

Supporting information

Capturing diversity in seed collections: an empirical study of two congeners with contrasting mating systems

Table S1. Sample collection sites and details for (a) landscape-scale population genetics (Restore & Renew) sampling; (b) seed (progeny array) sampling.

(a)

species	site	latitude	longitude	date	n samples	type
<i>H. sericea</i>	BlueMountainsNP	-28.5569	153.418	17/10/2015	5	leaf
<i>H. sericea</i>	BrisbaneWatersNP	-33.682	151.1514	19/05/2015	6	leaf
<i>H. sericea</i>	S10	-35.0225	150.4717	23/07/2016	6	leaf
<i>H. sericea</i>	S106	-34.3251	150.4746	6/05/2016	6	leaf
<i>H. sericea</i>	S17	-34.5213	150.2129	21/07/2016	6	leaf
<i>H. sericea</i>	S247	-34.0105	151.2234	11/05/2016	6	leaf
<i>H. sericea</i>	S255	-33.0066	151.4684	13/04/2017	6	leaf
<i>H. sericea</i>	S261	-35.0412	150.1355	13/04/2017	6	leaf
<i>H. sericea</i>	S27	-33.7839	150.6132	18/03/2016	6	leaf
<i>H. sericea</i>	S315	-33.4152	151.004	9/05/2017	6	leaf
<i>H. sericea</i>	S324	-33.9803	151.0084	10/11/2016	6	leaf
<i>H. sericea</i>	S37	-33.3141	150.2451	17/09/2015	6	leaf
<i>H. sericea</i>	S402	-32.7319	152.1305	23/05/2017	6	leaf
<i>H. sericea</i>	S41	-32.8967	150.7616	16/08/2016	6	leaf
<i>H. sericea</i>	S453	-33.4848	151.1868	26/05/2017	6	leaf
<i>H. sericea</i>	S46	-33.1449	151.0966	11/11/2015	6	leaf
<i>H. sericea</i>	S486	-33.5241	150.5658	24/05/2017	6	leaf
<i>H. sericea</i>	S50	-33.6836	150.7614	18/08/2016	6	leaf
<i>H. sericea</i>	S546	-29.9343	152.989	22/06/2017	6	leaf
<i>H. sericea</i>	S56	-34.1382	150.9983	31/08/2016	5	leaf
<i>H. sericea</i>	S57	-33.4765	150.7773	30/12/2016	5	leaf
<i>H. sericea</i>	S585	-35.1281	150.0123	10/07/2017	6	leaf
<i>H. sericea</i>	S612	-33.6635	150.6113	13/07/2017	6	leaf
<i>H. sericea</i>	S67	-32.8831	151.4473	21/04/2016	5	leaf
<i>H. sericea</i>	S68	-34.3519	150.631	8/09/2016	6	leaf
<i>H. sericea</i>	S73	-33.7848	150.3967	21/04/2016	6	leaf
<i>H. teretifolia</i>	BlueMountainsNP	-33.6737	151.2086	11/06/2015	6	leaf
<i>H. teretifolia</i>	BrisbaneWatersNP	-33.6717	151.1371	19/05/2015	6	leaf
<i>H. teretifolia</i>	HeathcoteNP	-33.5516	151.2954	18/03/2016	6	leaf
<i>H. teretifolia</i>	DuffysForest	-33.6737	151.2086	20/05/2016	5	leaf
<i>H. teretifolia</i>	JervisBayNP	-32.7454	152.1131	12/04/2016	6	leaf
<i>H. teretifolia</i>	HeathcoteNP	-33.8168	151.3005	14/10/2015	7	leaf
<i>H. teretifolia</i>	RoyalNP	-35.1072	150.6784	25/07/2015	6	leaf
<i>H. teretifolia</i>	S156	-35.1123	150.3161	15/03/2017	6	leaf
<i>H. teretifolia</i>	S162	-32.1167	152.4441	16/03/2017	6	leaf
<i>H. teretifolia</i>	S177	-33.6244	151.2606	28/03/2017	6	leaf
<i>H. teretifolia</i>	S18	-32.5015	152.2875	21/11/2016	6	leaf

