgia

(PhysOrg.com) -- New University of Georgia research suggests moving threatened animals to protected habitats may not always be an effective conservation technique if the breeding patterns of the species are influenced by a social hierarchy.

Research, published in the early online edition of the journal [Biological](#)

[Conservation](#), found an initial group of gopher tortoises released on St. Catherine's Island, Ga. were three times more likely to produce offspring than a later-introduced group, although the initial group had a much smaller proportion of reproduction-aged males.

"There definitely appeared to be an advantage to the order that the tortoises were released," said lead author Tracey Tuberville, an assistant research scientist at UGA's Savannah River Ecology Laboratory. "The earlier the males were released, the more likely they were to be successful fathering offspring for the next generation."

Moving multiple groups of gopher tortoises at different times may disrupt their social structure, explained Tuberville, resulting in differential success in reproduction among potential breeders. Introducing a specific number of males to reach a target population size may not achieve the desired results if all of the males are not reproducing.

"We found that females released later were not excluded from reproduction," she said. "If you need to augment a population, you might consider targeting females as opposed to males or introducing more females than males, because females produce the eggs, and they also seem to be incorporated into the breeding and social structure faster than males."

Gopher tortoises are federally listed as a threatened species in the western part of their range, though not in Georgia and Florida, where much of the destruction of their [habitat](#) has occurred.

Gopher tortoises are highly social and live in sandy burrows. They prefer open-canopied longleaf pine forests, which now cover only two percent of their historic range. Gopher tortoise habitats are ideal sites for human development, and Tuberville said that in the past, land developers were

required to do little to protect their habitats at development sites.

Gopher tortoises from various locations were first introduced to St. Catherine's in the 1980s. A second group from a single population was later introduced in 1994. Biologists and veterinarians working on the island recorded health and survivorship data on the tortoises, each of which were permanently and uniquely marked to be easily identifiable. The researchers sought to identify which [tortoises](#) from each group were successfully reproducing after release. After a site-wide capture of all the potential breeders, researchers collected DNA samples. Once the eggs hatched, they also tested the DNA of the young to determine the parents.

"If we find that the pattern of differential mating success is consistent, or if it is observed in other places, it will inform us whether or not we want to establish populations through multiple releases and also whether or not we want to augment an existing population," said Tuberville.

Study co-author Travis Glenn, associate professor in the department of environmental health science in the UGA College of Public Health, said that new DNA technologies increasingly are being used in conservation and environmental health efforts. "We're trying to use these techniques in new and interesting ways," said Glenn. "That requires partnerships between a greater variety of people."

"The technology is getting better and better, so the answers will be better and more informative," Glenn added. "The ability to address conservation concerns will be faster, cheaper and more accurate."

Provided by University of Georgia

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