

The pollination trade-off

Supplementary information

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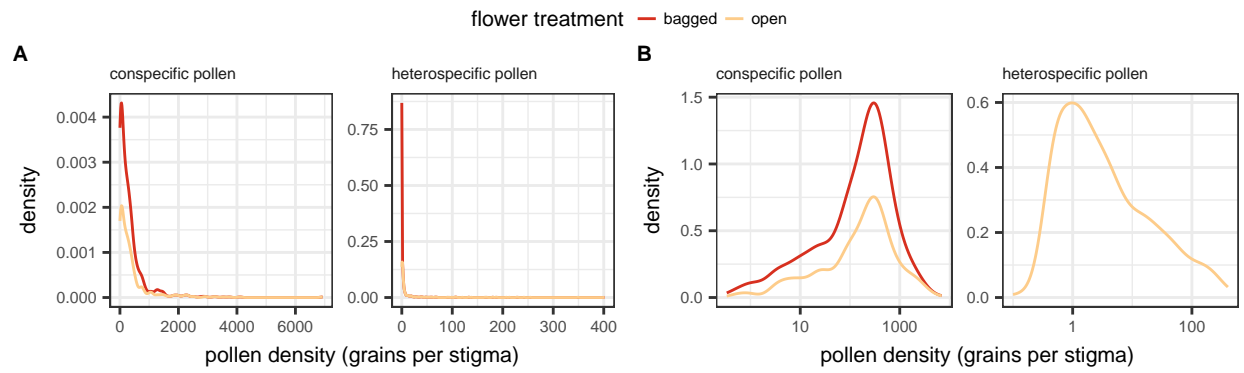


Figure S1: Distribution of stigmatic pollen density plotted in (A) a linear scale, and (B) a logarithmic scale (zero values not shown).

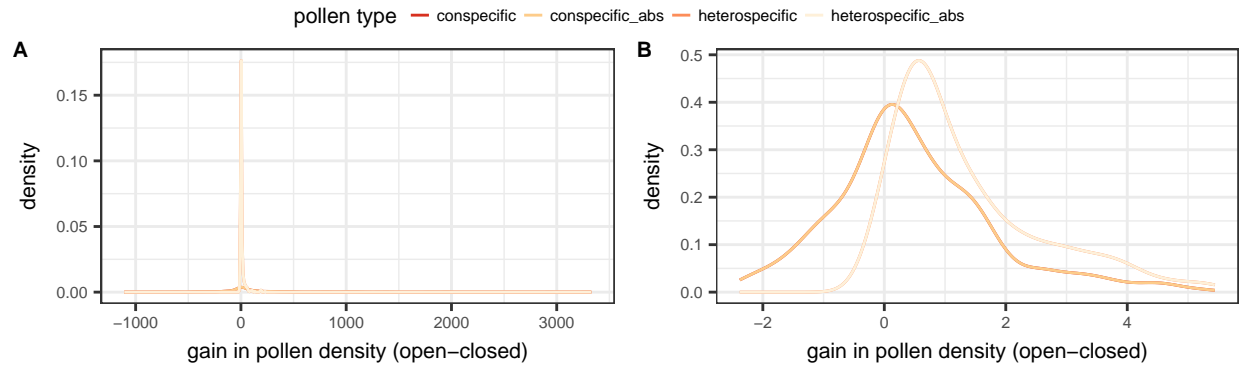


Figure S2: Distribution of the difference on stigmatic pollen density between open and closed flowers for one of the bootstrap replicates used in the model sets. When (A) using directly the gain in pollen density and (B) when pollen density is log transformed prior to calculating the gain.