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<i>H. teretifolia</i>	S19	-33.5406	151.2825	3/09/2015	6	leaf
<i>H. teretifolia</i>	S21	-34.1693	150.9951	14/03/2016	6	leaf
<i>H. teretifolia</i>	S31	-31.3136	152.8723	12/04/2016	6	leaf
<i>H. teretifolia</i>	S324	-31.7608	152.745	10/11/2016	5	leaf
<i>H. teretifolia</i>	S34	-34.1155	150.9491	13/04/2016	6	leaf
<i>H. teretifolia</i>	S43	-33.7953	150.4044	19/04/2016	6	leaf
<i>H. teretifolia</i>	S47	-33.6556	151.2568	18/08/2016	6	leaf
<i>H. teretifolia</i>	S55	-33.5879	150.2676	20/04/2016	6	leaf
<i>H. teretifolia</i>	S56	-35.0225	150.4717	31/08/2016	5	leaf
<i>H. teretifolia</i>	S588	-33.6078	150.3253	10/07/2017	6	leaf
<i>H. teretifolia</i>	S591	-34.6731	150.7168	10/07/2017	6	leaf
<i>H. teretifolia</i>	S594	-34.138	150.9971	10/07/2017	6	leaf
<i>H. teretifolia</i>	S60	-33.165	151.5796	4/01/2017	6	leaf
<i>H. teretifolia</i>	S600	-34.1404	151.1156	11/07/2017	6	leaf
<i>H. teretifolia</i>	S603	-34.2048	150.8464	11/07/2017	6	leaf
<i>H. teretifolia</i>	S73	-33.5768	150.3634	21/04/2016	6	leaf
<i>H. teretifolia</i>	S8	-33.4472	151.2139	28/06/2016	6	leaf

(b)

species	site	latitude	longitude	date	n samples	type
<i>H. sericea</i>	BV	-33.6461	151.1045	28/10/2018	10	leaf, seed
<i>H. sericea</i>	CR	-34.9776	150.738	13/12/2018	10	leaf, seed
<i>H. sericea</i>	KL	-34.0124	151.2244	12/10/2018	10	leaf, seed
<i>H. sericea</i>	MO	-33.4869	151.1873	7/12/2018	10	leaf, seed
<i>H. sericea</i>	PT	-32.8967	150.7613	29/11/2018	10	leaf, seed
<i>H. sericea</i>	SP	-33.6861	150.5779	28/10/2018	11	leaf, seed
<i>H. teretifolia</i>	BV	-33.6438	151.1141	28/10/2018	10	leaf, seed
<i>H. teretifolia</i>	CR	-35.0015	150.7927	13/12/2018	10	leaf, seed
<i>H. teretifolia</i>	KL	-34.0131	151.2251	12/10/2018	10	leaf, seed
<i>H. teretifolia</i>	MB	-33.5782	150.3635	26/10/2018	10	leaf, seed
<i>H. teretifolia</i>	MU	-33.1649	151.5792	7/12/2018	10	leaf, seed
<i>H. teretifolia</i>	RN	-34.1137	151.0677	22/11/2018	10	leaf, seed
<i>H. teretifolia</i>	VC	-33.5879	150.2677	26/10/2018	10	leaf, seed

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Table S2. Seed (progeny array) details and germination results.

species	site	mat. line	n sown	n germ.	% germ.	n sequenced
<i>H. sericea</i>	BV	1	15	15	100	3
<i>H. sericea</i>	BV	2	18	15	83	3
<i>H. sericea</i>	BV	3	10	10	100	3
<i>H. sericea</i>	BV	4	18	16	89	12
<i>H. sericea</i>	BV	5	11	11	100	5
<i>H. sericea</i>	BV	6	26	21	81	10
<i>H. sericea</i>	BV	7	6	6	100	1
<i>H. sericea</i>	BV	8	12	12	100	3
<i>H. sericea</i>	BV	9	15	15	100	10
<i>H. sericea</i>	BV	10	12	12	100	3
<i>H. sericea</i>	CR	1	20	18	90	3
<i>H. sericea</i>	CR	2	16	16	100	3
<i>H. sericea</i>	CR	3	24	24	100	3
<i>H. sericea</i>	CR	4	26	26	100	12
<i>H. sericea</i>	CR	5	26	24	92	3
<i>H. sericea</i>	CR	6	22	19	86	3
<i>H. sericea</i>	CR	7	22	22	100	3
<i>H. sericea</i>	CR	8	24	24	100	10
<i>H. sericea</i>	CR	9	22	22	100	3
<i>H. sericea</i>	CR	10	13	12	92	10
<i>H. sericea</i>	KL	1	20	20	100	10
<i>H. sericea</i>	KL	2	20	19	95	3
<i>H. sericea</i>	KL	3	20	20	100	9
<i>H. sericea</i>	KL	4	17	17	100	3
<i>H. sericea</i>	KL	5	19	12	63	0
<i>H. sericea</i>	KL	6	19	19	100	3
<i>H. sericea</i>	KL	7	20	20	100	3
<i>H. sericea</i>	KL	8	19	19	100	3
<i>H. sericea</i>	KL	9	20	20	100	10
<i>H. sericea</i>	KL	10	20	20	100	3
<i>H. sericea</i>	MO	1	24	23	96	10
<i>H. sericea</i>	MO	2	24	24	100	9
<i>H. sericea</i>	MO	3	12	11	92	4
<i>H. sericea</i>	MO	4	6	5	83	2
<i>H. sericea</i>	MO	5	6	6	100	3
<i>H. sericea</i>	MO	6	18	17	94	3
<i>H. sericea</i>	MO	7	8	8	100	3
<i>H. sericea</i>	MO	8	12	12	100	3
<i>H. sericea</i>	MO	9	16	14	88	9
<i>H. sericea</i>	MO	10	8	7	88	3
<i>H. sericea</i>	PT	1	24	24	100	10
<i>H. sericea</i>	PT	2	24	23	96	12
<i>H. sericea</i>	PT	3	24	18	75	3
<i>H. sericea</i>	PT	4	24	17	71	3
<i>H. sericea</i>	PT	5	22	18	82	3
<i>H. sericea</i>	PT	6	24	24	100	10

