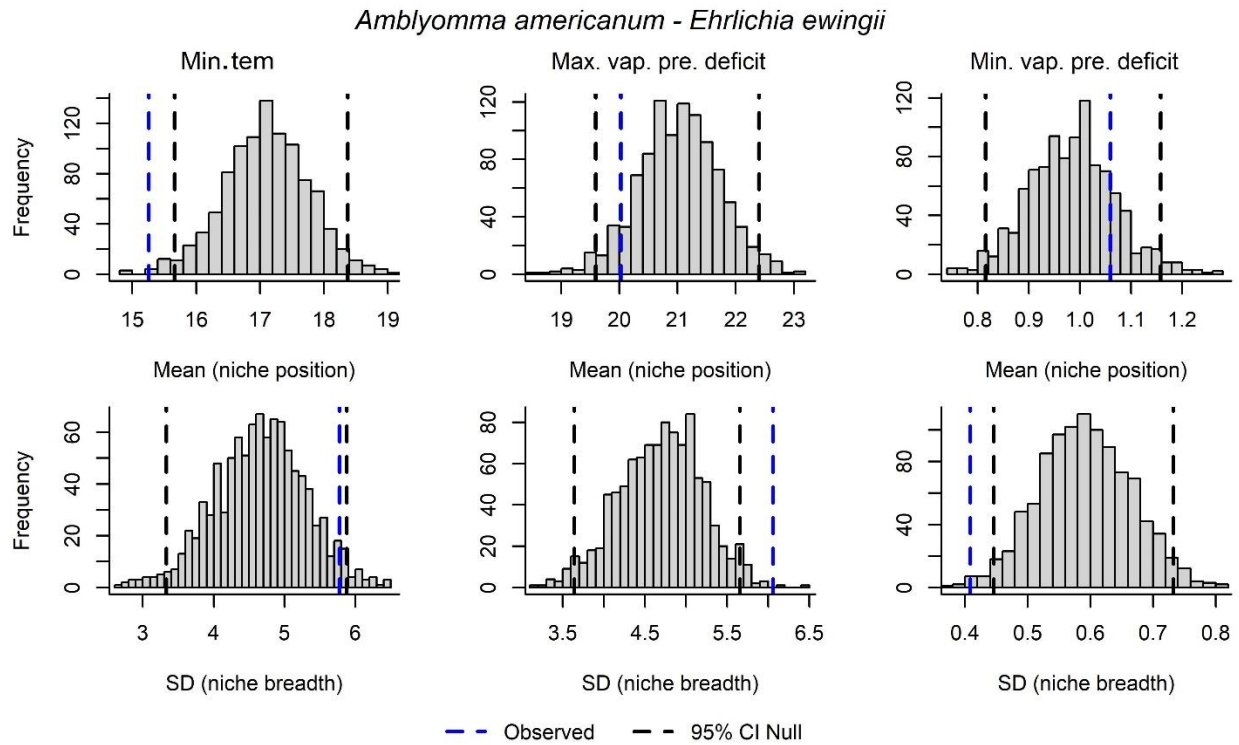


1 **Supplementary materials**

2



3

4 **S1.** Univariate non-parametric test to detect signals of niche dissimilarity for the pathogen *Ehrlichia*

5 *ewingii*, and tick species *Amblyomma americanum*. Here we used mean (lower than null maximum vapor

