The pollination trade-off

Supplementary information

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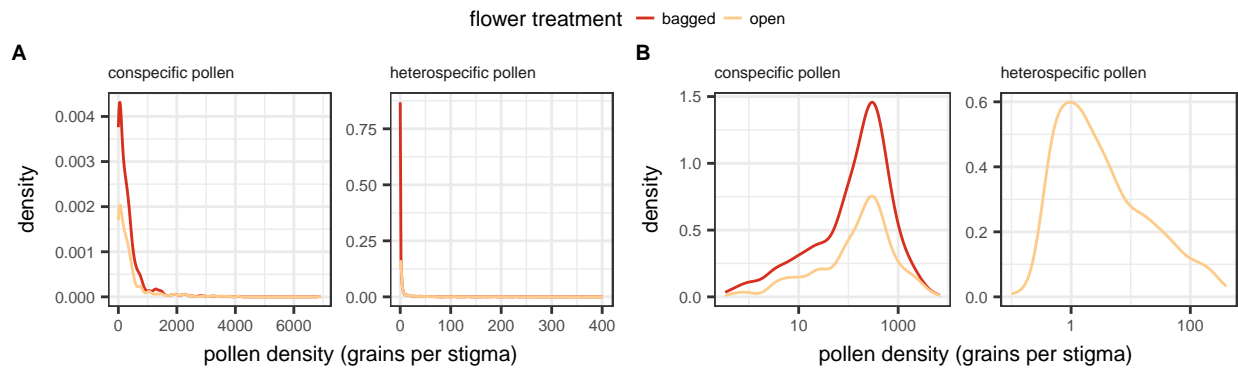
Figure S1: Distribution of stigmatic pollen density plotted in (A) a linear scale, and (B) a logarithmic scale (zero values not shown).
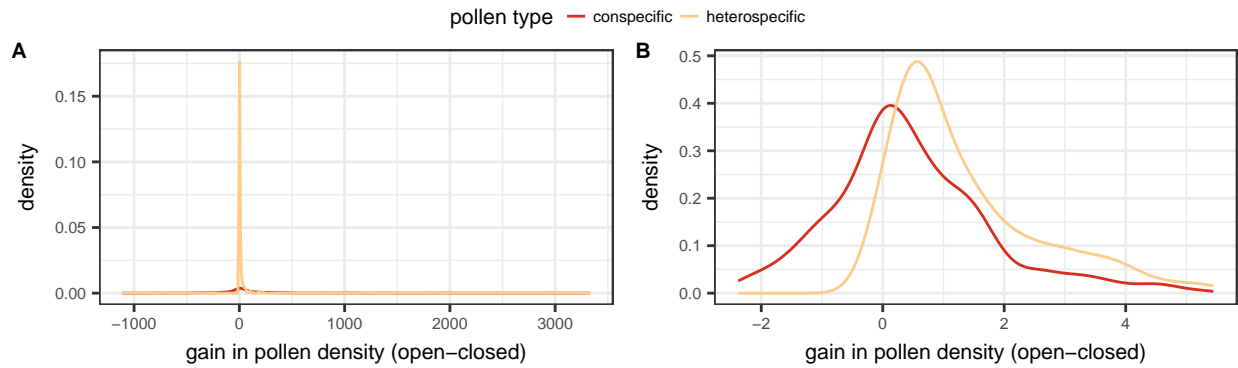

