

Effectiveness of Untreated Lymeez 3D Mesh Tick Gaiters in Slowing the Ascent of Deer Ticks

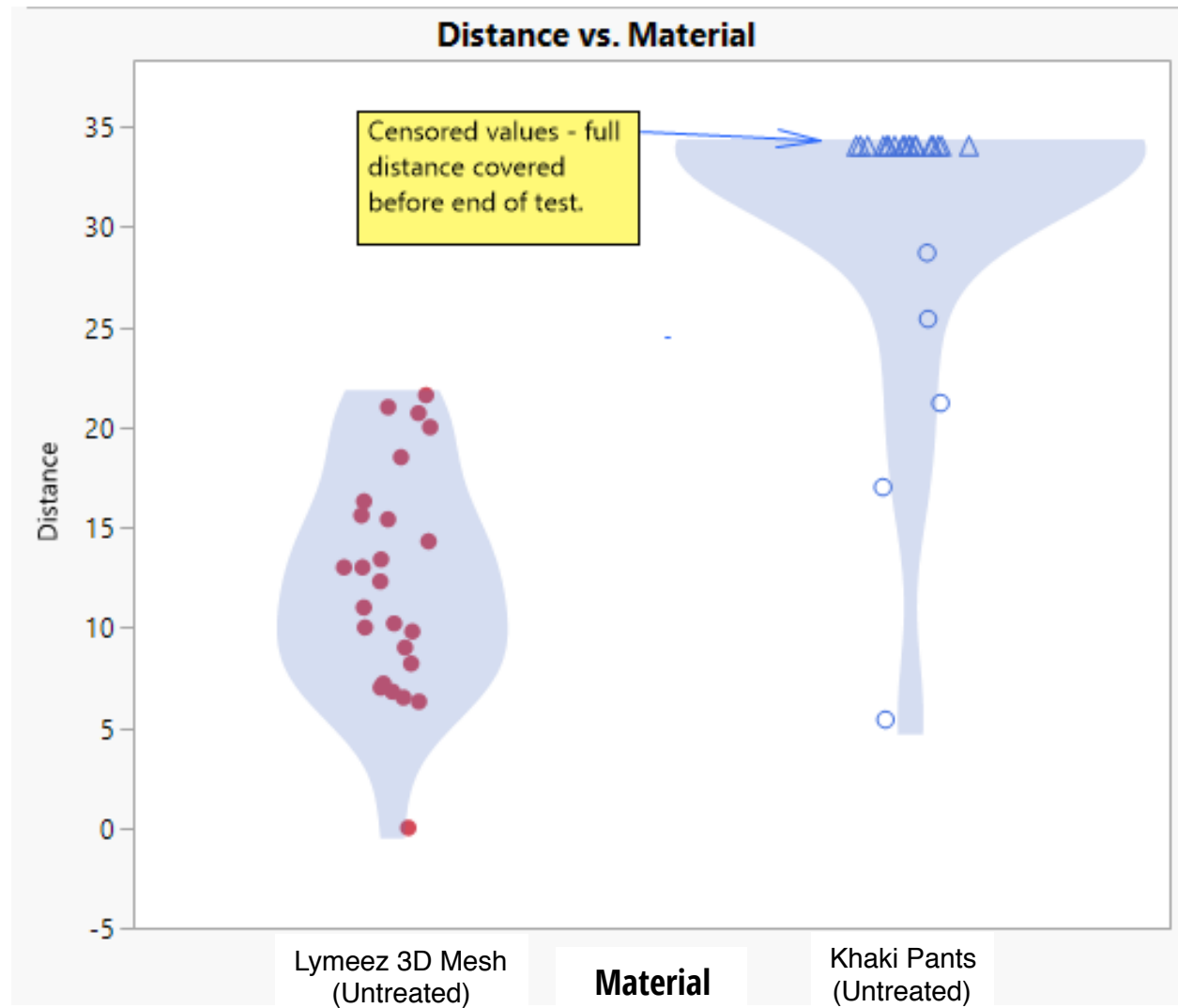
Summary: Untreated Lymeez 3D mesh tick gaiters significantly slow the ascent of adult female deer ticks. In the three-minute test, at the median distance traveled, this effect is 4–8 times that of normal clothing. Therefore, because ticks spend 4–8 more time climbing on the untreated gaiters, ticks are exposed to that much more tick-killing permethrin on the treated gaiters.

Description of test: Assess whether adult female blacklegged ticks (*Ixodes scapularis*) travel at a different rate (distance/time) over untreated Lymeez 3D mesh than over standard untreated cotton khaki pants.

Test Conditions: All observations were conducted on January 4, 2017 using laboratory-reared, pathogen-free female deer ticks (Oklahoma State University Tick Lab) held at 20.5°C, 71% RH. Subject wore either plain, untreated 100% cotton khaki pants or untreated Lymeez 3D Mesh tick gaiters over pants. Subject's leg was held at a constant angle of 90° relative to the floor. Ticks were allowed to freely attach at or near the bottom of the lower leg and observed for 3 minutes. Nearly all ticks climbed more or less vertically. The tick's finishing position was marked at 3 minutes, and a straight line measurement (cm) was made between the starting and finishing positions with a flexible measuring tape. A total of 48 ticks (25 on the 3D mesh and 23 on khakis) were used. 18 ticks on the khakis traversed the entire lower leg (34 cm) in less than 3 minutes. This resulted in right-censored distances for the purpose of the analysis.

Analysis of Results: Figure 1 displays the distribution of the data.

Fig. 1—Distance (in cm) vs. Material



In lognormal data modeling, the median distance travelled on untreated Khakis is 89.0 cm (35 in) and 11.4 cm (4.5 in) for untreated Lymeex 3D mesh gaiters. In other words, the best estimate of the degree of travel diversion and impedance by untreated Lymeex when compared to untreated Khakis is 8:1. The lower limit of the 95% confidence intervals indicate that untreated Lymeex have, at a minimum, a 4:1 impact.

Another way to look at the data is to ask, *What is the probability a tick will travel no more than 15 cm (6 in) in 3 minutes?*, for untreated Khakis there is only a 7% chance, yet for untreated Lymeex there is a 74% chance.

We feel confident, then, in concluding that untreated Lymeex 3D mesh tick gaiters significantly slow down the ascent of adult deer ticks. In the three-minute test, at the median distance traveled, this effect is 4–8 times that of normal clothing. Therefore, because ticks spend 4–8 more time climbing on the untreated Lymeex 3D mesh gaiters, ticks are exposed to that much more tick-killing permethrin on the treated Lymeex 3D mesh gaiters.