

**Appendix S1.** Composition of artificial populations in the demography experiment of the three geo-cytotypes of *Centaurea stoebe*. Eco-geographic origin of natural populations and number of seed families and seeds used (from Hahn, Buckley, and Müller-Schärer, 2012).

Artificial population	Eco-geographic region	Continent	Ploidy	Population code	Latitude	Longitude	Maternal plants	Seeds / maternal plant
EU-1/2x	EU-1	EU	2x	SUAC	N 49° 13.223'	E 24° 42.294'	10	17
EU-1/2x	EU-1	EU	2x	SUAG	N 50° 16.515'	E 28° 54.642'	10	17
EU-1/2x	EU-1	EU	2x	SUAH	N 49° 40.239'	E 33° 42.038'	10	17
EU-1/2x	EU-1	EU	2x	SUAI	N 49° 40.051'	E 34° 56.887'	10	17
EU-1/4x	EU-1	EU	4x	SUAA	N 48° 8.281'	E 23° 4.604'	14	16
EU-1/4x	EU-1	EU	4x	SUAD	N 48° 15.012'	E 25° 53.787'	14	16
EU-1/4x	EU-1	EU	4x	UA4	N 48° 30.955'	E 26° 27.948'	14	16
EU-2/2x	EU-2	EU	2x	D1	N 48° 15.639'	E 13° 0.903'	10	17
EU-2/2x	EU-2	EU	2x	DE2	N 47° 39.714'	E 7° 31.821'	10	17
EU-2/2x	EU-2	EU	2x	DE10	N 51° 11.677'	E 13° 25.833'	10	17
EU-2/2x	EU-2	EU	2x	DE11	N 49° 10.283'	E 11° 57.953'	10	17
EU-2/4x	EU-2	EU	4x	DE3	N 49° 25.010'	E 11° 5.139'	14	16
EU-2/4x	EU-2	EU	4x	DE4	N 49° 59.620'	E 10° 37.886'	14	16
EU-2/4x	EU-2	EU	4x	DE5	N 50° 17.894'	E 10° 39.454'	14	16
EU-3/2x	EU-3	EU	2x	H1	N 46° 43.321'	E 17° 46.133'	10	17
EU-3/2x	EU-3	EU	2x	H3	N 46° 54.846'	E 17° 20.098'	10	17
EU-3/2x	EU-3	EU	2x	H5	N 46° 6.536'	E 18° 55.511'	10	17
EU-3/2x	EU-3	EU	2x	H6	N 46° 42.350'	E 19° 53.752'	10	17
EU-3/4x	EU-3	EU	4x	H2	N 47° 6.994'	E 17° 26.604'	10	17
EU-3/4x	EU-3	EU	4x	H4	N 45° 57.913'	E 17° 29.998'	10	17
EU-3/4x	EU-3	EU	4x	SHE	N 46° 24.095'	E 17° 28.405'	10	17
EU-3/4x	EU-3	EU	4x	SHF	N 46° 5.865'	E 18° 13.182'	10	17
NA-1/4x	NA-1	NA	4x	USMT3	N 45° 50.079'	W 113° 58.494'	10	17
NA-1/4x	NA-1	NA	4x	USMT5	N 44° 51.319'	W 111° 23.663'	10	17
NA-1/4x	NA-1	NA	4x	USMT6	N 45° 17.758'	W 110° 49.917'	10	17
NA-1/4x	NA-1	NA	4x	USMT9	N 47° 18.034'	W 112° 7.540'	10	17
NA-2/4x	NA-2	NA	4x	USMT2	N 46° 35.027'	W 114° 8.440'	10	17
NA-2/4x	NA-2	NA	4x	USMT11	N 47° 18.502'	W 114° 17.985'	10	17
NA-2/4x	NA-2	NA	4x	USOR7	N 44° 33.821'	W 121° 25.096'	10	17
NA-2/4x	NA-2	NA	4x	USOR8	N 44° 3.305'	W 121° 14.644'	10	17
NA-3/4x	NA-3	NA	4x	USOR2	N 45° 41.883'	W 121° 30.340'	10	17
NA-3/4x	NA-3	NA	4x	USOR9	N 43° 41.977'	W 121° 29.742'	10	17
NA-3/4x	NA-3	NA	4x	USOR10	N 42° 14.260'	W 121° 47.740'	10	17
NA-3/4x	NA-3	NA	4x	USOR11	N 44° 9.400'	W 122° 15.735'	10	17

**Appendix S2.** Contribution of seed characteristics of *Centaurea stoebe* to falling velocity and seed roughness. Hierarchical variance partitioning of (A) falling velocity and (B) seed roughness (ratio polygon : seed perimeter) of seeds of all three geo-cytotypes of *C. stoebe* combined. Notes: *I.perc*, percentage of total explained variance of the independent contribution of each variable; *I*, independent contribution of each variable; *J*, joint contribution of each variable; total: sum of I and J. Main determinants are given in bold.

**(A) Falling velocity**

<b>Trait</b>	<b>I.perc</b>	<b>I</b>	<b>J</b>	<b>Total</b>
Pappus length	1.07	-0.05	-0.10	-0.15
Pappus width	8.78	-0.40	-0.36	-0.76
Achene length	6.80	-0.31	-0.27	-0.58
Achene width	5.05	-0.23	0.04	-0.19
Seed mass	<b>78.30</b>	<b>-3.56</b>	-0.29	-3.85

**(B) Seed roughness (ratio polygon : seed perimeter)**

<b>Trait</b>	<b>I.perc</b>	<b>I</b>	<b>J</b>	<b>Total</b>
Pappus length	7.06	-0.02	-0.02	-0.04
Pappus width	<b>81.76</b>	<b>-0.21</b>	-0.01	-0.22
Achene length	7.92	-0.02	0.02	-0.00
Achene width	3.26	-0.01	-0.01	-0.01