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<i>H. sericea</i>	PT	7	21	17	81	3
<i>H. sericea</i>	PT	8	18	17	94	3
<i>H. sericea</i>	PT	9	23	18	78	3
<i>H. sericea</i>	PT	10	22	19	86	3
<i>H. sericea</i>	SP	1	18	13	72	10
<i>H. sericea</i>	SP	2	10	10	100	3
<i>H. sericea</i>	SP	3	20	20	100	12
<i>H. sericea</i>	SP	4	12	11	92	3
<i>H. sericea</i>	SP	5	8	8	100	3
<i>H. sericea</i>	SP	6	6	6	100	3
<i>H. sericea</i>	SP	7	6	6	100	3
<i>H. sericea</i>	SP	8	17	13	76	10
<i>H. sericea</i>	SP	9	12	12	100	3
<i>H. sericea</i>	SP	10	10	10	100	3
<i>H. sericea</i>	SP	11	12	12	100	3
<i>H. teretifolia</i>	BV	1	24	20	83	10
<i>H. teretifolia</i>	BV	2	19	11	58	1
<i>H. teretifolia</i>	BV	3	15	7	47	3
<i>H. teretifolia</i>	BV	4	14	7	50	3
<i>H. teretifolia</i>	BV	5	7	1	14	0
<i>H. teretifolia</i>	BV	6	24	11	46	6
<i>H. teretifolia</i>	BV	7	24	9	38	3
<i>H. teretifolia</i>	BV	8	14	4	29	3
<i>H. teretifolia</i>	BV	9	4	2	50	2
<i>H. teretifolia</i>	BV	10	24	20	83	9
<i>H. teretifolia</i>	CR	1	24	23	96	9
<i>H. teretifolia</i>	CR	2	24	19	79	0
<i>H. teretifolia</i>	CR	3	25	25	100	3
<i>H. teretifolia</i>	CR	4	21	17	81	3
<i>H. teretifolia</i>	CR	5	24	24	100	10
<i>H. teretifolia</i>	CR	6	28	22	79	3
<i>H. teretifolia</i>	CR	7	24	13	54	3
<i>H. teretifolia</i>	CR	8	25	23	92	10
<i>H. teretifolia</i>	CR	9	28	27	96	3
<i>H. teretifolia</i>	CR	10	28	25	89	3
<i>H. teretifolia</i>	KL	1	6	5	83	2
<i>H. teretifolia</i>	KL	2	9	8	89	3
<i>H. teretifolia</i>	KL	3	14	4	29	3
<i>H. teretifolia</i>	KL	4	24	16	67	10
<i>H. teretifolia</i>	KL	5	16	15	94	9
<i>H. teretifolia</i>	KL	6	18	9	50	3
<i>H. teretifolia</i>	KL	7	24	21	88	10
<i>H. teretifolia</i>	KL	8	21	11	52	3
<i>H. teretifolia</i>	KL	9	3	2	67	3
<i>H. teretifolia</i>	KL	10	17	7	41	3
<i>H. teretifolia</i>	MB	1	25	14	56	9
<i>H. teretifolia</i>	MB	2	12	2	17	1
<i>H. teretifolia</i>	MB	3	15	4	27	3
<i>H. teretifolia</i>	MB	4	24	21	88	10