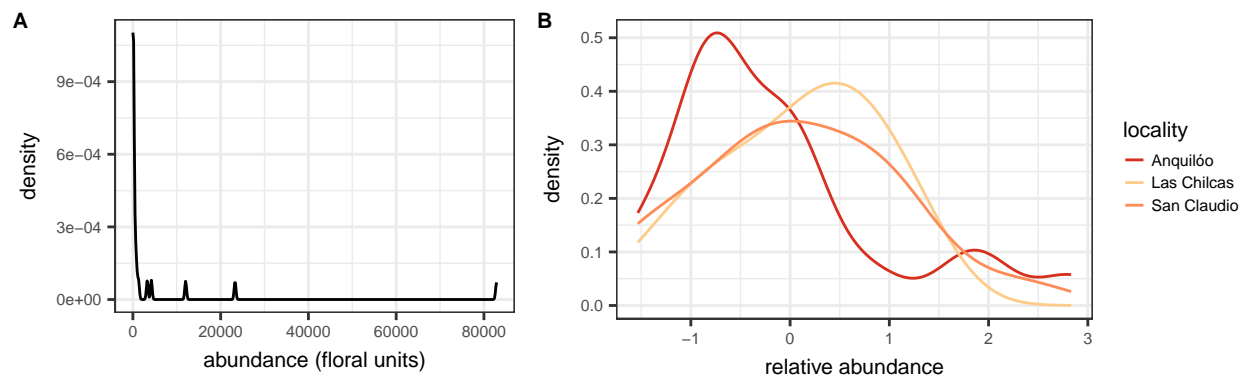


Figure S3: Distribution of plant abundance as (A) raw counts of floral units across communities, and (B) after applying a data transformation in which the counts have been log transformed and scaled to have a mean of zero and a standard deviation of one.

Table S1: 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>Diplotaxis tenuifolia</i>	198.7500000	217.0	0.1661275
<i>Dipsacus</i> sp.	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 crispa</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

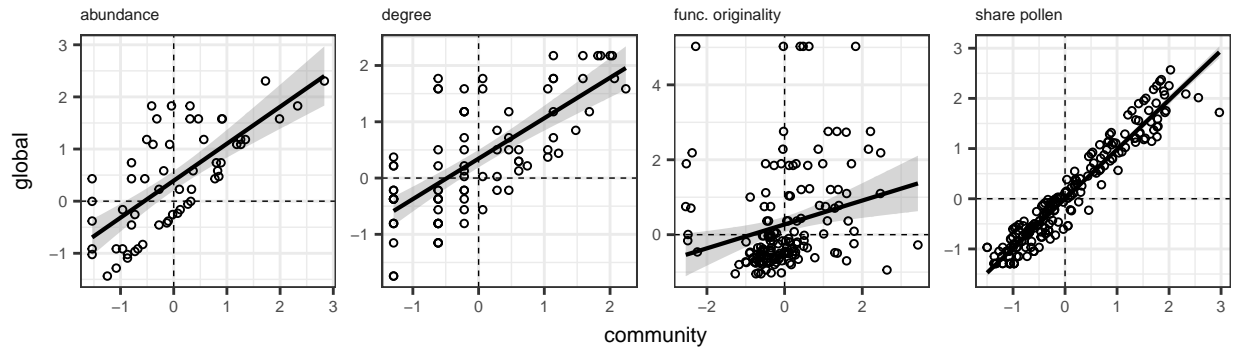


Figure S4: Relationship between the model's independent variables calculated at the community level and at the study-wide level.

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 community level. Only species present in more than one community are shown.

