

Supporting Information

Table S1. Populations of *Senecio pterophorus* used in a common garden experiment sampled at the native range (Eastern South Africa), the expanded range (Western South Africa) and two introduced ranges (Australia and Europe)

Location*	Population	Code†	Origin‡	Coordinates	Elevation (m)¶	Temp. (°C) ¶	Precip. (mm) ¶	Summer <i>P/PET</i> §	Predation (% heads)**
SOUTH AFRICA									
ECP	Colchester	S06	Nat	33°41'S 25°49'E	6	16.4	440	0.37	9.0
ECP	Grahamstown	S07	Nat	33°19'S 26°32'E	668	18.5	741	0.98	30.8
ECP	Alexandria	S08	Nat	33°36'S 26°24'E	124	16.1	548	0.51	9.1
ECP	Port Alfred	S09	Nat	33°36'S 26°52'E	61	18.2	595	0.57	35.0
ECP	Fort Hare	S10	Nat	32°47'S 26°52'E	535	18.2	593	0.76	45.7
ECP	Courtlands	S11	Nat	32°40'S 28°00'E	471	17.9	802	1.20	32.5
ECP	Umtentu	S12	Nat	31°51'S 28°30'E	716	17.4	713	1.21	20.0
ECP	Flargstaff	S13	Nat	31°11'S 29°26'E	884	16.0	912	1.66	24.5
ECP	Mt. Ayliff	S14	Nat	30°50'S 29°15'E	1116	15.9	827	1.63	26.0
ECP	Bizana	S15	Nat	30°50'S 29°35'E	1076	15.6	907	1.76	45.0
ECP	MountFrere	S18	Nat	30°57'S 28°57'E	1242	15.6	856	1.77	21.0
ECP	Antioch	S19	Nat	30°42'S 28°51'E	1261	16.0	787	1.63	27.3
ECP	Sidwadwenii	S20	Nat	31°23'S 28°50'E	1002	16.0	801	1.53	n/a
ECP	Mqanduli	S21	Nat	31°49'S 28°45'E	785	16.8	748	1.27	n/a
ECP	Gwadana	S22	Nat	32°12'S 28°17'E	709	16.9	750	1.32	n/a
ECP	Nobokwe	S23	Nat	31°54'S 27°50'E	963	16.9	650	1.16	n/a
KZN	Stafford's Post	S16	Nat	30°31'S 29°46'E	1141	15.6	927	1.85	9.0
KZN	Franklin	S17	Nat	30°23'S 29°38'E	1200	15.5	834	1.69	18.7
WCP	Groenfontein kop	S01	Exp	33°47'S 18°52'E	176	16.9	786	0.26	27.0
WCP	CapeTown	S02	Exp	34°07'S 18°23'E	26	16.4	825	0.34	42.4
WCP	Elgin	S03	Exp	34°09'S 19°01'E	326	14.7	996	0.44	48.1
WCP	Hermanus	S04	Exp	34°24'S 19°11'E	23	16.2	589	0.29	24.4
WCP	CapeTown	S05	Exp	33°56'S 18°26'E	114	16.5	1086	0.46	25.5
AUSTRALIA									
NSW	Doonside	A01	Int	33°45'S	48	17.2	873	1.04	n/a
NSW	Newcastle	A02	Int	32°52'S	13	17.9	1092	1.21	28.2
SA	Port Lincoln	A03	Int	34°33'S	13	16.0	509	0.23	2.0
SA	Wangary	A04	Int	34°30'S	15	16.2	531	0.21	23.0
SA	Lincoln NP	A05	Int	34°48'S	6	16.2	516	0.20	17.5
SA	Hincks NP	A06	Int	33°55'S	84	16.4	399	0.20	24.8
SA	Mt. Compass	A07	Int	35°20'S	262	14.6	801	0.40	2.5
SA	Cleland NP	A08	Int	34°57'S	602	13.0	1101	0.56	10.5
SA	Warren CP	A09	Int	34°40'S	257	14.9	616	0.27	19.1

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Functional Ecology

SA	Mt. Burr	A10	Int	37°35'S	171	13.3	867	0.49	16.5
VIC	Mt. Napier NP	A11	Int	37°55'S	223	12.9	757	0.61	14.5
VIC	Hastings	A12	Int	38°17'S	15	14.5	785	0.69	5.6
EUROPE									
CAT	Cambrils	C01	Int	41°04'N 1°04'E	20	16.3	549	0.25	0.5
CAT	Palafolls	C02	Int	41°39'N 2°42'E	66	15.6	722	0.34	0
CAT	Calella	C03	Int	41°37'N 2°39'E	144	15.6	717	0.34	0
CAT	Castellbisbal	C04	Int	41°27'N 1°59'E	51	16.3	589	0.31	0
CAT	Castellar V.	C05	Int	41°36'N 2°04'E	288	15.3	631	0.37	0
CAT	Bigues i Riells	C06	Int	41°41'N 2°12'E	295	15.1	667	0.40	0
CAT	Sabadell	C07	Int	41°31'N 2°07'E	124	16.1	594	0.31	0
CAT	Ripollet	C08	Int	41°29'N 2°10'E	61	16.3	599	0.31	0
CAT	Matadepera	C09	Int	41°35'N 2°01'E	413	14.5	662	0.41	0
CAT	Sant Llorenç NP	C10	Int	41°36'N 2°05'E	332	14.9	654	0.40	0
CAT	Campins	C11	Int	41°43'N 2°28'E	519	14.2	798	0.49	0
CAT	Montseny NP	C12	Int	41°43'N 2°24'E	622	13.0	822	0.58	0

*Abbreviation for regions and States in South Africa: ECP = Eastern Cape, WCP = Western Cape, KZN = KwaZulu-Natal; in Australia: NSW = New South Wales, SA = South Australia, VIC = Victoria; in Europe: CAT = Catalonia (Spain)

†Code assigned to each population. Populations indicated in bold were used for isotope and chemical analyses

‡Origin: Nat = native, Exp = expanded, Int = introduced

¶Altitude, mean annual temperature and mean annual rainfall. WorldClim Database (Hijmans *et al.* 2005)

§Ratio of precipitation to potential evapotranspiration during summer (December-February in the southern hemisphere and June-August in the northern hemisphere)

**Herbivore predation estimated as % of damaged heads averaged for 2-10 individuals per population (Castells *et al.* 2013). n/a, not available

Table S2. Effects of plant origin (South Africa-native, South Africa-expanded, Australia and Europe) and treatment (non-watered and watered) on individual-level traits, leaf-level traits and reproductive traits in a common garden experiment ($\beta \pm \text{SE}$). The reference level (intercept) is South Africa-native and non-watered treatment and coefficients (β) for other regions and treatments are relative to the reference level. Asterisks indicate the significance of the t-statistic for each coefficient: * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$.

