

The pollination trade-off

Supplementary information

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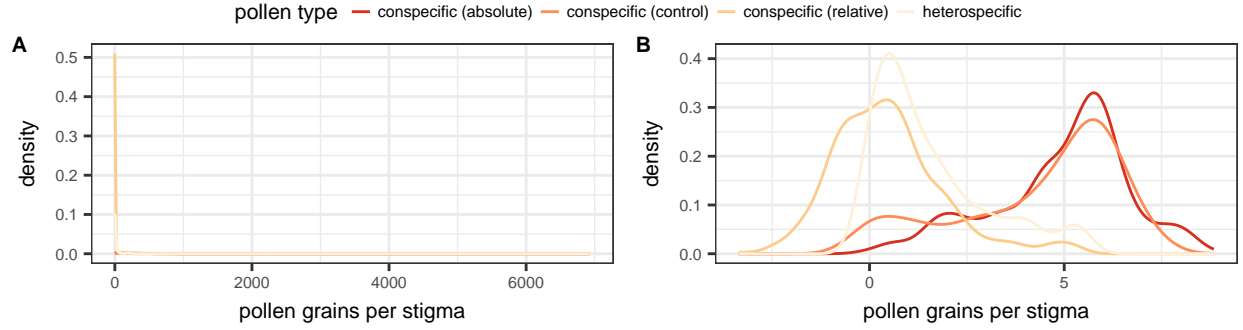


Figure S1: Distribution of the stigmatic pollen density for one of the bootstrap replicates used in the model sets. When (A) using directly the gain in pollen density and (B) when pollen density is log transformed (for the relative amount of conspecific pollen, density was log-transformed prior to calculating the gain).

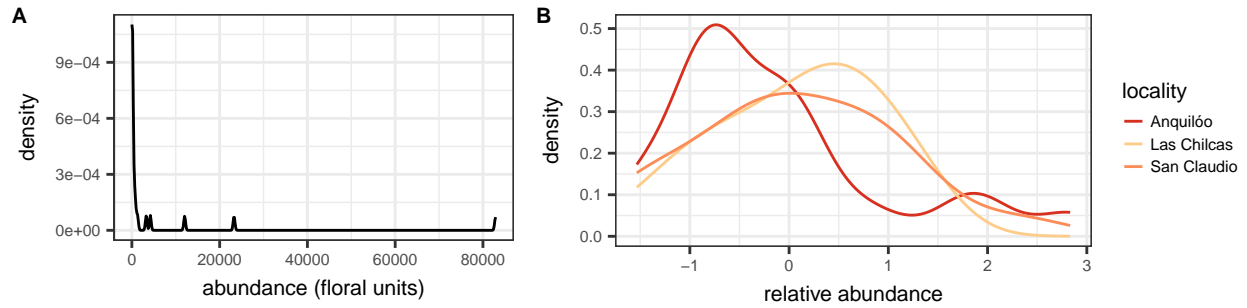


Figure S2: Distribution of plant abundance as (A) raw counts of floral units across communities, and (B) after applying a data transformation in which the counts have been log transformed and scaled to have a mean of zero and a standard deviation of one.

Table S1: Comparison of the different random structures we considered. The table shows median delta AIC values of 9 bootstrap resamples of the data. The 5th and 95th percentile are shown inside square brackets. Communities are defined by individual fragments but ignore the hierarchical arrangement of sampling sites.