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<i>H. teretifolia</i>	MB	5	16	16	100	3
<i>H. teretifolia</i>	MB	6	23	14	61	3
<i>H. teretifolia</i>	MB	7	18	10	56	3
<i>H. teretifolia</i>	MB	8	10	8	80	3
<i>H. teretifolia</i>	MB	9	24	23	96	10
<i>H. teretifolia</i>	MB	10	25	15	60	3
<i>H. teretifolia</i>	MU	1	22	3	14	3
<i>H. teretifolia</i>	MU	2	24	7	29	5
<i>H. teretifolia</i>	MU	3	25	5	20	6
<i>H. teretifolia</i>	MU	4	19	4	21	4
<i>H. teretifolia</i>	MU	5	22	5	23	3
<i>H. teretifolia</i>	MU	6	24	1	4	1
<i>H. teretifolia</i>	MU	7	16	5	31	5
<i>H. teretifolia</i>	MU	8	24	4	17	5
<i>H. teretifolia</i>	MU	9	23	4	17	3
<i>H. teretifolia</i>	MU	10	21	3	14	5
<i>H. teretifolia</i>	RN	1	20	5	25	3
<i>H. teretifolia</i>	RN	2	26	20	77	3
<i>H. teretifolia</i>	RN	3	24	18	75	10
<i>H. teretifolia</i>	RN	4	24	22	92	3
<i>H. teretifolia</i>	RN	5	28	23	82	10
<i>H. teretifolia</i>	RN	6	24	17	71	3
<i>H. teretifolia</i>	RN	7	23	12	52	3
<i>H. teretifolia</i>	RN	8	24	24	100	4
<i>H. teretifolia</i>	RN	9	24	4	17	2
<i>H. teretifolia</i>	RN	10	18	17	94	10
<i>H. teretifolia</i>	VC	1	16	4	25	3
<i>H. teretifolia</i>	VC	2	24	1	4	0
<i>H. teretifolia</i>	VC	3	16	1	6	0
<i>H. teretifolia</i>	VC	4	25	0	0	0
<i>H. teretifolia</i>	VC	5	18	7	39	7
<i>H. teretifolia</i>	VC	6	17	8	47	8
<i>H. teretifolia</i>	VC	7	13	5	38	2
<i>H. teretifolia</i>	VC	8	16	3	19	2
<i>H. teretifolia</i>	VC	9	24	5	21	4
<i>H. teretifolia</i>	VC	10	13	1	8	1

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Table S3. Estimates of genetic diversity for seed sampling sites (per-site H_o , H_e , FIS, relatedness, average genetic distance from mother plants; average genetic distance from all individuals).

species	site	H_o	H_e	FIS	average pairwise relatedness	average pairwise Euclidean distance (mums)	average pairwise Euclidean distance (all)
<i>H. sericea</i>	BV	0.094	0.193	0.424	0.059	88.249	85.790
<i>H. sericea</i>	CR	0.026	0.103	0.699	0.157	62.173	48.169
<i>H. sericea</i>	KL	0.021	0.143	0.823	0.128	72.603	68.620
<i>H. sericea</i>	MO	0.057	0.1	0.365	0.068	59.600	56.775
<i>H. sericea</i>	PT	0.018	0.013	-0.149	0.381	15.693	15.356
<i>H. sericea</i>	SP	0.015	0.094	0.84	0.265	54.486	63.033
<i>H. teretifolia</i>	BV	0.120	0.191	0.311	0.052	99.253	93.421
<i>H. teretifolia</i>	CR	0.081	0.173	0.436	0.073	98.387	93.814
<i>H. teretifolia</i>	KL	0.139	0.195	0.228	0.056	95.900	92.135
<i>H. teretifolia</i>	MB	0.134	0.191	0.241	0.056	95.920	96.160
<i>H. teretifolia</i>	MU	0.135	0.142	0.036	0.053	72.956	75.511
<i>H. teretifolia</i>	RN	0.175	0.201	0.100	0.057	93.658	98.384
<i>H. teretifolia</i>	VC	0.102	0.160	0.290	0.071	85.262	85.624