plant species	community	difference	statistic	p value
<i>Carduus acanthoides</i>	Anquilóo - agricultural - 2	33.000	15.0	0.018
<i>Carduus acanthoides</i>	San Claudio - agricultural - 1	11.500	96.0	0.253
<i>Carduus acanthoides</i>	San Claudio - agricultural - 2	-13.175	52.0	0.990
<i>Carduus acanthoides</i>	San Claudio - reserve - 1	-1.885	19.5	0.828
<i>Carduus acanthoides</i>	San Claudio - reserve - 2	8.751	38.5	0.123
<i>Cirsium vulgare</i>	Anquilóo - agricultural - 2	-38.250	12.0	0.732
<i>Cirsium vulgare</i>	Las Chilcas - reserve - 1	-36.750	12.0	0.732
<i>Cirsium vulgare</i>	San Claudio - reserve - 1	-138.833	0.0	1.000
<i>Hirschfeldia incana</i>	Anquilóo - agricultural - 1	100.500	263.0	0.033
<i>Hirschfeldia incana</i>	Anquilóo - agricultural - 2	677.000	17.0	0.024
<i>Hirschfeldia incana</i>	San Claudio - agricultural - 1	-176.789	165.0	0.993
<i>Hirschfeldia incana</i>	San Claudio - agricultural - 2	51.000	658.5	0.126
<i>Hirschfeldia incana</i>	San Claudio - reserve - 1	-23.250	266.0	0.691
<i>Hirschfeldia incana</i>	San Claudio - reserve - 2	143.000	435.5	0.016
<i>Mentha pulegium</i>	Las Chilcas - agricultural - 2	1.667	13.0	0.182
<i>Mentha pulegium</i>	Las Chilcas - reserve - 1	1.667	6.0	0.350
<i>Nierembergia aristata</i>	Anquilóo - agricultural - 1	721.000	1.0	0.500
<i>Nierembergia aristata</i>	Anquilóo - reserve - 1	846.000	9.0	0.050
<i>Nierembergia aristata</i>	Anquilóo - reserve - 2	881.500	18.0	0.012
<i>Nothoscordum euosimum</i>	Las Chilcas - agricultural - 1	305.750	18.0	0.012
<i>Nothoscordum euosimum</i>	Las Chilcas - agricultural - 2	38.500	5.0	0.500
<i>Sisyrinchium platense</i>	Las Chilcas - agricultural - 1	54.000	25.0	0.155
<i>Sisyrinchium platense</i>	Las Chilcas - reserve - 1	-134.000	0.0	1.000
<i>Turnera sidoides</i>	Anquilóo - agricultural - 1	135.250	113.0	0.001
<i>Turnera sidoides</i>	Anquilóo - agricultural - 2	3.000	9.0	0.036
<i>Turnera sidoides</i>	Anquilóo - reserve - 2	153.206	18.0	0.014
<i>Verbena intermedia</i>	Anquilóo - reserve - 2	35.000	13.0	0.190
<i>Verbena intermedia</i>	San Claudio - agricultural - 2	18.750	65.0	0.104
<i>Verbena intermedia</i>	San Claudio - reserve - 2	213.250	70.0	0.000

Table S3: Comparison of the different random structures we considered. The table shows median delta AIC values of 99 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	1 community / plant sp.	0 [0, 4.9]
	1 locality / land use / fragment / plant sp.	4 [3.3, 7.9]
	1 locality / land use / plant sp.	4.8 [0, 13.5]
	1 locality / plant sp.	3.9 [0, 17.8]
	1 plant sp.	7.8 [0, 25.9]
conspecific_abs	1 community / plant sp.	14.8 [3.5, 25.1]
	1 locality / land use / fragment / plant sp.	18.7 [7.5, 29.1]
	1 locality / land use / plant sp.	8.1 [0, 16.5]
	1 locality / plant sp.	0 [0, 8.8]
	1 plant sp.	28 [15, 41.5]
heterospecific	1 community / plant sp.	0 [0, 7.9]
	1 locality / land use / fragment / plant sp.	4 [4, 11.3]
	1 locality / land use / plant sp.	5.8 [2.2, 12.8]
	1 locality / plant sp.	16 [5.2, 51.5]
	1 plant sp.	12.7 [0, 44.2]
heterospecific_abs	1 community / plant sp.	0 [0, 7.9]
	1 locality / land use / fragment / plant sp.	4 [4, 11.3]
	1 locality / land use / plant sp.	5.8 [2.2, 12.8]
	1 locality / plant sp.	16 [5.2, 51.5]
	1 plant sp.	12.7 [0, 44.2]