| pollen type | random structure | delta_AIC |
|------------------------|--|-------------------|
| conspecific (absolute) | 1 community / plant sp. | 21.7 [0, 28.9] |
| | 1 locality / land use / fragment / plant sp. | 25.9 [4.2, 33.2] |
| | 1 locality / land use / plant sp. | 15.4 [4.9, 19.7] |
| | 1 locality / plant sp. | 0 [0, 22.6] |
| | 1 plant sp. | 43.7 [24.8, 67.7] |
| conspecific (control) | 1 community / plant sp. | 8.4 [2.8, 16.1] |
| | 1 locality / land use / fragment / plant sp. | 12.8 [7.2, 20.5] |
| | 1 locality / land use / plant sp. | 9.7 [2.6, 13.7] |
| | 1 locality / plant sp. | 8.8 [2.5, 9.8] |
| | 1 plant sp. | 0 [0, 0] |
| conspecific (relative) | 1 community / plant sp. | 0 [0, 0.1] |
| | 1 locality / land use / fragment / plant sp. | 4.2 [4, 4.3] |
| | 1 locality / land use / plant sp. | 4.9 [0.8, 11.2] |
| | 1 locality / plant sp. | 6.6 [1, 11.2] |
| | 1 plant sp. | 16 [5.2, 26.8] |
| heterospecific | 1 community / plant sp. | 2 [0, 10.1] |
| | 1 locality / land use / fragment / plant sp. | 6.2 [4.2, 14.3] |
| | 1 locality / land use / plant sp. | 0 [0, 8.5] |
| | 1 locality / plant sp. | 10.7 [6.1, 30] |
| | 1 plant sp. | 9.2 [0, 33] |

Table S2: Results of testing the alternative hypothesis that the conspecific pollen density in open flowers is greater than the density in bagged flowers. Tests were performed at the species level (across communities).

| plant species | difference | statistic | p value |
|----------------------------------|--------------|-----------|-----------|
| <i>Aloysia gratissima</i> | 31.6666177 | 9.0 | 0.0382613 |
| <i>Baccharis pingraea</i> | 2.9999531 | 156.0 | 0.0000308 |
| <i>Carduus acanthoides</i> | 0.0000386 | 1077.0 | 0.4953884 |
| <i>Cirsium vulgare</i> | -109.7728636 | 82.0 | 0.9969050 |
| <i>Condalia microphylla</i> | -8.9004993 | 20.0 | 0.7499117 |
| <i>Cypella herbertii</i> | 2428.2500000 | 20.0 | 0.0151515 |
| <i>Descurania argentina</i> | 21.5000000 | 61.0 | 0.0599151 |
| <i>Diploaxis tenuifolia</i> | 198.7500000 | 217.0 | 0.1661275 |
| <i>Dipsacus sp.</i> | 6.7177679 | 28.5 | 0.0085552 |
| <i>Gaillardia megapotamica</i> | -411.7500000 | 9.0 | 0.9999504 |
| <i>Glandularia hookeriana</i> | -68.5833333 | 5.0 | 0.8690476 |
| <i>Hirschfeldia incana</i> | 29.5000848 | 9510.0 | 0.1014593 |
| <i>Lycium chilense</i> | 394.1666667 | 24.0 | 0.1969697 |
| <i>Mentha pulegium</i> | 1.0104167 | 34.0 | 0.2205997 |
| <i>Nierembergia aristata</i> | 769.7500000 | 70.0 | 0.0000514 |
| <i>Nothoscordum euosimum</i> | 199.4166667 | 44.0 | 0.0247752 |
| <i>Physalis viscosa</i> | 1074.0000000 | 15.0 | 0.0178571 |
| <i>Prosopidastrum globosum</i> | 3.3096971 | 20.0 | 0.2051239 |
| <i>Senecio pulcher</i> | -25.0000000 | 6.0 | 0.7142857 |
| <i>Sisyrinchium platense</i> | -22.2500000 | 49.0 | 0.6918285 |
| <i>Solanum sisymbriifolium</i> | 2195.0000000 | 3.0 | 0.2500000 |
| <i>Sphaeralcea crista</i> | 5.7000000 | 15.0 | 0.0178571 |
| <i>Stemodia lanceolata</i> | 1261.0000000 | 25.0 | 0.0039683 |
| <i>Thelesperma megapotamicum</i> | -23.3333333 | 4.0 | 0.6500000 |
| <i>Turnera sidioides</i> | 151.0000205 | 327.0 | 0.0000224 |
| <i>Verbena intermedia</i> | 87.0833333 | 367.0 | 0.0062368 |

Table S3: Comparison of the different fixed structures we considered. The table shows median delta AIC values of 9 bootstrap resamples of the data. The 5th and 95th percentile are shown inside square brackets.