Figure S2: Distribution of the difference on stigmatic pollen density between open and closed flowers for one of the bootstrap replicates used in the model sets. When (A) using directly the gain in pollen density and (B) when pollen density is log transormed prior to calculating the gain.
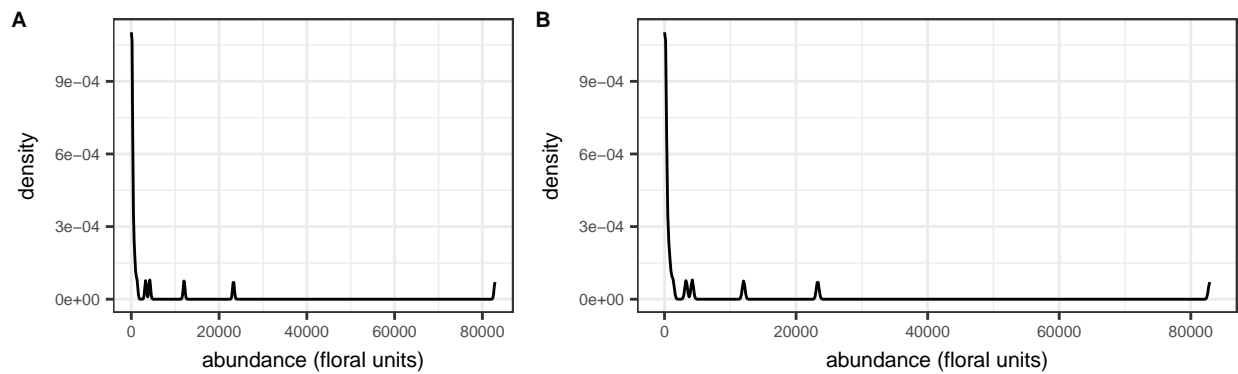

Figure S3: Distribution of plant abundance as (A) raw counts of floral units across communities, and (B) after applying a data transformation in which the counts have been

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
Aloysia gratissima	31.6666177	9.0	0.0382613
Baccharis pingraea	2.9999531	156.0	0.0000308
Carduus acanthoides	0.0000386	1077.0	0.4953884
Cirsium vulgare	-109.7728636	82.0	0.9969050
Condalia microphylla	-8.9004993	20.0	0.7499117
Cypella herbertii	2428.2500000	20.0	0.0151515
Descurania argentina	21.5000000	61.0	0.0599151
Diplotaxis tenuifolia	198.7500000	217.0	0.1661275
Dipsacus sp.	6.7177679	28.5	0.0085552
Gaillardia megapotamica	-411.7500000	9.0	0.9999504
Glandularia hookeriana	-68.5833333	5.0	0.8690476
Hirschfeldia incana	29.5000848	9510.0	0.1014593
Lycium chilense	394.1666667	24.0	0.1969697
Mentha pulegium	1.0104167	34.0	0.2205997
Nierembergia aristata	769.7500000	70.0	0.0000514
Nothoscordum euosimum	199.4166667	44.0	0.0247752
Physalis viscosa	1074.0000000	15.0	0.0178571
Prosopidastrum globosum	3.3096971	20.0	0.2051239
Senecio pulcher	-25.0000000	6.0	0.7142857
Sisyrinchium platense	-22.2500000	49.0	0.6918285
Solanum sisymbriifolium	2195.0000000	3.0	0.2500000
Sphaeralcea crispa	5.7000000	15.0	0.0178571
Stemodia lanceolata	1261.0000000	25.0	0.0039683
Thelesperma megapotamicum	-23.3333333	4.0	0.6500000
Turnera sidioides	151.0000205	327.0	0.0000224
Verbena intermedia	87.0833333	367.0	0.0062368
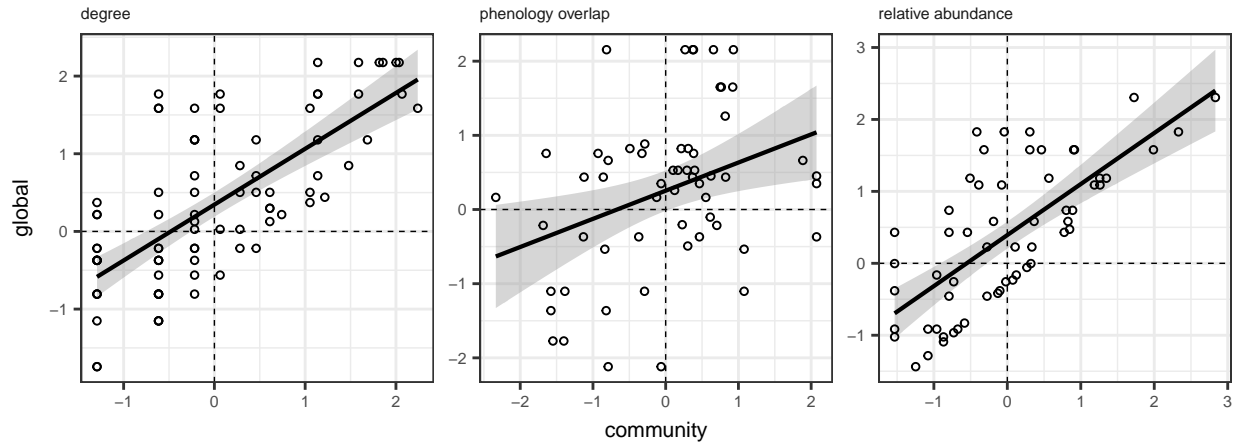
Figure S4: Relationship between the model's independent variables calculated at the community level and at the study-wide level.