Variables	N	Intercept	Region			Treatment	Region : Treatment		
			South Africa - Expanded	Australia	Europe	Watered	South Africa - Expanded	Australia	Europe
Survival	558	3.1 ± 0.5***	0.6 ± 1.2	-1.7 ± 0.6**	1.5 ± 1.2	1.2 ± 0.9	-2.1 ± 1.5	-1.3 ± 1.0	-3.5 ± 1.4*
Shoot biomass (g DM)	503	547.2 ± 53.0***	-215.2 ± 92.7*	-181.2 ± 70.6*	-212.2 ± 67.8**	263.5 ± 55.1**	-103.4 ± 73.8	-154.9 ± 58.9**	-93.1 ± 53.8
Leaf biomass (g DM)	496	147.6 ± 14.3***	-52.0 ± 22.9*	-53.5 ± 17.5**	-46.0 ± 16.7**	75.9 ± 16.4**	-27.8 ± 20.5	-49.8 ± 16.2**	-27.3 ± 14.9
Stem biomass (g DM)	499	404.0 ± 38.0***	-164.4 ± 71.8*	-130.8 ± 54.7*	-163.1 ± 52.7**	190.0 ± 36.0**	-82.1 ± 55.7	-107.8 ± 44.6*	-69.9 ± 40.9
SLA (cm ² /g DM)†	482	4.736 ± 0.02***	0.065 ± 0.045	-0.025 ± 0.036	-0.057 ± 0.034	0.207 ± 0.032	0.005 ± 0.063	0.006 ± 0.050	0.044 ± 0.047
Total leaf area (cm ²)†	475	9.609 ± 0.12***	-0.361 ± 0.188	-0.591 ± 0.144***	-0.298 ± 0.140*	0.631 ± 0.130**	0.005 ± 0.159	-0.091 ± 0.127	-0.164 ± 0.118
Leaf shape†	477	-1.861 ± 0.05***	0.250 ± 0.093**	0.204 ± 0.070**	-0.120 ± 0.069	-0.016 ± 0.040	0.030 ± 0.059	-0.053 ± 0.047	-0.002 ± 0.043
δ ¹³ C	232	-29.789 ± 0.18***	-0.165 ± 0.260	-0.018 ± 0.247	-0.255 ± 0.245	-1.276 ± 0.232***	0.136 ± 0.334	0.169 ± 0.317	0.071 ± 0.314
N (%)†	232	0.774 ± 0.04***	0.037 ± 0.044	-0.028 ± 0.041	-0.030 ± 0.041	0.072 ± 0.059	0.009 ± 0.057	-0.129 ± 0.054*	-0.021 ± 0.054
C/N †	232	2.986 ± 0.04***	-0.041 ± 0.042	0.029 ± 0.040	0.028 ± 0.039	-0.120 ± 0.052*	0.019 ± 0.055	0.117 ± 0.053*	0.020 ± 0.052
First flowering (days)	474	108.50 ± 3.22***	-1.45 ± 5.70	3.18 ± 4.35	2.12 ± 4.20	3.59 ± 3.29	-11.13 ± 4.44*	-0.03 ± 3.56	3.17 ± 3.29
Flowering period (days)	474	52.52 ± 5.05***	-1.79 ± 5.79	-5.78 ± 4.46	-2.72 ± 4.27	-6.54 ± 6.45	13.40 ± 4.92**	-0.12 ± 3.95	-3.88 ± 3.65
Seeds/head	435	81.50 ± 2.16***	3.24 ± 4.21	-8.76 ± 3.27*	-1.53 ± 3.13	-6.09 ± 2.01**	4.46 ± 3.34	3.49 ± 2.81	-0.40 ± 2.61
Num. heads†	498	7.10 ± 0.16***	0.11 ± 0.25	-0.35 ± 0.19	-0.37 ± 0.18*	-0.31 ± 0.19	0.12 ± 0.27	0.22 ± 0.22	0.16 ± 0.20
Num. seeds†	432	12.00 ± 0.15***	0.01 ± 0.21	-0.44 ± 0.17*	-0.45 ± 0.16**	-0.24 ± 0.19	0.14 ± 0.25	0.09 ± 0.21	-0.05 ± 0.19

† Ln transformed variables

Table S3. Effects of region (South Africa-native, South Africa-expanded, Australia and Europe) and water treatment (non-watered NW, and watered W) on the relative growth rate (RGR) of *S. pterophorus* growing in a common garden experiment. RGR was calculated as the difference in plant height for three consecutive periods during the course of the experiment (1st period, 2nd period and 3rd period) ($\beta \pm \text{SE}$). See materials and methods for additional details. The reference levels (intercept) are Saf-Nat for region, NW for treatment and 1st for Period. Significant effects in comparison with the reference level are indicated as * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$

	RGR (cm/day)
Intercept	0.0230 \pm 0.0005***
Region Saf-Exp	0.0008 \pm 0.0006
Region Australia	0.0009 \pm 0.0005
Region Europe	-0.0005 \pm 0.0005
Treatment W	0.0001 \pm 0.0006
2 nd Period	-0.0190 \pm 0.0004***
3 rd Period	-0.0206 \pm 0.0004***
Region South Africa - Expanded :	-0.0010 \pm 0.0006
Region Australia : Treatment W	0.0004 \pm 0.0005
Region Europe : Treatment W	0.0009 \pm 0.0004*
Treatment W : 2 nd period	0.0007 \pm 0.0004
Treatment W : 3 rd period	0.0015 \pm 0.0004***
Region South Africa – Expanded : 2 nd	-0.0013 \pm 0.0007
Region Australia: 2 nd period	-0.0016 \pm 0.0006**
Region Europe: 2 nd period	0.0023 \pm 0.0005***
Region South Africa – Expanded : 3 rd period	0.0004 \pm 0.0007
Region Australia : 3 rd period	-0.0018 \pm 0.0006**
Region Europe : 3 rd period	-0.0004 \pm 0.0005

