

Ticks and endangered voles linked by migrating birds

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Migrating birds probably did it. That's what University of California, Davis, epidemiology professor Janet Foley says after DNA detective work confirmed that a disease-carrying tick only found in the southeastern United States has colonized a federally endangered rodent population in an extremely isolated patch of Mojave Desert wetlands.

DNA sequencing also shows that the relic population of Amargosa voles near Tecopa, Calif., just east of Death Valley National Park, and the [tick](#) that scientists know as *Ixodes minor* also share *Borrelia burgdorferi*, the tick-borne bacterium responsible for Lyme disease.

"It was a very unexpected finding," Foley, whose findings are being published this week in the journal *Ecology and Evolution*, said in an interview. "And, as a scientist enthralled by ticks and voles, terribly exciting, too."

Some would call that an understatement.

The few hundred Amargosa voles left on Earth cling to existence by their tiny claws in a few acres of bulrush surrounded by harsh desert terrain, which is uninhabitable for the tick that thrives in the dense, humid forests of North Carolina, South Carolina and Georgia.

"A possible explanation is that the ticks traveled with birds migrating from southeastern North America to Mexico or Central America and then up the West Coast flyway," Foley said.

The discovery was more bad news for efforts to save the Amargosa vole and its tiny, highly specialized habitat from extinction.

Threats to the vole include habitat loss and degradation due to water diversions and groundwater withdrawals; inbreeding; predation by foxes, coyotes, raptors and wading birds; and infectious diseases. In 2011, the population was devastated by ear lesions and deformities attributed to orange mites.

"The tick and voles exist in a network of migration patterns of perhaps many species," she said. "So, a fear is that if not Lyme disease, it could be the next pathogen or parasite that wipes them out."

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