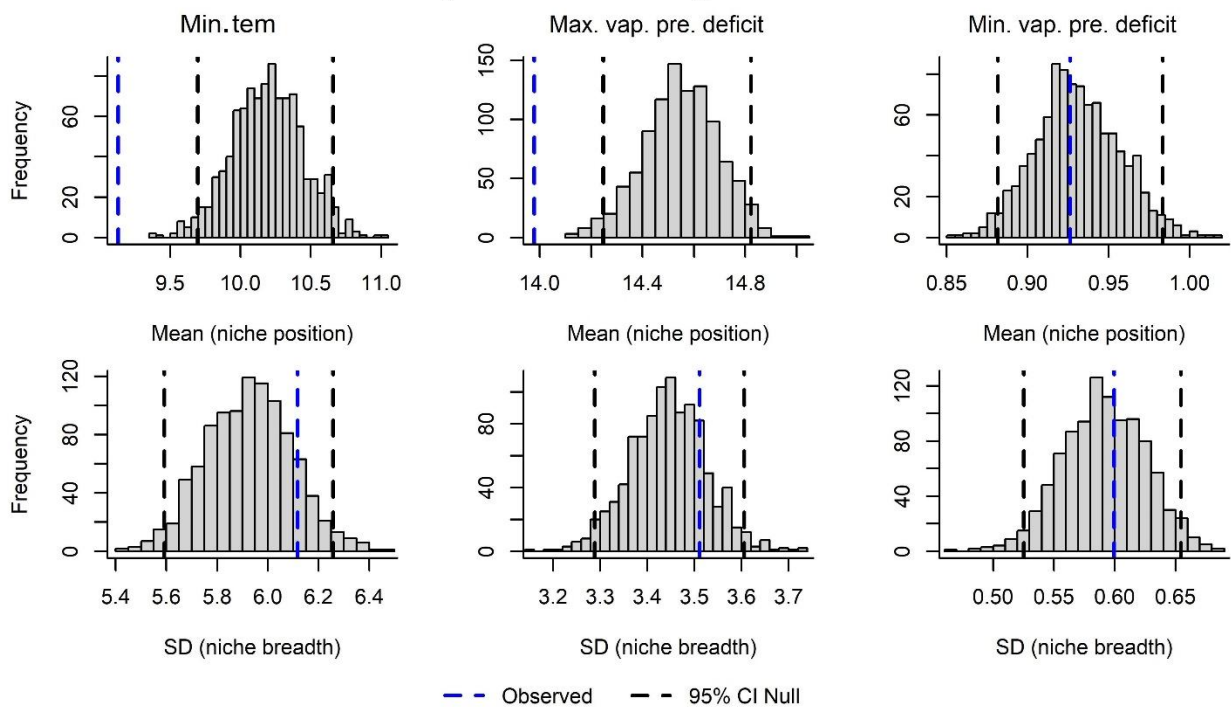
6 pressure deficit) and SD (higher than null maximum vapor pressure deficit) as an example of rejecting the

7 null hypothesis. The null hypothesis was rejected under mean of the minimum temperature, and SD of the