Table S4. Plasticity index for individual-level traits, leaf-level traits and reproductive traits of *S. pterophorus* in response to water availability across regions (South Africa-native, South Africa Expanded, Australia and Europe) in a common garden experiment ($\beta \pm \text{SE}$). The reference level (intercept) for region corresponds to South Africa-native and coefficients (β) for other regions are relative to this reference level. Asterisks indicate the significance of the t-statistic for each coefficient: * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$

Variables	N	Intercept	Region		
			South Africa - Expanded	Australia	Europe
Shoot biomass (g DM)	233	0.2197 ± 0.0744*	-0.0135 ± 0.0969	-0.0729 ± 0.0796	-0.0091 ± 0.0708
Leaf biomass (g DM)	227	0.2402 ± 0.0869*	-0.0364 ± 0.1095	-0.1169 ± 0.0886	-0.0146 ± 0.0797
Stem biomass (g DM)	228	0.2086 ± 0.0666*	-0.0165 ± 0.1040	-0.0530 ± 0.0851	-0.0117 ± 0.0769
SLA (cm ² /g DM)†	213	0.1612 ± 0.0268***	0.0187 ± 0.0462	0.0223 ± 0.0380	0.0359 ± 0.0345
Total leaf area (cm ²)†	208	0.3613 ± 0.0820*	-0.0038 ± 0.0879	-0.0460 ± 0.0730	-0.0818 ± 0.0662
Leaf shape†	213	-0.0143 ± 0.0288	-0.0411 ± 0.0545	-0.0580 ± 0.0450	-0.0129 ± 0.0409
δ ¹³ C	116	0.0429 ± 0.0087***	0.0035 ± 0.0115	0.0045 ± 0.0109	0.0022 ± 0.0108
N (%)†	116	-0.0553 ± 0.0216*	0.0491 ± 0.0320	-0.0137 ± 0.0304	0.0336 ± 0.0302
C/N	116	0.0545 ± 0.1106	0.0994 ± 0.0763	0.0888 ± 0.0728	0.0889 ± 0.0720
First Flowering (days)	206	0.0308 ± 0.0212	-0.0676 ± 0.0345	-0.0102 ± 0.0293	0.0174 ± 0.0258
Flowering period (days)	206	-0.0932 ± 0.1107	0.2072 ± 0.0842*	-0.0113 ± 0.0717	-0.0713 ± 0.0630
Seeds/head	176	0.0626 ± 0.0221***	0.0548 ± 0.0429	0.0360 ± 0.0384	0.0067 ± 0.0345
Num. heads†	226	-0.1199 ± 0.0763	-0.0011 ± 0.1239	0.0789 ± 0.1029	0.0466 ± 0.0914
Num. seeds†	176	-0.0688 ± 0.0701	0.0131 ± 0.1368	-0.0261 ± 0.1209	-0.1233 ± 0.1092

†Ln transformed variables

Functional Ecology

Table S5. Effects of plant origin (South Africa-native, South Africa-expanded, Australia and Europe), drought index (summer precipitation over evapotranspiration $-P/PET$ - centred at the mean value for all regions) and herbivore predation on individual-level traits, leaf-level traits and reproductive traits ($\beta \pm SE$) for plants growing under the control treatment (non-watered). The reference level for region (intercept) is South Africa-native range and coefficients (β) for other regions are relative to this reference level. Asterisks indicate the significance of the t-statistic for each coefficient: * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$

Variables	N	Intercept	Region			P/PET (centred)	Predation†
			South Africa - Expanded	Australia	Europe		
Survival	244	3.00 ± 1.31	-261.4 ± 8.37E+04	-1.8 ± 1.5	0.3 ± 4.2	-0.4 ± 1.0	0.0 ± 0.4
Shoot biomass (g DM)	226	417.3 ± 73.1***	-125.3 ± 430.0	45.7 ± 103.9	-200.6 ± 154.3	287.0 ± 55.0***	-7.3 ± 20.6
Leaf biomass (g DM)	220	106.9 ± 18.9***	-19.7 ± 113.4	3.9 ± 27.5	-22.8 ± 41.5	76.9 ± 14.9***	0.3 ± 5.4
Stem biomass (g DM)	224	320.7 ± 55.9***	-117.9 ± 328.1	29.0 ± 79.5	-152.4 ± 120.6	204.5 ± 42.7***	-8.0 ± 15.7
SLA (cm ² /g DM)†	215	4.69 ± 0.06***	0.65 ± 0.44	-0.04 ± 0.10	0.04 ± 0.13	-0.09 ± 0.05	0.03 ± 0.02
Total leaf area (cm ²)†	210	9.21 ± 0.19***	0.39 ± 1.07	0.03 ± 0.26	-0.15 ± 0.40	0.51 ± 0.14**	0.05 ± 0.05
Leaf shape†	212	-1.64 ± 0.07***	-0.33 ± 0.45	0.00 ± 0.10	-0.63 ± 0.16***	-0.44 ± 0.06***	0.01 ± 0.02
$\delta^{13}C$	116	-29.54 ± 0.58***	-1.79 ± 2.24	-0.54 ± 0.79	0.04 ± 1.36	0.82 ± 0.49	-0.13 ± 0.18
N (%)†	116	0.68 ± 0.08***	0.07 ± 0.29	-0.07 ± 0.10	0.27 ± 0.16	-0.11 ± 0.05*	0.04 ± 0.02
C/N†	116	3.09 ± 0.07***	0.02 ± 0.28	0.05 ± 0.10	-0.27 ± 0.16	0.09 ± 0.05	-0.04 ± 0.02
First flowering (days)	217	102.99 ± 6.47***	9.12 ± 37.80	14.13 ± 9.43	2.03 ± 15.23	17.59 ± 5.56**	-0.86 ± 1.82
Flowering period (days)	217	57.06 ± 7.42***	3.69 ± 41.29	-14.74 ± 10.30	-5.54 ± 16.65	-16.18 ± 6.07*	0.82 ± 1.99
Seeds/head	206	90.32 ± 4.58***	-24.28 ± 25.76	-14.58 ± 6.44*	-3.79 ± 9.61	-20.45 ± 3.58***	0.34 ± 1.33
Num. heads†	223	7.24 ± 0.32***	0.63 ± 1.82	-0.37 ± 0.44	-0.59 ± 0.62	-0.54 ± 0.22*	0.03 ± 0.09
Num. seeds†	206	11.76 ± 0.31***	0.25 ± 1.65	-0.31 ± 0.41	-0.18 ± 0.55	-0.51 ± 0.21*	0.16 ± 0.09

