

Results

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To check for the effect of heterospecific pollen we assume that the optimal seed production is with the hand cross pollination (pollen from a different individual of the same species) and then we subtract to the mean value of cross pollination the mean value of heterospecific pollen effect across treatments. Previously we have scaled the seed for each species with mean 0 and standard deviation of 1. When a species had higher values of seed production with treatments than the cross we set as maximum value for the treatments the same as the hand cross pollination.

Part 1 Relation between effect of Hp and evolutive distance

I try Mantel test and procustes test, although both are similar procustes performs better in wider range of circumstances Peres-Neto and Jackson (2001). Moreover, I consider the square root of the evolutive distances which improves the statistical power in comparison to the normal distances Letten and Cornwell (2015).

1) With the RBCL marker

Heterospecific pollen effect~evolutive distance

r	p	Analysis	Type
0.2558924	0.033	Mantel	normal evolutive distance
0.2949348	0.016	Mantel	sqrt evolutive distance
0.3466341	0.714	Procustes	normal evolutive distance
0.4666208	0.640	Procustes	sqrt evolutive distance

I wonder if the matrices are too small for procustes, is a general trend for all the analysis to have a non significant p value and correlation around these numbers.

2) With the ITS marker

Heterospecific pollen effect~evolutive distance

r	p	Analysis	Type
0.2743059	0.026	Mantel	normal evolutive distance
0.2891004	0.024	Mantel	sqrt evolutive distance
0.4217703	0.775	Procustes	normal evolutive distance
0.5317588	0.724	Procustes	sqrt evolutive distance

I plot now the pairwise distances on the x axis and the effect of heterospecific pollen on the y axis, although is not very intuitive the greater the effect the closer to 0 because the mean hand cross pollination and the mean heterospecific pollen effect were more similar.

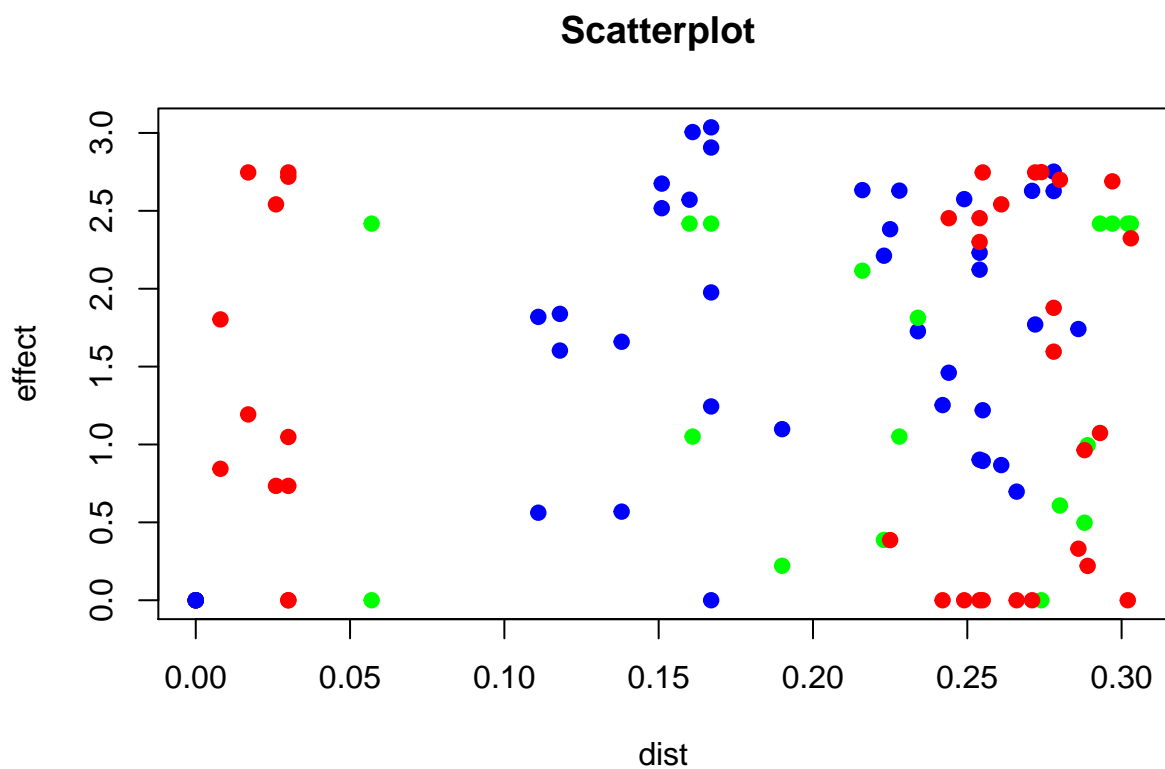
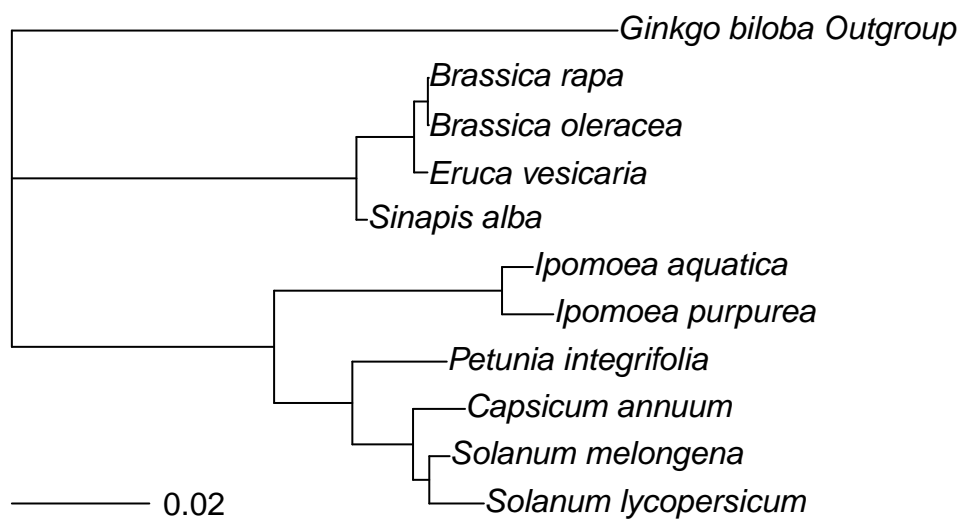


Figure 1: Scatterplot of the evolutionary distances (x axis) and the mean scaled effect per species (ITS markers).



Part 2 Relation between effect of Hp and traits

References

Letten, Andrew D, and William K Cornwell. 2015. “Trees, Branches and (Square) Roots: Why Evolutionary Relatedness Is Not Linearly Related to Functional Distance.” *Methods in Ecology and Evolution* 6 (4). Wiley Online Library: 439–44.

Peres-Neto, Pedro R, and Donald A Jackson. 2001. “How Well Do Multivariate Data Sets Match? The Advantages of a Procrustean Superimposition Approach over the Mantel Test.” *Oecologia* 129 (2). Springer: 169–78.