

Birds Play an Important Role in the Spread of Lyme Disease

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(PhysOrg.com) -- The range of Lyme disease is spreading in North America and it appears that birds play a significant role by transporting the Lyme disease bacterium over long distances, a new study by the Yale School of Public Health has found. The study appears online in the journal *Frontiers in Ecology and the Environment*.

Researchers analyzed published records and concluded that at least 70 species of North American birds are susceptible to infection by black-legged ticks (*Ixodes scapularis*), the principal vector of the [Lyme disease](#) bacterium (*Borrelia burgdorferi*). The evidence also suggests that these bird species are dispersing infected ticks into areas that had previously been free of the disease, such as Canada.

Lyme disease bacterium is usually associated with [small mammals](#) such as mice and squirrels. Immature ticks (in the larval and nymphal stages) become infected with the bacterium when they feed on these mammals. During subsequent blood meals, an infected tick transmits the infection to other hosts, including humans. White-tailed deer—while playing an important role in maintaining and spreading tick populations—are a biological dead end for the bacterium because its blood is immune to infection.

Birds, however, are not immune and numerous species get infected and are capable of transmitting the pathogen onto ticks, the researchers found. What remains to be seen is whether the *B. burgdorferi* strains that can infect birds can also cause disease in humans. If so, the role of birds

in the epidemiology of Lyme disease could be profound.

“Birds are often overlooked in Lyme disease studies,” said Robert Brinkerhoff, a post-doctoral student in Maria A. Diuk-Wasser’s lab at the School of Public Health and first author of the paper, “but they may be playing a key role in its rapid expansion.” The researchers found that *I. scapularis* most consistently parasitizes bird species such as thrushes, brown thrashers, wrens and wood warblers. The authors estimate that as few as three individual [birds](#) are needed to infect one black-legged tick with the bacterium.

Lyme disease can cause severe health problems, including arthritis, nervous system abnormalities and irregular heart rhythm. It is the most common vector-borne disease in the United States, with the number of reported human infections doubling between 1992 and 2006.

Provided by Yale University

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