

## Don't let your guard down on questing ticks in the south

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Scientists have been trying to understand whether there are behavior differences between southern and northern nymphs in a study in PLoS One.[1]

Investigators from the Department of Fisheries and Wildlife, Michigan State University set up a model to compare *Ixodes scapularis* nymphs from northern regions (Wisconsin and Rhode Island) with those in southern regions (Tennessee and Florida). They monitored nymphal ticks within a 0.2 meter area ? just over 2 square feet explains Arsnoe from the Department of Fisheries and Wildlife, Michigan State University, East Lansing, Michigan, USA. [1]

Wooden dowels which mimicked the stems of understory vegetation were set up and the behavior of nymphal ticks was monitored for 10 weeks from May to July 2011. The study was repeated for 19 weeks from mid-May until mid-September 2012.

[Arsnoe and colleagues](#) found there were more questing ticks in the North than the South as identified by dragging a cloth within the 0.2 meter area.

Ticks seek hosts by a behaviour called "questing." Questing ticks crawl up the stems of grass or perch on the edges of leaves on the ground with the front legs extended waiting to latch onto a host passing by.

The authors suggested that there were behavioral differences between the southern and northern ticks. "The hypothesis goes that there are behavior differences between northern and southern nymphs that alter how readily they are collected, and how likely they are to transmit the etiological agent of Lyme disease to humans." according to Arsnoe. [1] He added. "Our findings suggest that southern origin *I. scapularis* nymphs rarely emerge from the leaf litter, and consequently are unlikely to contact passing humans."

So if ticks were not questing in the Southern, as the Arsnoe study suggests, how do we explain the cases of Lyme disease in that region?

The answer could be that Southern ticks are not as likely to quest during the hottest and driest months. The investigators were flagging for questing ticks during mid-May to mid-September. Arsnoe granted in his discussion that ticks are less likely to quest when the weather is hot and dry. "In general, ticks quest more often and higher when ambient air is less desiccating (i.e., high humidity and/or lower temperature)." This is presumably due to *I. scapularis*' intolerance to dry conditions.

In fact, *I. scapularis* tick bites were only reported in a Mississippi study from from October to April when the weather was not so hot and dry. [2]

In other words, the behavioral differences between southern and northern ticks described by Arsnøe could merely reflect the reluctance of a tick to quest when the weather is hot and dry. It would be reasonable to look out for ticks in the South from October to April, when the weather is not so hot and dry.

References:

1. Arsnøe IM, Hickling GJ, Ginsberg HS, McElreath R, Tsao JI. Different populations of blacklegged tick nymphs exhibit differences in questing behavior that have implications for human Lyme disease risk. *PLoS One*. 2015;10(5):e0127450.
2. Goddard J, Varela-Stokes A, Finley R. Lyme disease-like illnesses in the south. *J Miss State Med Assoc*. 2012;53(3):68-69, 71-62.

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