NAKAZATO, TAKUYA, DAN L. WARREN, AND LEONIE C. MOYLE. 2010. Ecological and geographic modes of species divergence in wild tomatoes. *American Journal of Botany* 97(4): 680–693.

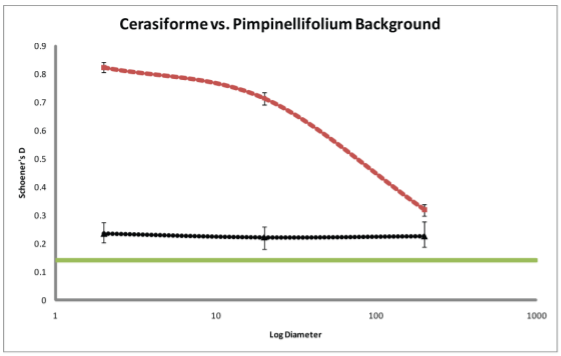
Appendix S6. Sensitivity of background test to definition of species background. The test for each species pair consists of two reciprocal comparisons of each species to randomly drawn points from the background of its sister species, with "background" being construed as a set of circular buffers of increasing diameter (2, 20, and 200 km) around known occurrence points for the sister species (black lines). Error bars represent 95% confidence intervals estimated from 100 pseudoreplicates, and green bars represent the observed niche similarity between occurrence points for that pair of sister species (see Table 5, main text). Red lines represent comparisons for each species to its own background, which is given as an illustration of how environmental heterogeneity increases with distance for each species. For example, in panel A (left), we see that the difference between actual occurrence points for the sister species is greater than that expected based on the available habitat to *Solanum pimpinellifolium*, regardless of the diameter of the buffer we choose to denote the species background. However, the significance of the opposite comparison (panel A, right) depends on the diameter of the buffer applied. In comparison, in panel B (left and right), observed similarity between *S. corneliomulleri* and *S. peruvianum* is always greater than the similarity of each species to the environmental background of the other species, regardless of the buffer diameter used to define background habitat. In all cases, the habitat occupied by the two species appears similar, even at very fine spatial scales.

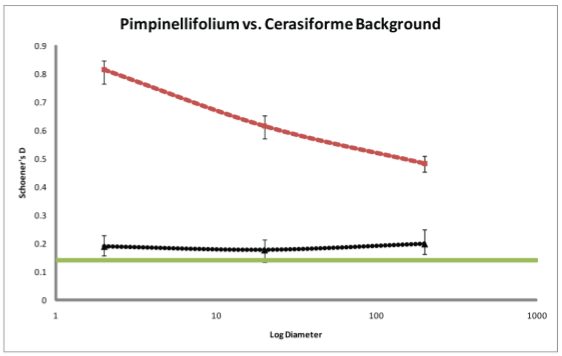
In panel D (left), we see that the actual overlap between sisters can switch from being significantly higher than expected to significantly lower than expected by changing the definition

of background. This indicates that, at a very fine scale (2 km), *S. pennellii* is choosing habitat more similar to that of its sister species than expected by chance, but that as you broaden the definition of available habitat (20 km and 200 km), you find that there are patches of habitat that are more similar to those occupied by *habrochaites* that those occupied by *pennellii*. This suggests that *pennellii* are distributed within the available habitat in manner that is more unlike *habrochaites* than expected by chance. This might indicate significant niche divergence, contingent upon the assumption that 20 km is a reasonable estimate of the dispersal potential of *pennellii*.

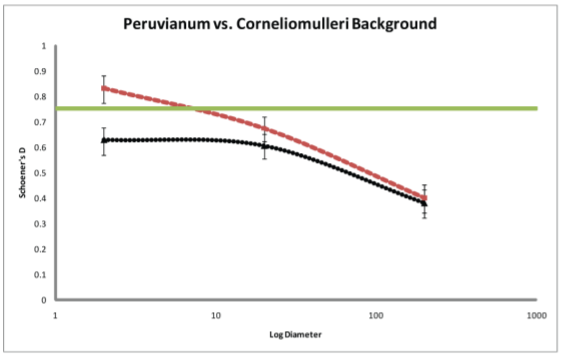
In the 2-km comparisons for panel C and the 20-km comparison for panel D, we see that sisters are more similar than expected when the comparison is made in one direction, and less than expected when the comparison is made in the opposite direction. This counterintuitive result makes more sense when viewed in light of the fact that habitat distributions may differ between two areas. A simple hypothetical depiction of this is given in panel E. Two allopatric species (red and blue) have different suites of habitat available to them (dashed lines). Each occupies a subset of the habitat that is available to it (shaded regions). When the overlap between the two species is compared to that expected based on the background of the blue species, we find that the two species are considerably more similar than expected when compared to points randomly drawn from the background. When the overlap is compared to the habitat available to the red species, however, we find that the species are significantly more divergent than expected.