† Ln transformed variables

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Table S5 (Continued)

Region: <i>P</i> /PET(centred)			Region:Predation†		
South Africa - Expanded	Australia	Europe	South Africa - Expanded	Australia	Europe
-869.5 ± 2.85E+05	1.8 ± 1.9	-2.1 ± 10.9	1.3 ± 3.5	0.4 ± 0.5	12.3 ± 3.37E+05
104.4 ± 594.2	-364.3 ± 126.0**	-608.2 ± 360.6	64.2 ± 94.3	-23.2 ± 31.6	-97.8 ± 119.4
8.4 ± 161.7	-108.7 ± 33.9**	-123.9 ± 97.2	12.1 ± 25.0	-6.7 ± 8.3	§
161.7 ± 461.3	-256.5 ± 97.9*	-398.1 ± 282.5	61.1 ± 71.4	-15.2 ± 24.0	-39.4 ± 90.2
-0.25 ± 0.53	0.02 ± 0.11	0.22 ± 0.31	-0.23 ± 0.10*	-0.02 ± 0.03	-0.07 ± 0.12
-0.24 ± 1.54	-0.94 ± 0.32**	-1.12 ± 0.94	-0.12 ± 0.23	-0.11 ± 0.08	§
0.05 ± 0.62	0.49 ± 0.13***	-0.32 ± 0.37	0.04 ± 0.10	-0.03 ± 0.03	-0.09 ± 0.12
1.37 ± 3.10	-1.17 ± 0.79	0.53 ± 3.05	0.79 ± 0.50	0.20 ± 0.25	0.38 ± 0.60
0.03 ± 0.36	0.10 ± 0.09	0.61 ± 0.35	-0.03 ± 0.07	0.01 ± 0.03	-0.05 ± 0.08
0.20 ± 0.35	-0.10 ± 0.09	-0.56 ± 0.35	0.03 ± 0.07	-0.01 ± 0.03	0.10 ± 0.08
-32.59 ± 59.04	-21.34 ± 12.57	-32.34 ± 36.17	-2.42 ± 7.76	-1.86 ± 2.71	3.29 ± 9.69
53.96 ± 64.52	15.63 ± 13.74	20.82 ± 39.54	0.70 ± 8.47	1.40 ± 2.96	-3.00 ± 10.58
-2.29 ± 36.51	18.76 ± 7.86*	37.01 ± 22.37	2.37 ± 5.60	-1.49 ± 1.95	-8.55 ± 7.05
-0.74 ± 2.37	0.01 ± 0.50	0.28 ± 1.43	-0.37 ± 0.41	-0.04 ± 0.14	-0.01 ± 0.52
-1.30 ± 2.07	-0.11 ± 0.45	0.58 ± 1.26	-0.38 ± 0.38	-0.15 ± 0.13	-0.27 ± 0.48

† Ln transformed variables

§ This coefficient could not be calculated because there was no variability in herbivore predation values for those plants.

Table S6. Effects of plant origin (South Africa-native, South Africa Expanded, Australia and Europe), drought index (summer precipitation over evapotranspiration $-P/PET$ - centred at the mean value for all regions) and herbivore predation on individual-level traits, leaf-level traits and reproductive traits ($\beta \pm SE$) for plants growing under a water treatment. The reference level (intercept) is South Africa-native and non-watered treatment and coefficients (β) for other regions and treatments are relative to the reference level. Asterisks indicate the significance of the t-statistic for each coefficient: * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$.

Variables	N	Intercept	Region			P/PET (centred)	Predation†
			South Africa - Expanded	Australia	Europe		
Survival	244	4.61 \pm 3.06	-1.9 \pm 8.24E+00	-2.9 \pm 3.1	-3.7 \pm 3.5	5.1 \pm 6.7	0.1 \pm 0.8
Shoot biomass (g DM)	221	576.9 \pm 102.8***	218.4 \pm 620.2	37.1 \pm 147.9	62.0 \pm 230.2	458.5 \pm 71.9***	-12.8 \pm 30.5
Leaf biomass (g DM)	220	154.1 \pm 26.5***	-1.1 \pm 157.0	-1.1 \pm 37.4	52.6 \pm 57.9	113.0 \pm 18.0***	0.7 \pm 7.8
Stem biomass (g DM)	219	410.6 \pm 77.9***	215.5 \pm 483.2	50.6 \pm 115.8	118.0 \pm 192.3	357.3 \pm 58.2***	-7.7 \pm 23.7
SLA (cm ² /g DM)†	215	5.01 \pm 0.07***	0.11 \pm 0.41	-0.13 \pm 0.10	-0.16 \pm 0.15	-0.07 \pm 0.05	-0.01 \pm 0.02
Total leaf area (cm ²)†	213	9.92 \pm 0.20***	-0.12 \pm 1.14	0.01 \pm 0.28	0.30 \pm 0.44	0.50 \pm 0.14**	0.01 \pm 0.06
Leaf shape†	213	-1.60 \pm 0.08***	-0.20 \pm 0.46	-0.10 \pm 0.11	-0.64 \pm 0.18**	-0.48 \pm 0.06***	0.00 \pm 0.02
$\delta^{13}C$	116	-32.18 \pm 0.42***	-0.77 \pm 1.68	1.99 \pm 0.59***	-0.28 \pm 0.92	0.27 \pm 0.31	0.35 \pm 0.13*
N (%)†	116	0.80 \pm 0.10***	-0.09 \pm 0.40	-0.16 \pm 0.14	-0.08 \pm 0.22	-0.04 \pm 0.07	0.02 \pm 0.03
C/N†	116	2.89 \pm 0.10***	-0.08 \pm 0.37	0.17 \pm 0.13	0.09 \pm 0.20	0.03 \pm 0.07	-0.01 \pm 0.03
First flowering (days)	206	96.77 \pm 6.07***	-0.99 \pm 35.25	10.85 \pm 8.92	35.74 \pm 15.83*	17.08 \pm 5.62**	2.67 \pm 1.70
Flowering period (days)	206	61.49 \pm 8.33***	15.22 \pm 38.21	-13.14 \pm 9.60	-27.58 \pm 16.51	-19.02 \pm 5.79**	-2.45 \pm 1.90
Seeds/head	180	84.69 \pm 5.15***	18.57 \pm 28.49	-12.89 \pm 7.44	-2.06 \pm 12.32	-11.87 \pm 4.37*	-0.91 \pm 1.54
Num. heads†	218	7.66 \pm 0.29***	-0.34 \pm 1.82	-0.75 \pm 0.43	-1.92 \pm 0.68**	-0.57 \pm 0.21*	-0.19 \pm 0.09*
Num. seeds†	179	12.41 \pm 0.28***	-0.11 \pm 1.61	-0.70 \pm 0.41	-1.91 \pm 0.61**	-0.61 \pm 0.21**	-0.12 \pm 0.09