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
{\emph{ Carduus acanthoides}}	Anquilóo - agricultural - 2	33.000000	15.0	0.0178571
{\emph{ Carduus acanthoides}}	San Claudio - agricultural - 1	11.500000	96.0	0.2532746
{\emph{ Carduus acanthoides}}	San Claudio - agricultural - 2	-13.175317	52.0	0.9902415
{\emph{ Carduus acanthoides}}	San Claudio - reserve - 1	-1.885121	19.5	0.8279753
{\emph{ Carduus acanthoides}}	San Claudio - reserve - 2	8.751193	38.5	0.1231573
{\emph{ Cirsium vulgare}}	Anquilóo - agricultural - 2	-38.250000	12.0	0.7316017
{\emph{ Cirsium vulgare}}	Las Chilcas - reserve - 1	-36.750000	12.0	0.7316017
{\emph{ Cirsium vulgare}}	San Claudio - reserve - 1	-138.833333	0.0	1.0000000
{\emph{ Hirschfeldia incana}}	Anquilóo - agricultural - 1	100.500000	263.0	0.0331919
{\emph{ Hirschfeldia incana}}	Anquilóo - agricultural - 2	677.000000	17.0	0.0238095
{\emph{ Hirschfeldia incana}}	San Claudio - agricultural - 1	-176.789010	165.0	0.9932982
{\emph{ Hirschfeldia incana}}	San Claudio - agricultural - 2	51.000029	658.5	0.1256791
{\emph{ Hirschfeldia incana}}	San Claudio - reserve - 1	-23.250368	266.0	0.6909042
{\emph{ Hirschfeldia incana}}	San Claudio - reserve - 2	142.999982	435.5	0.0162112
{\emph{ Mentha pulegium}}	Las Chilcas - agricultural - 2	1.666659	13.0	0.1820751
{\emph{ Mentha pulegium}}	Las Chilcas - reserve - 1	1.666667	6.0	0.3500000
{\emph{ Nierembergia aristata}}	Anquilóo - agricultural - 1	721.000000	1.0	0.5000000
{\emph{ Nierembergia aristata}}	Anquilóo - reserve - 1	846.000000	9.0	0.0500000
{\emph{ Nierembergia aristata}}	Anquilóo - reserve - 2	881.500000	18.0	0.0119048
{\emph{ Nothoscordum euosimum}}	Las Chilcas - agricultural - 1	305.750000	18.0	0.0119048
{\emph{ Nothoscordum euosimum}}	Las Chilcas - agricultural - 2	38.500000	5.0	0.5000000
{\emph{ Sisyrinchium platense}}	Las Chilcas - agricultural - 1	54.000000	25.0	0.1547619
{\emph{ Sisyrinchium platense}}	Las Chilcas - reserve - 1	-134.000000	0.0	1.0000000
{\emph{ Turnera sidioides}}	Anquilóo - agricultural - 1	135.250000	113.0	0.0010067
{\emph{ Turnera sidioides}}	Anquilóo - agricultural - 2	3.000037	9.0	0.0360991
{\emph{ Turnera sidioides}}	Anquilóo - reserve - 2	153.205503	18.0	0.0137659
{\emph{ Verbena intermedia}}	Anquilóo - reserve - 2	35.000000	13.0	0.1904762
{\emph{ Verbena intermedia}}	San Claudio - agricultural - 2	18.750000	65.0	0.1041438
{\emph{ Verbena intermedia}}	San Claudio - reserve - 2	213.250000	70.0	0.0002155