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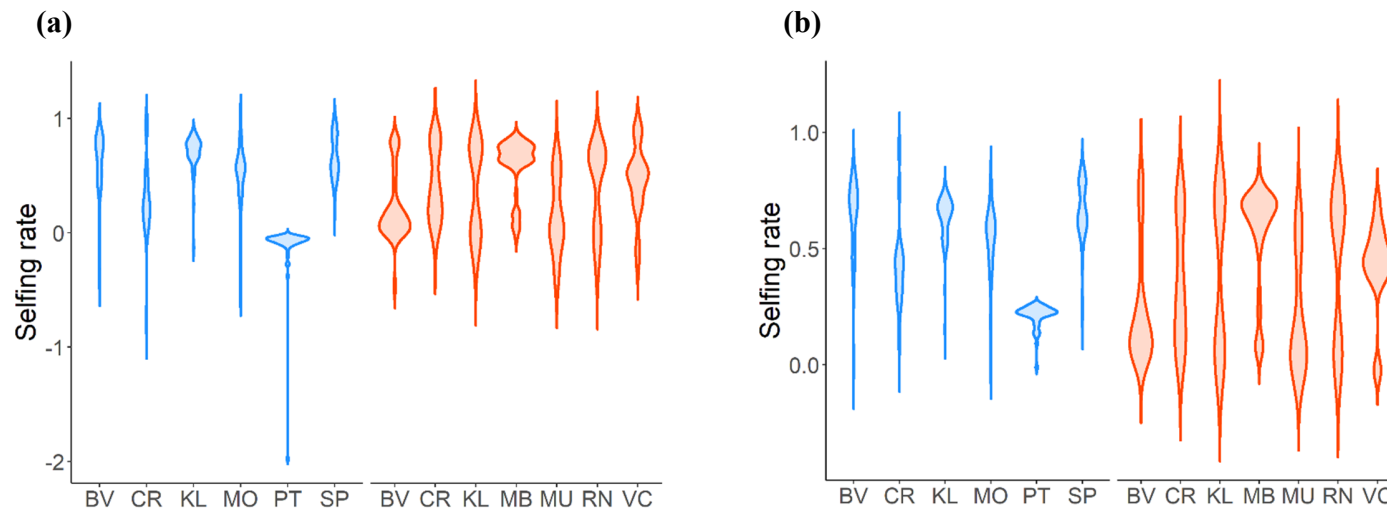


Figure S1. Violin plots (Gaussian kernel density estimates) of individual progeny selfing rates inferred per site using (a) MME and (b) CNN approaches for *H. sericea* (blue) and *H. teretifolia* (orange). Estimates for all sites are shown, including outlier estimates from site PT at which all mother plants were highly genetically homogeneous.

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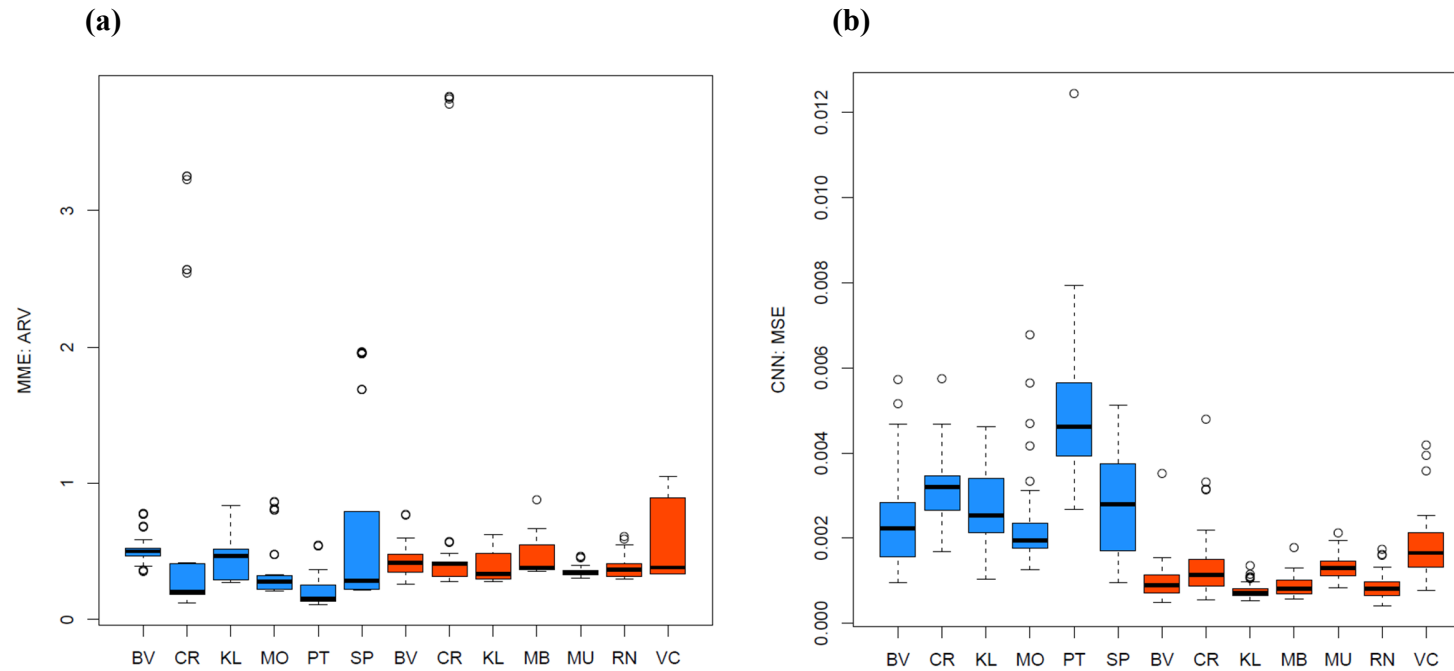