† Ln transformed variables

Contemporary evolution of an invasive plant is associated with climate but not with herbivory
Colomer-Ventura, Martínez-Vilalta, Zuccarini, Escolà, Armengot and Castells

Table S6 (Continued)

Region: <i>P</i> /PET(centred)			Region:Predation†		
South Africa - Expanded	Australia	Europe	South Africa - Expanded	Australia	Europe
-3.4 ± 1.20E+01	-5.3 ± 6.8	-8.9 ± 8.1	0.2 ± 2.0	-0.2 ± 0.9	7.0 ± 5.91E+02
-220.8 ± 793.3	-491.2 ± 166.7**	-130.8 ± 539.1	-47.1 ± 145.9	-33.4 ± 46.5	-109.8 ± 187.7
-164.7 ± 198.3	-130.2 ± 41.6**	28.8 ± 135.3	-9.3 ± 37.1	-12.9 ± 11.8	-31.1 ± 47.9
-77.2 ± 638.5	-370.4 ± 134.5*	58.6 ± 452.8	-40.3 ± 112.3	-25.7 ± 36.1	-82.8 ± 143.6
-0.19 ± 0.53	0.14 ± 0.12	-0.11 ± 0.35	-0.05 ± 0.10	0.03 ± 0.03	0.23 ± 0.13
-1.56 ± 1.57	-0.37 ± 0.34	0.61 ± 1.04	-0.11 ± 0.26	-0.09 ± 0.08	0.01 ± 0.33
-0.05 ± 0.65	0.36 ± 0.14*	-0.12 ± 0.43	0.01 ± 0.10	-0.03 ± 0.03	0.21 ± 0.13
-1.69 ± 2.07	0.38 ± 0.51	-3.22 ± 2.04	0.03 ± 0.39	-0.55 ± 0.19**	-0.36 ± 0.47
-0.78 ± 0.49	0.14 ± 0.12	-0.14 ± 0.48	-0.06 ± 0.09	0.01 ± 0.04	0.16 ± 0.11
0.44 ± 0.46	-0.13 ± 0.11	0.11 ± 0.45	0.07 ± 0.09	-0.02 ± 0.04	-0.15 ± 0.10
-10.61 ± 59.12	-32.89 ± 12.60*	21.16 ± 37.98	-0.71 ± 7.15	-1.59 ± 2.49	-10.80 ± 8.79
51.52 ± 60.60	28.03 ± 12.94*	6.73 ± 39.30	0.59 ± 8.09	-0.03 ± 2.78	15.40 ± 10.03
40.34 ± 44.21	7.13 ± 9.78	34.80 ± 28.95	-1.87 ± 6.13	-0.23 ± 2.21	0.05 ± 7.61
-0.38 ± 2.33	0.24 ± 0.49	-1.63 ± 1.59	0.00 ± 0.43	0.11 ± 0.14	-0.04 ± 0.55
-0.18 ± 2.03	-0.03 ± 0.47	-1.44 ± 1.40	-0.09 ± 0.38	-0.04 ± 0.13	-0.12 ± 0.49

† Ln transformed variables

Contemporary evolution of an invasive plant is associated with climate but not with herbivory
 Colomer-Ventura, Martínez-Vilalta, Zuccarini, Escolà, Armengot and Castells

Table S7. ANOVA Type I table corresponding to the linear mixed model presented in Table S5. Results show the effects of plant origin (Region: South Africa-native, South Africa Expanded, Australia and Europe), drought index (summer precipitation over evapotranspiration centred at the mean value for all regions; P/PET_{cent}) and herbivore predation on individual-level traits, leaf-level traits and reproductive traits for plants growing under a control treatment (non-watered). Variables were introduced in the model in the same order as shown in the table. Asterisks indicate the significance of the F-statistic as * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$.