	Df	Deviance	Resid. Df	Resid. Dev	Pr(>Chi)
NULL			649	227291.81	
species	26	73445.11	623	153846.70	0.0000
community	10	2020.22	613	151826.47	0.6614
species:community	10	1141.52	603	150684.95	0.9312

Table S3: Analysis of variance of conspecific pollen density in bagged flowers (self pollination rate). Density were modelled using a quasipoisson distribution. The model suggests that self-pollination rates are species dependent but not across.
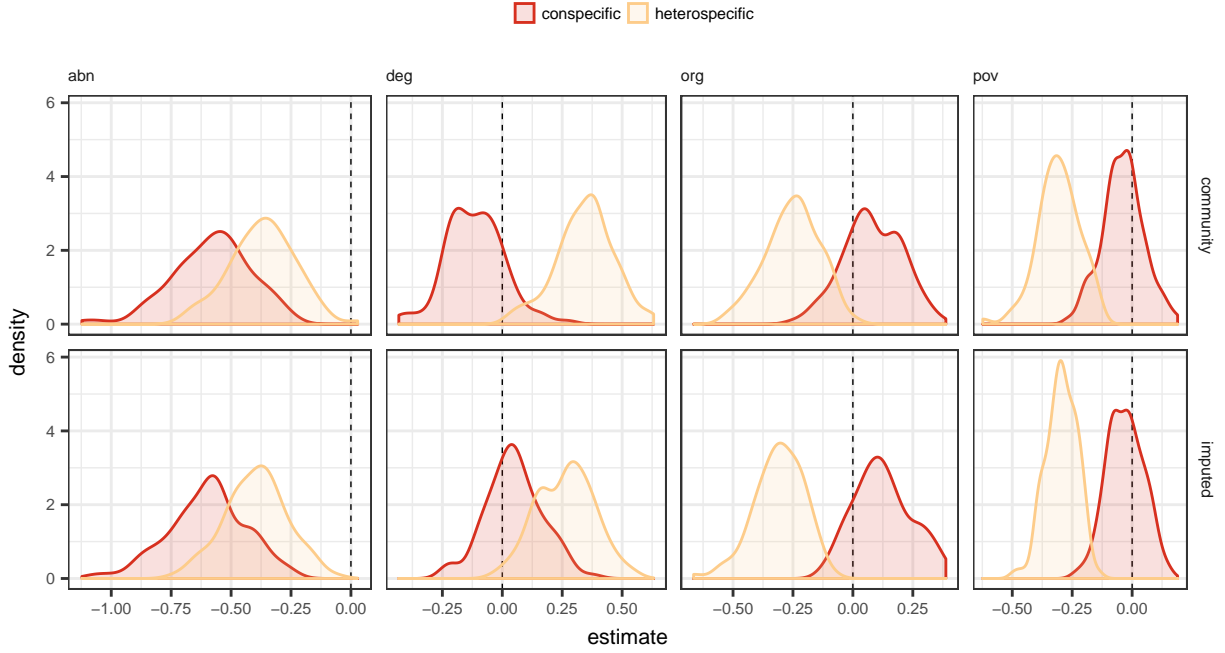
Figure S5: Model coefficients

	model metric	pollen type	best model set	shift estimate	p value
1	sigma	conspecific	imputed	2.2E-03	4.3E-01
2	sigma	heterospecific	imputed	1.2E-02	2.0E-14
3	r2c	conspecific	imputed	-3.3E-02	5.3E-15
4	r2c	heterospecific	imputed	-3.0E-02	3.9E-17

Table S4: Results of two sample paired Wilcoxon signed rank test comparing different model quality metrics of the model sets using predictors computed across or within communities. Metrics are the root mean square error (rmse), the residual standard deviation (sigma), the conditional r-squared approximation as proposed by Nakagawa and Schielzeth (2013), the omega-squared value as suggested by Xu (2003), and the normalised root-mean-square error of the model sets constructed using predictors computed at the community or study level.

Chapter 1

References