Figure S2. Measures of (a) average reciprocal variance among loci calculated as part of MME inference of selfing rate, and (b) mean standard error from CNN estimation of selfing rate among progeny at each site in *H. sericea* (blue) and *H. teretifolia* (orange). Less informative data for estimation of selfing rates are expected to result in lower ARV and higher MSE values relative to more informative data. Thus, less confidence might be warranted in estimates with relatively low ARV and/or relatively high MSE.

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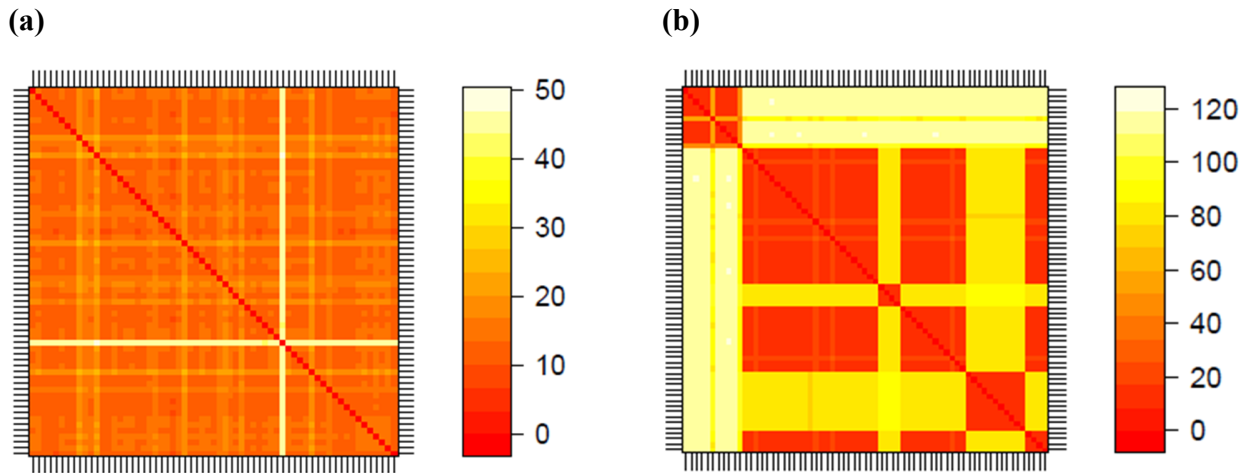


Figure S3. Heatmaps of pairwise Euclidean distance matrices among *H. sericea* individuals originating from (a) site PT and (b) site SP (at which observed heterozygosity is similar to PT). Matrices are ordered by maternal line (mother followed by offspring). High similarity among all individuals across maternal lines at site PT is indicated by near-uniformly low pairwise genetic distance (orange-red tones). In contrast, four distinct groups of similar individuals are discernible at site SP, corresponding to maternal lines (with the largest of these groups comprising 8 of the 11 maternal lines sampled at this site).