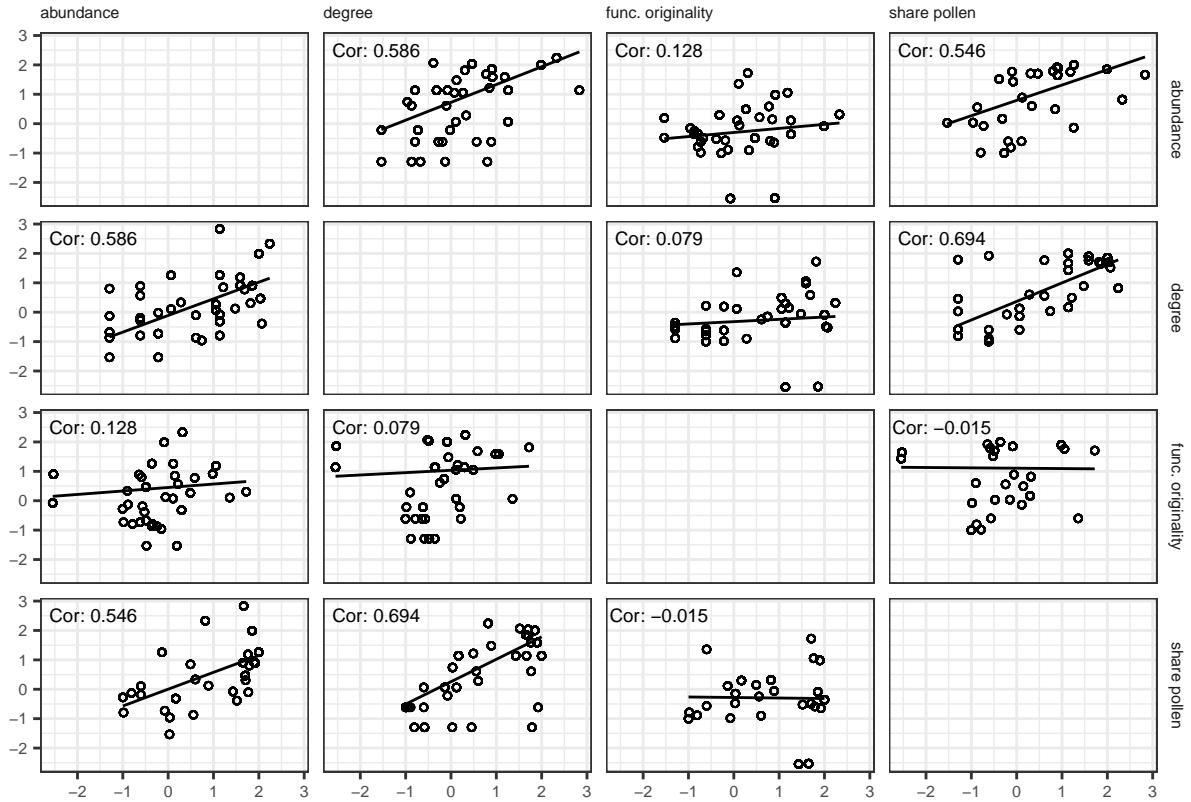


Figure S5: Correlation between the explanatory variables included in the statistical models.

Table S4: Comparison of the different fixed structures we considered. The table shows median delta AIC values of 99 bootstrap resamples of the data. The 5th and 95th percentile are shown inside square brackets.