| pollen type | fixed structure | delta_AIC |
|-------------------------------|---|----------------------|
| conspecific (absolute) | ~ abundance + share pollen + degree | 0.1 [0 ,0.8] |
| | ~ abundance + share pollen + degree + func. originality | 0.3 [0 ,1] |
| | ~ abundance + share pollen | 0.2 [0 ,1] |
| | ~ share pollen + degree + func. originality | 1.4 [0.4 ,2.2] |
| | ~ abundance + share pollen + func. originality | 1.2 [0.5 ,2.2] |
| | ~ share pollen + func. originality | 2.9 [1.4 ,3.4] |
| | ~ share pollen + degree | 110.8 [67.9 ,194] |
| | ~ share pollen | 113.3 [70.4 ,195.8] |
| | ~ abundance | 203.7 [181.8 ,239.7] |
| | ~ abundance + degree | 205.3 [183.7 ,241.4] |
| | ~ abundance + func. originality | 205.5 [183.6 ,241.6] |
| | ~ func. originality | 206.2 [184.5 ,241.7] |
| | ~ degree + func. originality | 206.2 [185.2 ,242.3] |
| | ~ abundance + degree + func. originality | 206.9 [185.5 ,243.3] |
| | ~ degree | 355.8 [306.3 ,433.9] |
| | ~ 1 | 372 [324.4 ,453] |
| conspecific (control) | ~ share pollen + func. originality | 0 [0 ,0.3] |
| | ~ share pollen + degree + func. originality | 1.3 [0.4 ,1.6] |
| | ~ abundance + share pollen + func. originality | 1.8 [0.8 ,2.1] |
| | ~ abundance + share pollen | 1.9 [0.8 ,2.6] |
| | ~ abundance + share pollen + degree + func. originality | 3.2 [1.1 ,3.6] |
| | ~ abundance + share pollen + degree | 3.8 [2 ,4.6] |
| | ~ share pollen | 61 [36.2 ,65] |
| | ~ share pollen + degree | 61.7 [37.7 ,65.9] |
| | ~ func. originality | 160.7 [135.1 ,179.4] |
| | ~ abundance | 161.2 [135 ,180.2] |
| | ~ abundance + func. originality | 162.1 [136 ,181.2] |
| | ~ degree + func. originality | 162.4 [136.5 ,181.3] |
| | ~ abundance + degree | 163.3 [137.1 ,182.2] |
| | ~ abundance + degree + func. originality | 164.2 [138 ,183.3] |
| | ~ 1 | 286.9 [256.3 ,309.6] |
| | ~ degree | 288.9 [258 ,311.5] |
| conspecific (relative) | ~ abundance + share pollen | 0 [0 ,0.5] |
| | ~ abundance + share pollen + func. originality | 0.1 [0 ,0.9] |
| | ~ abundance + share pollen + degree | 0.9 [0.1 ,1.8] |
| | ~ abundance + share pollen + degree + func. originality | 1.7 [0.9 ,2.6] |
| | ~ share pollen + func. originality | 2.3 [1.2 ,3.9] |
| | ~ share pollen + degree + func. originality | 3.6 [2 ,4.6] |
| | ~ share pollen | 118.5 [96.6 ,132.7] |
| | ~ share pollen + degree | 119.7 [97.5 ,133.5] |
| | ~ abundance + func. originality | 211.6 [200.3 ,231.2] |
| | ~ abundance | 212.6 [201.1 ,231.1] |
| | ~ abundance + degree | 213.7 [202.6 ,232.1] |
| | ~ abundance + degree + func. originality | 213.5 [202.2 ,232.8] |
| | ~ func. originality | 213.6 [200.7 ,232.6] |
| | ~ degree + func. originality | 213.9 [201.7 ,232.5] |
| | ~ degree | 402.6 [371.5 ,421.6] |
| | ~ 1 | 403.8 [373.8 ,423.4] |
| heterospecific | ~ abundance + share pollen | 0 [0 ,0] |
| | ~ abundance + share pollen + degree | 1.6 [1.1 ,1.9] |
| | ~ abundance + share pollen + func. originality | 1.5 [1 ,1.7] |
| | ~ abundance + share pollen + degree + func. originality | 2.6 [2.2 ,3.2] |
| | ~ share pollen + func. originality | 12.4 [11 ,14.2] |
| | ~ share pollen + degree + func. originality | 13.5 [11.5 ,15.2] |
| | ~ share pollen | 64 [52.9 ,93.1] |
| | ~ share pollen + degree | 64.9 [54.1 ,93.3] |
| | ~ abundance + degree | 231.2 [172.7 ,261.9] |
| | ~ abundance | 231.4 [171.8 ,262.3] |
| | ~ abundance + func. originality | 231.9 [172.4 ,263] |
| | ~ abundance + degree + func. originality | 232.5 [173.7 ,263.4] |
| | ~ func. originality | 237.6 [177.6 ,269] |
| | ~ degree + func. originality | 239.6 [179.4 ,271] |
| | ~ degree | 343.3 [318.5 ,417.5] |
| | ~ 1 | 407.1 [340.4 ,447.9] |