		Sum.Sq	Mean.Sq	DF	DenDF	F-value	P
Survival	P/PET_{cent}	2.574	2.574	1	2.57		
	region	8.491	2.830	3	2.83		
	log(predation)	1.753	1.753	1	1.75		
	P/PET_{cent} : region	0.929	0.310	3	0.31		
	region : log(predation)	0.715	0.238	3	0.24		
Shoot biomass (g DM)	P/PET_{cent}	1818608.0	1818608.0	1	30.85	45.63	0.000 ***
	region	80932.6	26977.5	3	30.96	0.59	0.623
	log(predation)	61630.2	61630.2	1	182.88	1.55	0.214
	P/PET_{cent} : region	458269.2	152756.4	3	29.76	3.78	0.021 *
	region : log(predation)	70300.5	23433.5	3	202.70	0.58	0.628
Leaf biomass (g DM)	P/PET_{cent}	109217.9	109217.9	1	30.25	40.03	0.000 ***
	region	367.2	122.4	3	31.27	0.05	0.986
	log(predation)	1453.5	1453.5	1	180.02	0.61	0.436
	P/PET_{cent} : region	34503.8	11501.3	3	30.47	4.17	0.014 *
	region : log(predation)	2758.0	1379.0	2	197.06	0.50	0.606
Stem biomass (g DM)	P/PET_{cent}	949574.2	949574.2	1	30.55	42.09	0.000 ***
	region	67470.7	22490.2	3	30.66	0.89	0.460
	log(predation)	36725.0	36725.0	1	184.04	1.64	0.202
	P/PET_{cent} : region	214314.8	71438.3	3	29.67	3.11	0.041 *
	region : log(predation)	33416.3	11138.8	3	201.40	0.49	0.692
SLA (cm ² /g DM)	P/PET_{cent}	0.012	0.012	1	201.03	0.27	0.604
	region	0.473	0.158	3	201.27	3.57	0.015 *
	log(predation)	0.064	0.064	1	202.07	1.44	0.231
	P/PET_{cent} : region	0.083	0.028	3	201.64	0.62	0.604
	region : log(predation)	0.253	0.084	3	201.69	1.91	0.129
Total leaf area (cm ²) †	P/PET_{cent}	4.763	4.763	1	27.39	20.03	0.000 ***
	region	0.257	0.086	3	28.54	0.44	0.729
	log(predation)	0.020	0.020	1	171.12	0.10	0.751
	P/PET_{cent} : region	2.604	0.868	3	27.52	3.59	0.026 *
	region : log(predation)	0.511	0.256	2	187.52	1.06	0.347
Leaf shape †	P/PET_{cent}	0.824	0.824	1	31.42	22.30	0.000 ***
	region	3.182	1.061	3	32.52	28.59	0.000 ***
	log(predation)	0.007	0.007	1	176.05	0.30	0.585
	P/PET_{cent} : region	0.580	0.193	3	31.69	5.20	0.005 **
	region : log(predation)	0.059	0.020	3	190.79	0.53	0.662
$\delta^{13}C$	P/PET_{cent}	1.578	1.578	1	10.87	1.85	0.201
	region	0.313	0.104	3	11.92	0.12	0.949
	log(predation)	0.055	0.055	1	95.36	0.04	0.847

Contemporary evolution of an invasive plant is associated with climate but not with herbivory
Colomer-Ventura, Martínez-Vilalta, Zuccarini, Escolà, Armengot and Castells

Functional Ecology

	<i>P/PETcent</i> : region	2.405	0.802	3	12.53	0.90	0.470
	region : log(predation)	2.549	0.850	3	98.59	0.95	0.422
N (%)†	<i>P/PETcent</i>	0.009	0.009	1	103.23	0.52	0.473
	region	0.090	0.030	3	102.07	1.71	0.169
	log(predation)	0.106	0.106	1	102.04	6.00	0.016 *
	<i>P/PETcent</i> : region	0.086	0.029	3	102.27	1.63	0.186
	region : log(predation)	0.014	0.005	3	102.29	0.27	0.845
C/N†	<i>P/PETcent</i>	0.004	0.004	1	103.39	0.22	0.639
	region	0.089	0.030	3	102.10	1.72	0.167
	log(predation)	0.108	0.108	1	102.07	6.26	0.014 *
	<i>P/PETcent</i> : region	0.097	0.032	3	102.34	1.90	0.135
	region : log(predation)	0.034	0.011	3	102.36	0.65	0.583
Flowering date (days)	<i>P/PETcent</i>	457.80	457.80	1	32.84	1.75	0.195
	region	1316.81	438.94	3	30.34	1.66	0.197
	log(predation)	490.22	490.22	1	181.84	1.95	0.164
	<i>P/PETcent</i> : region	1062.88	354.29	3	29.45	1.38	0.268
	region : log(predation)	179.74	59.91	3	193.52	0.23	0.872
Flowering period (days)	<i>P/PETcent</i>	307.79	307.79	1	31.68	0.99	0.327
	region	1396.53	465.51	3	29.29	1.49	0.237
	log(predation)	338.89	338.89	1	179.95	1.15	0.284
	<i>P/PETcent</i> : region	705.72	235.24	3	28.45	0.77	0.521
	region : log(predation)	105.08	35.03	3	193.05	0.12	0.951
Seeds/head	<i>P/PETcent</i>	808.53	808.53	1	37.51	5.57	0.024 *
	region	4512.11	1504.04	3	29.69	10.79	0.000 ***
	log(predation)	13.27	13.27	1	164.78	0.06	0.800
	<i>P/PETcent</i> : region	1118.49	372.83	3	28.33	2.69	0.065
	region : log(predation)	302.72	100.91	3	182.13	0.73	0.536
Num. heads†	<i>P/PETcent</i>	0.810	0.810	1	29.02	1.02	0.321
	region	9.785	3.262	3	27.35	4.19	0.015 *
	log(predation)	0.001	0.001	1	170.16	0.00	0.975
	<i>P/PETcent</i> : region	0.198	0.066	3	26.18	0.08	0.968
	region : log(predation)	0.659	0.220	3	195.35	0.28	0.838
Num. seeds†	<i>P/PETcent</i>	0.003	0.003	1	38.85	0.00	0.960
	region	13.484	4.495	3	28.76	6.60	0.002 **
	log(predation)	1.101	1.101	1	148.10	1.63	0.204
	<i>P/PETcent</i> : region	0.754	0.251	3	26.91	0.37	0.778
	region : log(predation)	1.511	0.504	3	174.84	0.74	0.531

† Ln transformed variables

Table S8. ANOVA Type I table corresponding to the linear mixed model presented in Table S6. Results show the effects of plant origin (Region: South Africa-native, South Africa Expanded, Australia and Europe), drought index (summer precipitation over evapotranspiration centred at the mean value for all regions; P/PET_{cent}) and herbivore predation on individual-level traits, leaf-level traits and reproductive traits for plants growing under a water treatment. Variables were introduced in the model in the same order as shown in the table. Asterisks indicate the significance of the F-statistic as * $P < 0.05$, ** $P < 0.01$ and *** $P < 0.001$.