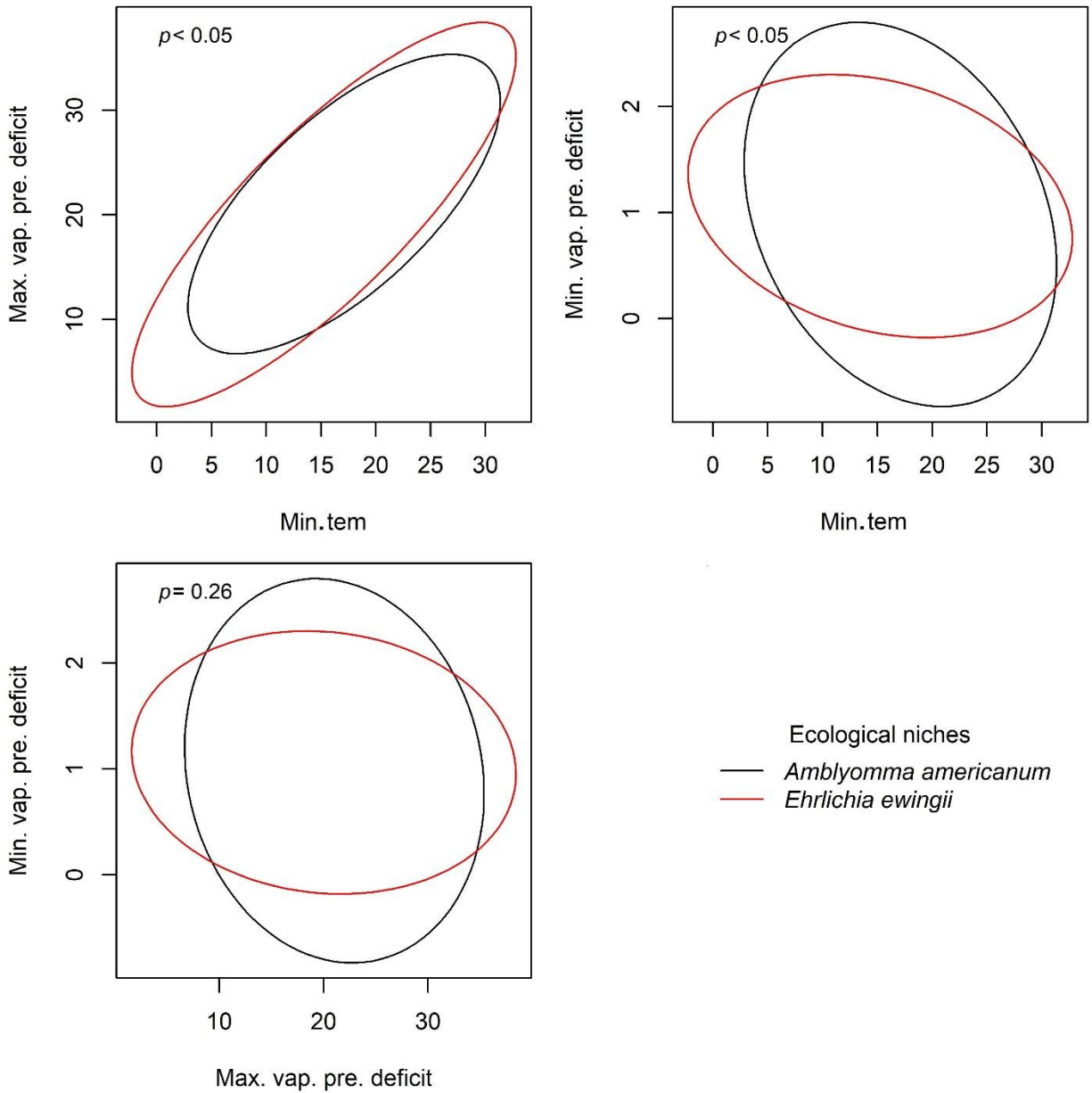
8 maximum and minimum vapor pressure deficit.

9

Ixodes scapularis - *Borrelia burgdorferi sensu lato*



10
 11 **S2.** Univariate non-parametric test to detect signals of niche dissimilarity for the pathogen *Borrelia*
 12 *burgdorferi sensu lato*, and tick species *Ixodes scapularis*. Here we used mean (lower than null maximum
 13 vapor pressure deficit) and SD (higher than null maximum vapor pressure deficit) as an example of
 14 rejecting the null hypothesis. The null hypothesis was rejected under all mean and SD of the environmental
 15 variables.