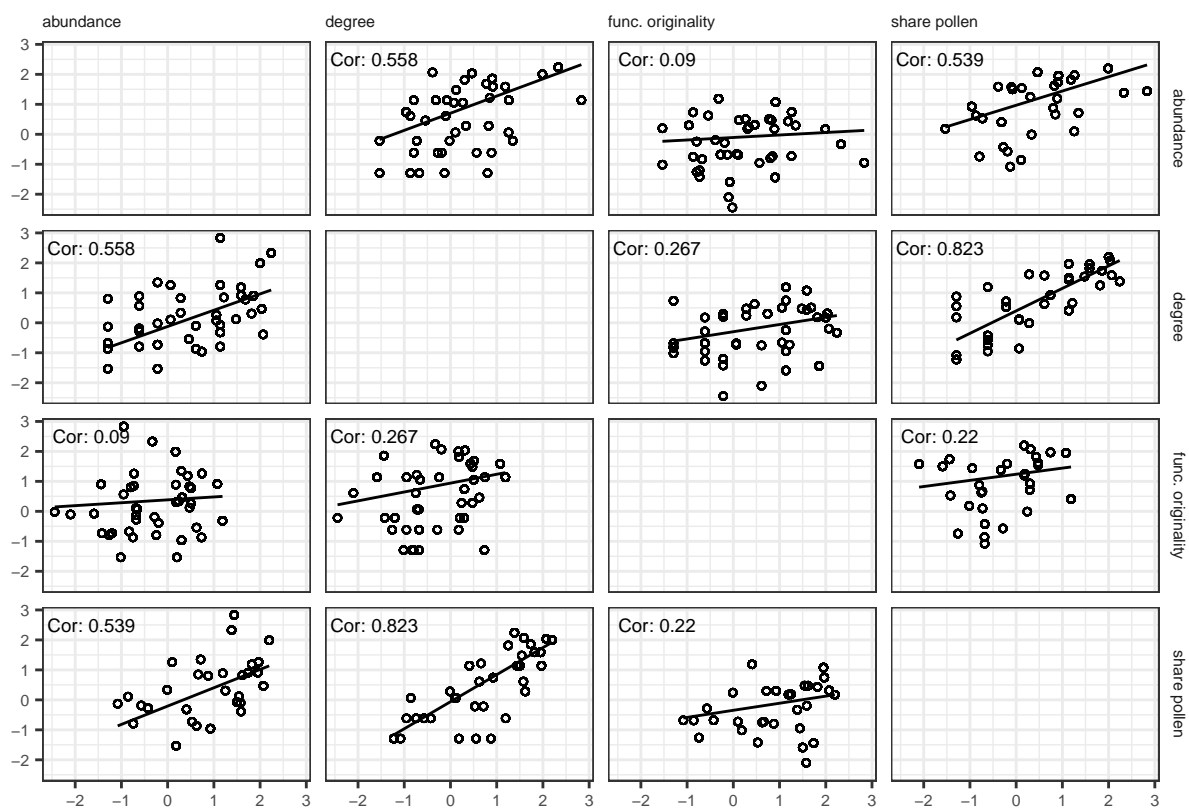


Figure S3: Correlation between the explanatory variables included in the statistical models.