		Sum.Sq	Mean.Sq	DF	DenDF	F-value	P
Survival	P/PET_{cent}	0.106	0.106	1	0.11		
	region	4.408	1.469	3	1.47		
	log(predation)	0.003	0.003	1	0.00		
	P/PET_{cent} : region	1.579	0.526	3	0.53		
	region : log(predation)	0.084	0.028	3	0.03		
Shoot biomass (g DM)	P/PET_{cent}	6598496.7	6598496.7	1	26.96	64.22	0.000 ***
	region	45414.8	15138.3	3	31.02	0.14	0.933
	log(predation)	258380.4	258380.4	1	148.66	2.50	0.116
	P/PET_{cent} : region	1001489.0	333829.7	3	31.90	3.25	0.035 *
	region : log(predation)	84928.6	28309.5	3	181.49	0.28	0.843
Leaf biomass (g DM)	P/PET_{cent}	448782.3	448782.3	1	26.40	66.81	0.000 ***
	region	20703.8	6901.3	3	30.45	1.03	0.394
	log(predation)	10691.4	10691.4	1	144.33	1.55	0.215
	P/PET_{cent} : region	81477.3	27159.1	3	31.25	4.05	0.015 *
	region : log(predation)	9974.4	3324.8	3	178.15	0.49	0.686
Stem biomass (g DM)	P/PET_{cent}	3461061.3	3461061.3	1	26.51	58.50	0.000 ***
	region	41364.6	13788.2	3	29.51	0.22	0.880
	log(predation)	124224.9	124224.9	1	153.40	2.14	0.146
	P/PET_{cent} : region	511303.2	170434.4	3	31.36	2.87	0.052
	region : log(predation)	48953.4	16317.8	3	184.26	0.27	0.843
SLA (cm ² /g DM)	P/PET_{cent}	0.005	0.005	1	200.93	0.11	0.740
	region	0.244	0.081	3	201.96	1.77	0.154
	log(predation)	0.019	0.019	1	202.90	0.40	0.529
	P/PET_{cent} : region	0.118	0.039	3	201.34	0.85	0.468
	region : log(predation)	0.204	0.068	3	201.82	1.46	0.225
Total leaf area (cm ²) †	P/PET_{cent}	9.924	9.924	1	26.58	32.30	0.000 ***
	region	0.661	0.220	3	30.59	0.72	0.545
	log(predation)	0.220	0.220	1	165.60	0.72	0.398
	P/PET_{cent} : region	0.918	0.306	3	31.79	0.99	0.411
	region : log(predation)	0.407	0.136	3	184.21	0.44	0.725
Leaf shape †	P/PET_{cent}	1.377	1.378	1	30.12	29.46	0.000 ***
	region	3.993	1.331	3	34.14	28.88	0.000 ***
	log(predation)	0.004	0.004	1	173.23	0.07	0.792
	P/PET_{cent} : region	0.286	0.095	3	35.35	2.07	0.122
	region : log(predation)	0.169	0.056	3	188.534	1.21	0.307
$\delta^{13}C$	P/PET_{cent}	1.533	1.533	1	102.63	2.66	0.106
	region	2.108	0.703	3	103.07	1.20	0.314
	log(predation)	0.695	0.695	1	102.12	1.17	0.281

Contemporary evolution of an invasive plant is associated with climate but not with herbivory
Colomer-Ventura, Martínez-Vilalta, Zuccarini, Escolà, Armengot and Castells

Functional Ecology

	<i>P/PETcent</i> : region	1.983	0.661	3	103.42	1.11	0.348
	region : log(predation)	5.558	1.853	3	103.46	3.14	0.028 *
N (%)†	<i>P/PETcent</i>	0.010	0.010	1	102.19	0.35	0.555
	region	0.611	0.204	3	102.51	6.26	0.001 ***
	log(predation)	0.050	0.050	1	101.89	1.50	0.223
	<i>P/PETcent</i> : region	0.191	0.064	3	102.77	1.92	0.131
	region : log(predation)	0.084	0.028	3	102.80	0.85	0.471
C/N†	<i>P/PETcent</i>	0.022	0.022	1	102.28	0.81	0.370
	region	0.447	0.149	3	102.67	5.29	0.002 **
	log(predation)	0.031	0.031	1	101.89	1.09	0.300
	<i>P/PETcent</i> : region	0.112	0.037	3	102.99	1.31	0.276
	region : log(predation)	0.095	0.032	3	103.02	1.10	0.351
Flowering date (days)	<i>P/PETcent</i>	408.711	408.711	1	28.20	2.08	0.160
	region	2772.645	924.215	3	27.07	4.51	0.011 *
	log(predation)	318.997	318.997	1	184.91	1.25	0.266
	<i>P/PETcent</i> : region	1624.374	541.458	3	27.06	2.70	0.066
	region : log(predation)	352.542	117.514	3	184.90	0.58	0.629
Flowering period (days)	<i>P/PETcent</i>	486.840	486.840	1	27.65	1.85	0.185
	region	4562.379	1520.793	3	26.57	5.79	0.004 **
	log(predation)	554.825	554.825	1	176.94	1.94	0.165
	<i>P/PETcent</i> : region	1418.304	472.768	3	26.44	1.78	0.175
	region : log(predation)	641.482	213.827	3	183.57	0.80	0.495
Seeds/head	<i>P/PETcent</i>	226.627	226.627	1	29.25	1.62	0.213
	region	1977.952	659.317	3	26.35	4.40	0.012 *
	log(predation)	156.497	156.497	1	159.97	1.05	0.306
	<i>P/PETcent</i> : region	399.982	133.327	3	25.60	0.86	0.474
	region : log(predation)	14.851	4.950	3	161.10	0.03	0.992
Num. heads†	<i>P/PETcent</i>	2.152	2.152	1	29.35	2.42	0.130
	region	11.118	3.706	3	30.61	4.21	0.013 *
	log(predation)	3.944	3.944	1	147.75	4.45	0.036 *
	<i>P/PETcent</i> : region	1.357	0.452	3	31.87	0.51	0.678
	region : log(predation)	0.585	0.195	3	179.17	0.22	0.882
Num. seeds†	<i>P/PETcent</i>	0.517	0.517	1	166.85	0.74	0.392
	region	20.804	6.935	3	166.83	9.88	0.000 ***
	log(predation)	2.982	2.982	1	166.96	4.25	0.041 *
	<i>P/PETcent</i> : region	0.728	0.243	3	166.83	0.35	0.792
	region : log(predation)	0.108	0.036	3	166.97	0.05	0.985

† Ln transformed variables

Fig. S1. Monthly temperature (line) and precipitation (shaded area) at the locations where *S. pterophorus* populations were sampled, averaged by region. Climatic data was obtained from the WorldClim database (Hijmans *et al.* 2005) for each sampled population.