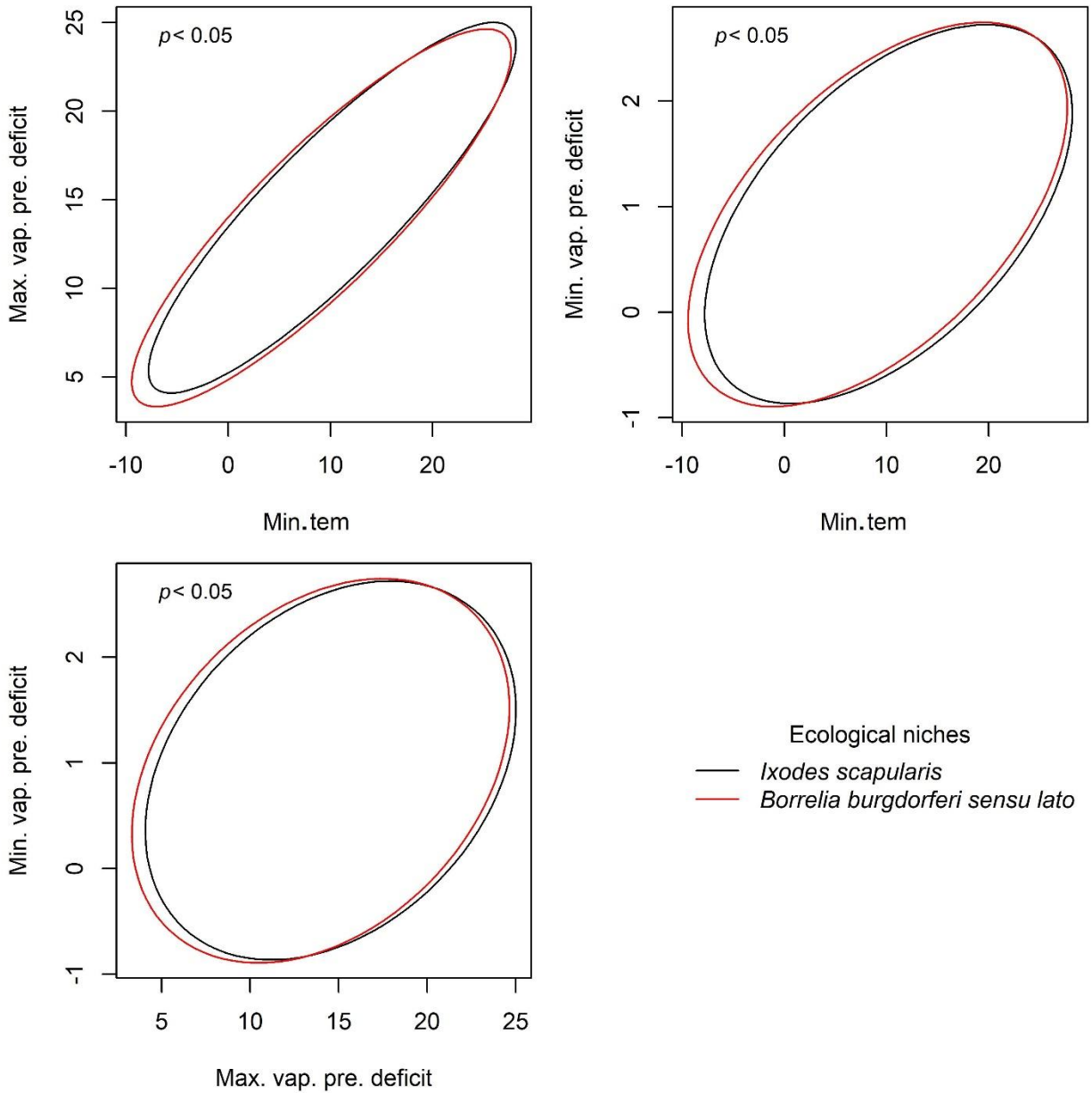


16

17 **S3.** PERMANOVA analysis for ecological niche of *Amblyomma americanum*, and *Ehrlichia ewingii*.

18 Ellipses were created from occurrence data, and maximum and minimum vapor pressure deficit and

19 minimum temperature in two dimensions. Significant values are shown for each comparison.



20

21 **S4.** PERMANOVA analysis for ecological niche of *Ixodes scapularis*, and *Borrelia burgdorferi sensu*

22 lato. Ellipses were created from NEON data, and maximum and minimum vapor pressure deficit and

23 minimum temperature in two dimensions. p-values are shown for each comparison.

24