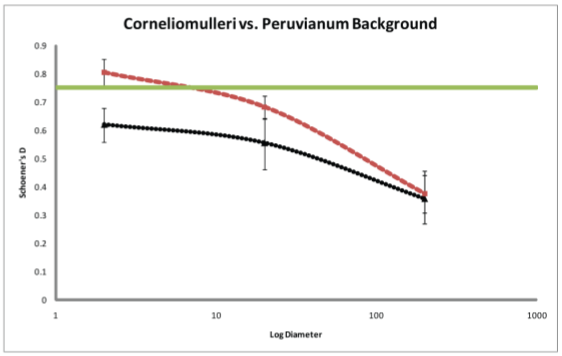
a.


Cerasiforme vs. Pimpinellifolium Background
Schoener's D
Log Diameter

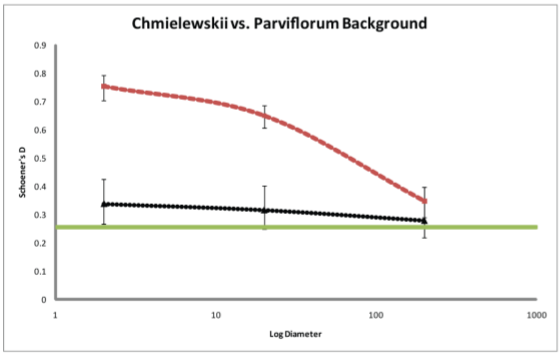

Pimpinellifolium vs. Cerasiforme Background
Schoener's D
Log Diameter

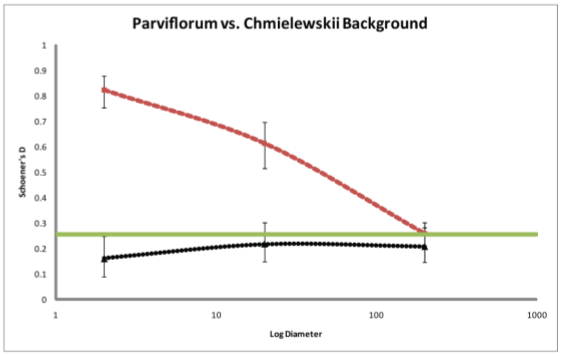
b.


Peruvianum vs. Corneliomulleri Background
Schoener's D
Log Diameter

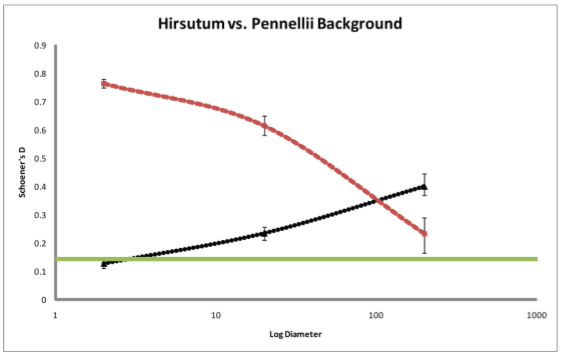

Corneliomulleri vs. Peruvianum Background
Schoener's D
Log Diameter

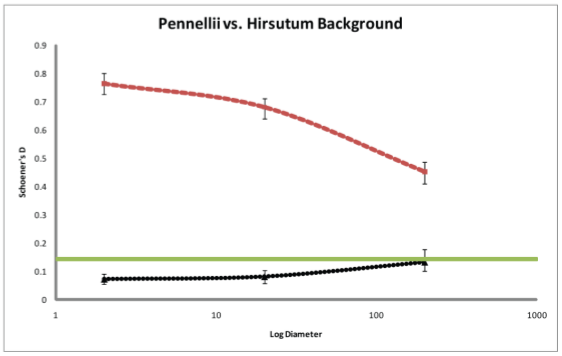
c.


Chmielewskii vs. Parviflorum Background
Schoener's D
Log Diameter


Parviflorum vs. Chmielewskii Background
Schoener's D
Log Diameter

d.


Hirsutum vs. Pennellii Background
Schoener's D
Log Diameter


Pennellii vs. Hirsutum Background
Schoener's D
Log Diameter

e.