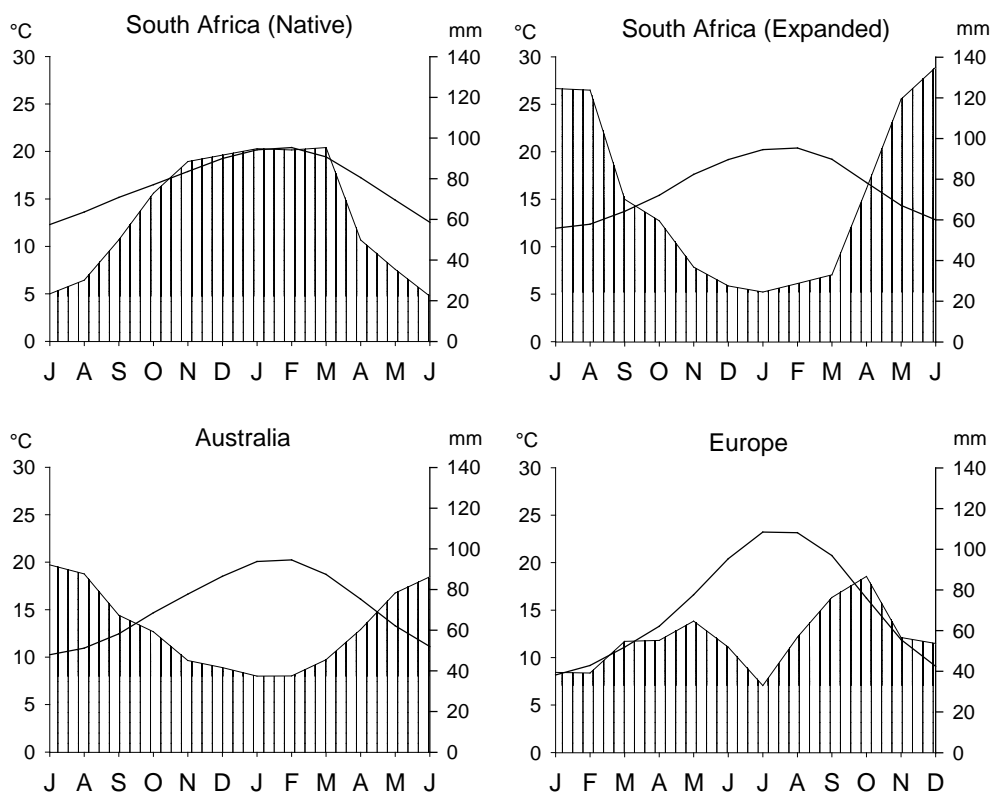
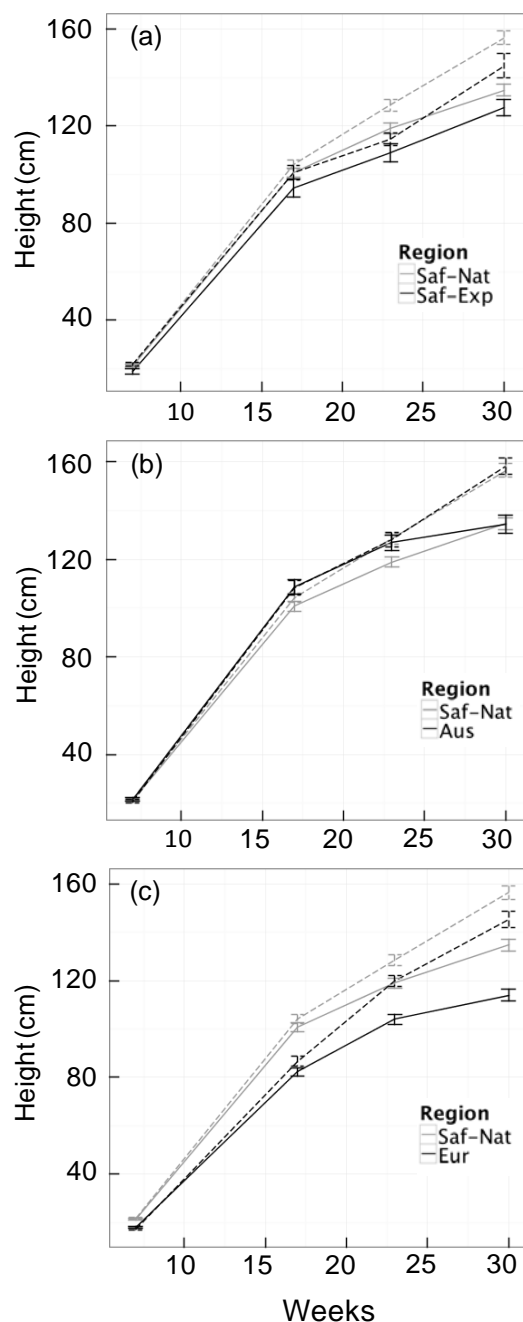


Fig. S2. Plant height of *S. pterophorus* from the native region in Eastern South Africa (Saf-Nat) compared to: a) the expanded region in Western South Africa (Saf-Exp), b) the introduced region in Australia (Aus) and c) the introduced region in Europe (Eur), in a common garden experiment with irrigation (W, dashed lines) and without irrigation (NW, solid lines). Data points indicate the mean \pm SE for four measures during the course of the experiment. The coefficients of the corresponding linear model are reported in Table S3.



Contemporary evolution of an invasive plant is associated with climate but not with herbivory
 Colomer-Ventura, Martínez-Vilalta, Zuccarini, Escolà, Armengot and Castells