pollen type	fixed structure	delta_AIC
conspecific	~ share pollen + func. originality	0 [0 ,1.1]
	~ abundance + share pollen + func. originality	0.3 [0 ,1.4]
	~ share pollen + degree + func. originality	1.2 [0.1 ,2.2]
	~ abundance + share pollen + degree + func. originality	1.8 [0.9 ,2.8]
	~ abundance + share pollen	20.2 [17.1 ,22.4]
	~ abundance + share pollen + degree	21.8 [18.7 ,23.9]
	~ share pollen	94.4 [81.9 ,113.3]
	~ share pollen + degree	95.6 [83.6 ,114.3]
	~ abundance + func. originality	160.1 [145.2 ,178]
	~ func. originality	159.6 [145.6 ,177.9]
	~ degree + func. originality	160.5 [145.7 ,178.4]
	~ abundance + degree + func. originality	161.7 [146.7 ,179.4]
	~ abundance	188.2 [171.8 ,208]
	~ abundance + degree	189.5 [172.3 ,209]
	~ degree	331 [303.5 ,352]
	~ 1	332.3 [305.1 ,353.3]
conspecific_abs	~ abundance + share pollen + func. originality	0 [0 ,0]
	~ share pollen + func. originality	1.2 [0.3 ,2.1]
	~ abundance + share pollen + degree + func. originality	1.4 [1 ,1.7]
	~ share pollen + degree + func. originality	1.9 [1.3 ,2.8]
	~ abundance + share pollen	21.7 [15.5 ,28.9]
	~ abundance + share pollen + degree	23.4 [17 ,30.6]
	~ share pollen	114.7 [84.6 ,142.5]
	~ share pollen + degree	115.2 [85.2 ,143]
	~ abundance + func. originality	147.1 [122.9 ,169.3]
	~ func. originality	147.8 [122.7 ,169.7]
	~ degree + func. originality	149.1 [124 ,170.9]
	~ abundance + degree + func. originality	149 [124.8 ,171.2]
	~ abundance	176.3 [148.8 ,203.1]
	~ abundance + degree	178.3 [150.7 ,204.9]
	~ degree	311.4 [272.8 ,346.4]
	~ 1	311.6 [273.3 ,347.5]
heterospecific	~ abundance + share pollen + func. originality	0 [0 ,0]
	~ abundance + share pollen + degree + func. originality	1.4 [0.8 ,1.9]
	~ share pollen + func. originality	9.6 [6.9 ,11.8]
	~ share pollen + degree + func. originality	11.6 [8.9 ,13.7]
	~ abundance + share pollen	15.6 [13 ,18.8]
	~ abundance + share pollen + degree	17.1 [14.4 ,20.2]
	~ share pollen	70 [63.6 ,76]
	~ share pollen + degree	71.9 [65.6 ,77.9]
	~ abundance + degree + func. originality	148.6 [129.1 ,170.5]
	~ abundance + func. originality	150.8 [130.7 ,172.8]
	~ func. originality	155.3 [135.4 ,178.2]
	~ degree + func. originality	157.3 [137.4 ,180.2]
	~ abundance + degree	172.5 [148.6 ,195.8]
	~ abundance	173.6 [150.4 ,197.5]
	~ 1	285.5 [266 ,313.5]
	~ degree	285 [267.2 ,314.5]
heterospecific_abs	~ abundance + share pollen + func. originality	0 [0 ,0]
	~ abundance + share pollen + degree + func. originality	1.4 [0.8 ,1.9]
	~ share pollen + func. originality	9.6 [6.9 ,11.8]
	~ share pollen + degree + func. originality	11.6 [8.9 ,13.7]
	~ abundance + share pollen	15.6 [13 ,18.8]
	~ abundance + share pollen + degree	17.1 [14.4 ,20.2]
	~ share pollen	70 [63.6 ,76]
	~ share pollen + degree	71.9 [65.6 ,77.9]
	~ abundance + degree + func. originality	148.6 [129.1 ,170.5]
	~ abundance + func. originality	150.8 [130.7 ,172.8]
	~ func. originality	155.3 [135.4 ,178.2]
	~ degree + func. originality	157.3 [137.4 ,180.2]
	~ abundance + degree	172.5 [148.6 ,195.8]
	~ abundance	173.6 [150.4 ,197.5]
	~ 1	285.5 [266 ,313.5]
	~ degree	285 [267.2 ,314.5]