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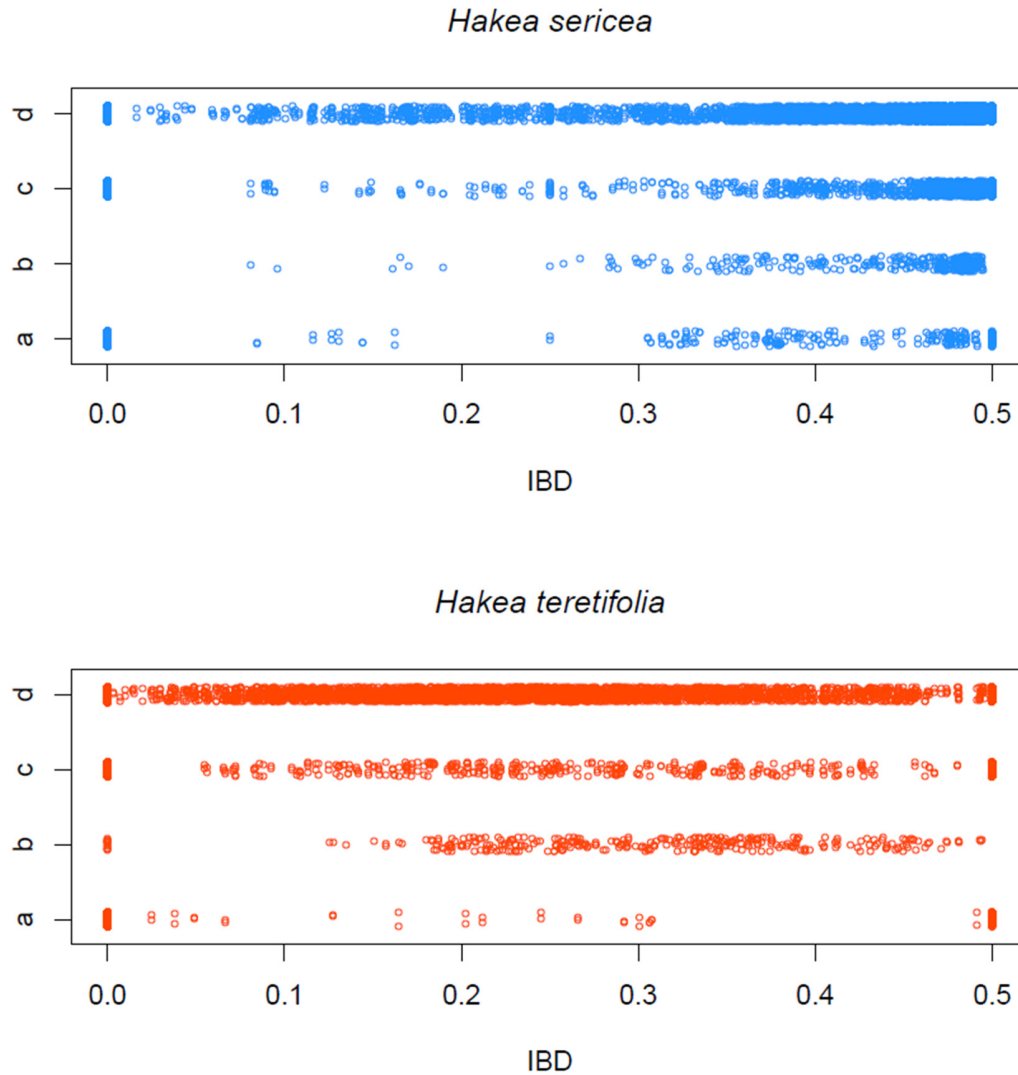


Figure S4. Stripcharts plotting pairwise kinship estimates among (a) mothers within populations, (b) mothers and offspring, (c) siblings within populations, (d) all individuals within populations. IBD= identity by descent. On average, pairwise kinship coefficients among mothers within populations were significantly higher in *H. sericea* (0.18, vs. 0.059 in *H. teretifolia*, $p = 6.2 \times 10^{-27}$), as were parent-progeny kinship coefficients (*H. sericea*: 0.44, *H. teretifolia*: 0.30, $p = 2.6 \times 10^{-58}$), and kinship coefficients among siblings (*H. sericea*: 0.27, *H. teretifolia*: 0.12, $p = 8.0 \times 10^{-69}$).

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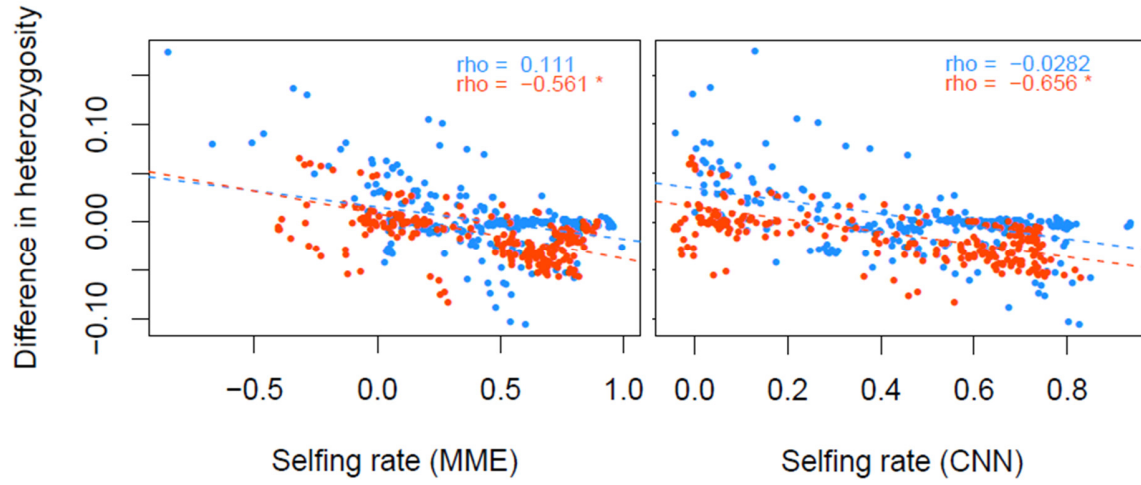