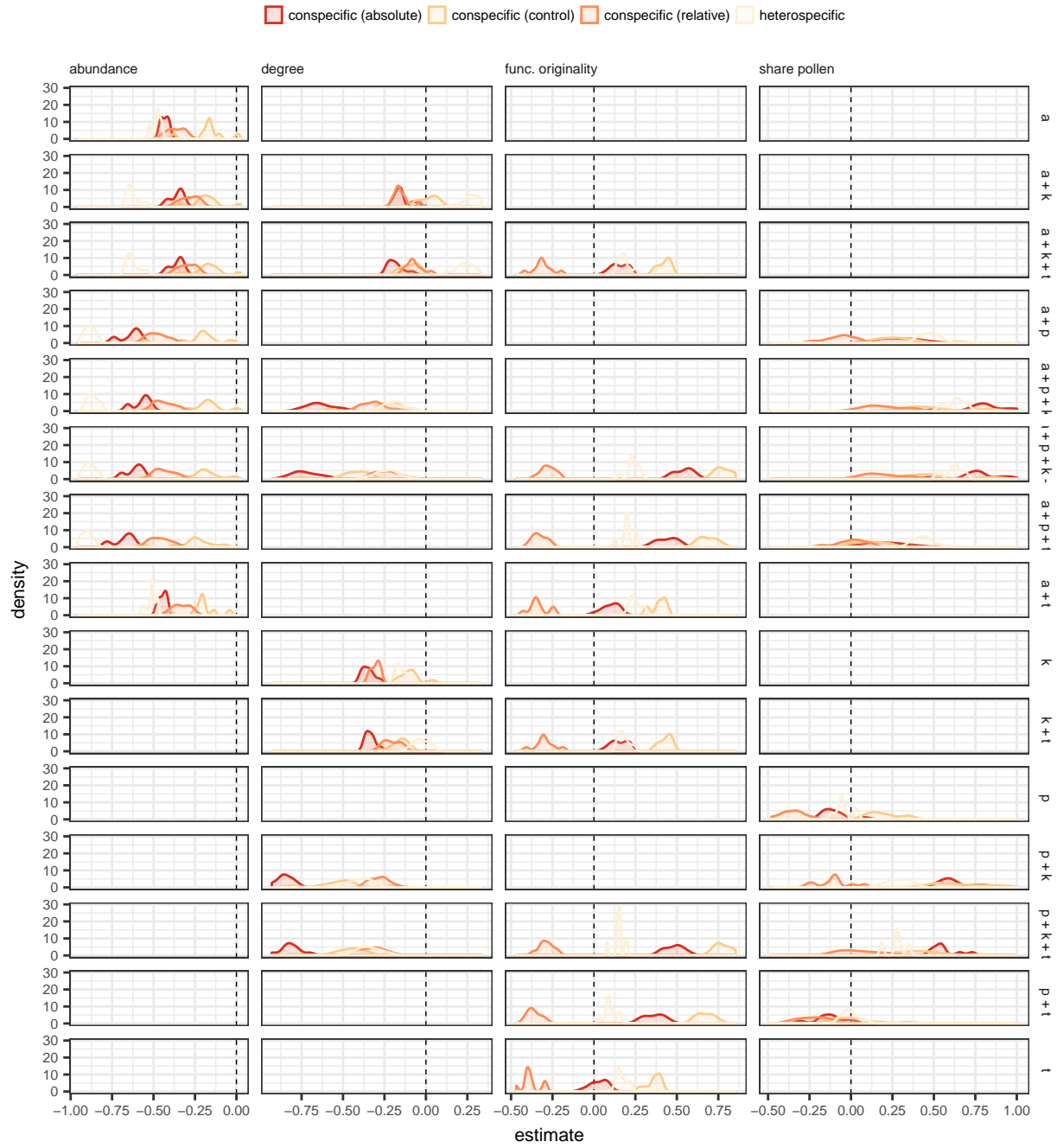


Figure S4: Distribution of effect estimates for models of conspecific and heterospecific pollen density gain. Only results for the models with the most parsimonious fixed effects.