Pathogen-carrying neotropical ticks ride migratory birds into US

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Arcadian Flycatcher. Credit: Guida

Tick species not normally present in the United States are arriving here on migratory birds. Some of these ticks carry disease-causing Ricksettia species, and some of those species are exotic to the US. The research is

published on October 2nd in *Applied and Environmental Microbiology*, a journal of the American Society for Microbiology.

In the study, the investigators examined thousands of migratory birds that had just arrived in the US, after having flown from Central or South America. Three percent of the birds carried exotic ticks. Based on the total number of migratory birds arriving in the US each spring—in the billions—the investigators estimated that more than 19 million exotic ticks are introduced into the US each spring, said Emily B. Cohen, PhD, Postdoctoral Fellow, Migratory Bird Center, Smithsonian Conservation Biology Institute, National Zoological Park, Washington, DC.

But as yet there is no evidence that neotropical ticks have established themselves in the US. "It takes the right combination of biotic and abiotic features for the neotropical ticks to survive, reproduce and spread," said Sarah A. Hamer, PhD, DVM, Assistant Professor in the Department of Veterinary Integrative Biosciences, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University. The ticks typically take their first and second blood meals on birds, but once they become adults, they seek out large mammals such as sloths or anteaters, she explained, noting the absence of these exotic mammals from the US.

"Nonetheless, an adult of one of the neotropical tick species we found on migrants, Amblymma longirostre, was recently found crawling outside of a home in Oklahoma, in the fall, which could represent a bird-imported nymph that arrived in the spring and successfully molted," said Cohen.

Moreover, there is precedent for implicating migratory birds in range expansions of ticks and disease. For example, the range of African bont ticks and the livestock-infecting bacterial species they carry, *Ehrlichia ruminatium*, expanded to the Caribbean, probably after the ticks hitched a ride on migratory cattle egrets. *E. ruminantium*, causes heartwater

disease, which reduces livestock productivity. Also, migratory birds are responsible for expanding populations of Lyme disease ticks beyond their northern distribution limit, in Canada.

The more general danger, said Cohen, is that the changing climate, or changes in other environmental conditions, could change the ranges of potential hosts of ticks, in ways that could enable the ticks to establish themselves. She recommended that studies should be undertaken to assess the likelihood of such an occurrence. Hamer has begun to examine diverse wild mammals for neotropical ticks, including rodents, raccoons, coyotes, and feral hogs, which are abundant across Texas.

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