Figure S5. Difference in proportion of heterozygous loci between individual seedlings and their mothers, plotted against each seedling's estimated selfing rate (*H. sericea*: blue; *H. teretifolia*: orange). Shown for each species: linear regression (dashed) lines; Spearman's correlation coefficient (rho), asterisks denoting significant correlation ($p < 0.05$).

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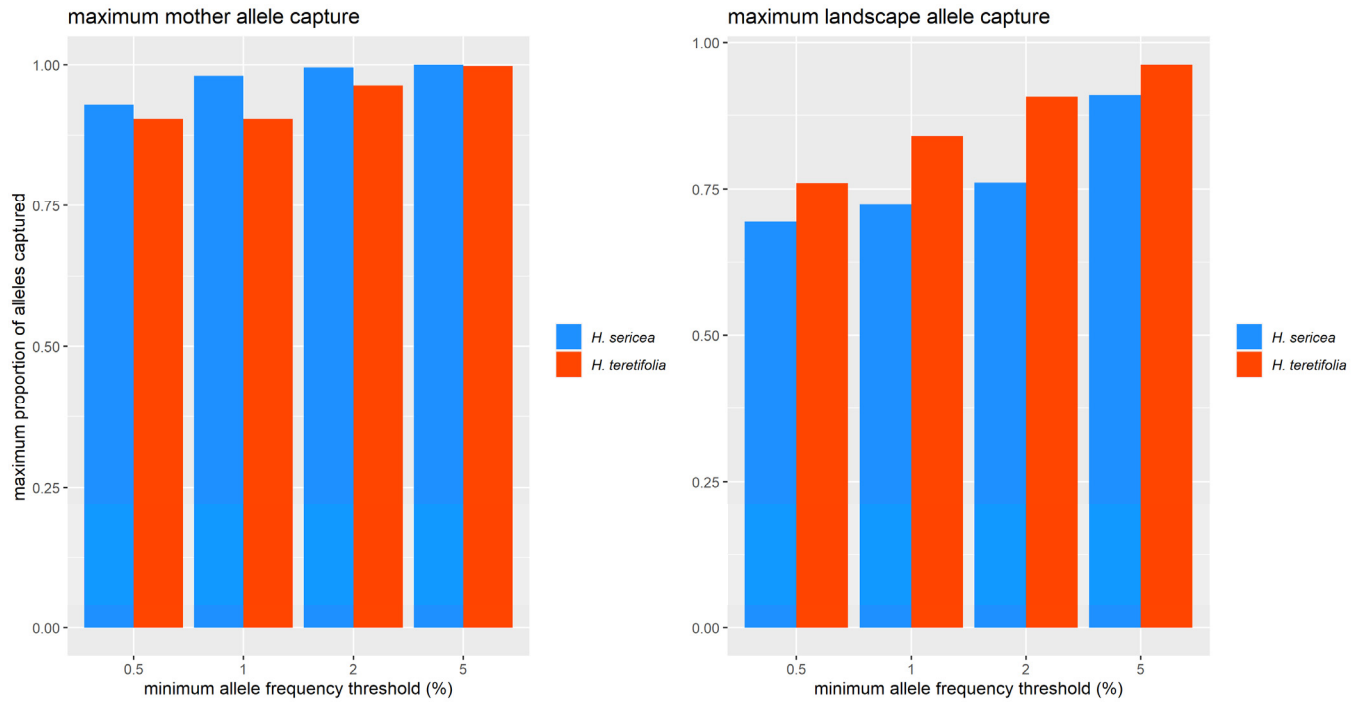


Figure S6. Maximum proportions of alleles captured by resampling seedlings (8 maternal lines among all seed sampling sites), for (a) alleles present in the mother plants at seed sampling sites, and (b) alleles present in all adult plants including the landscape-scale sampling sites. Maximum allele capture is shown for alleles present in each data set at four different frequencies (i.e., allele frequency $\geq 0.5\%$, 1%, 2%, and 5%).