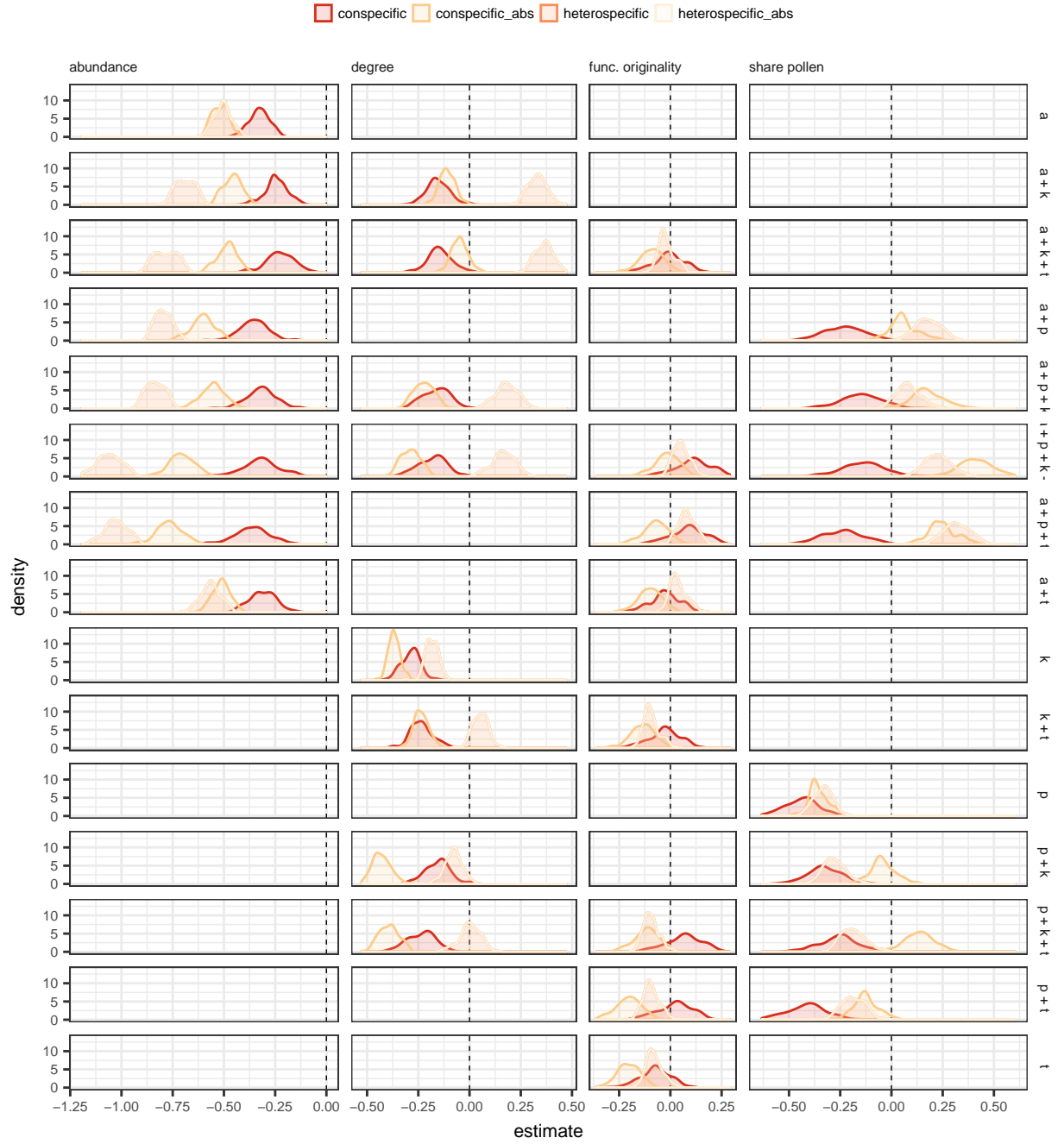
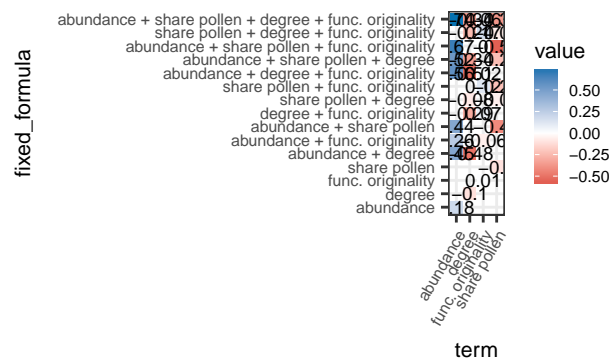


Figure S6: Distribution of effect estimates for models of conspecific and heterospecific pollen density gain. Only results for the models with the most parsimonious fixed effects.

A



B

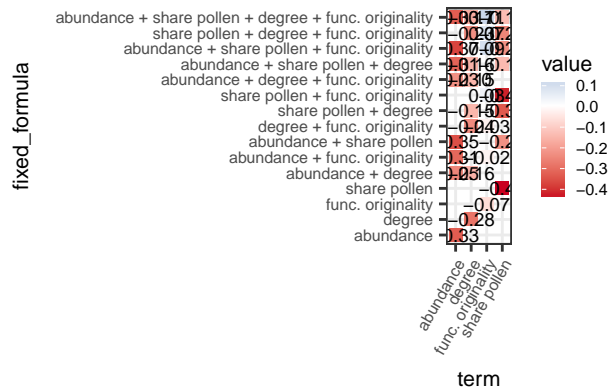


Figure S7: (#fig:fig_effect_quant_qual)asd

Chapter 1

References