Supplementary Material

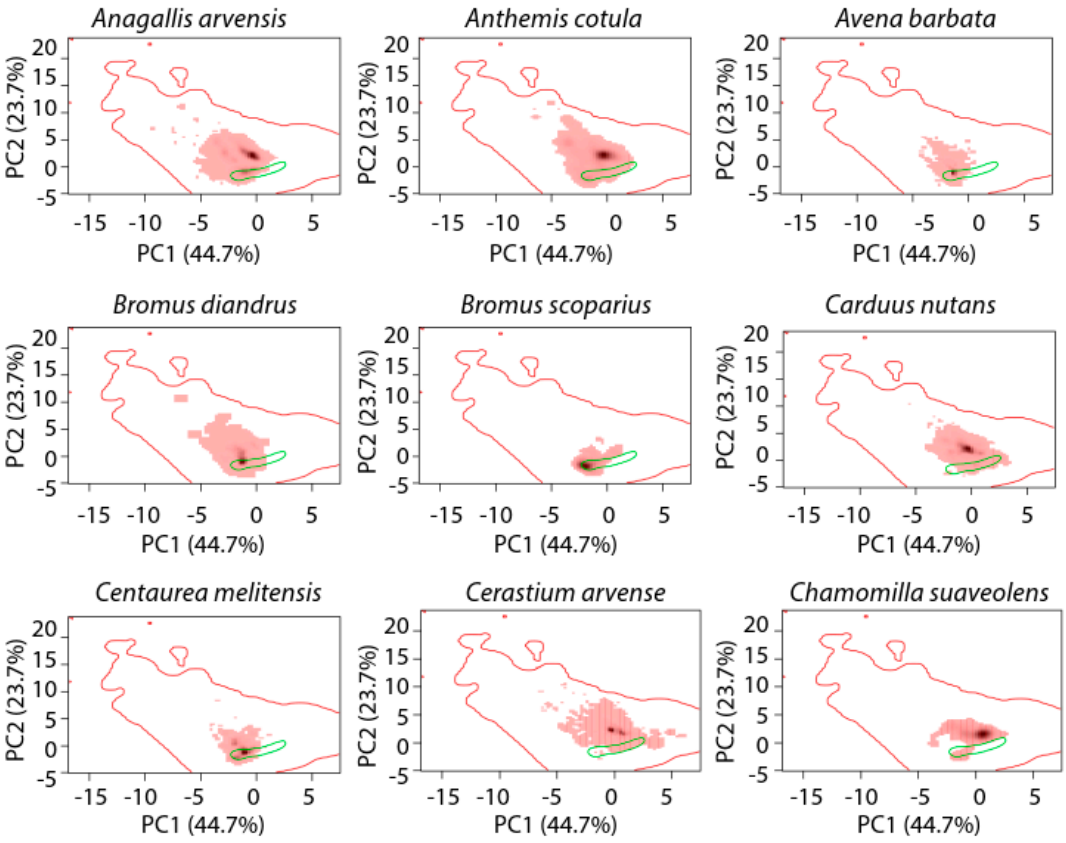

Figure S1: PCA-env for study species. Red line represents global climatic background conditions and green line represents climatic background conditions in study area Red pixels represents global climatic niche. The grey-black gradient represents the most occupied global climatic conditions by species.

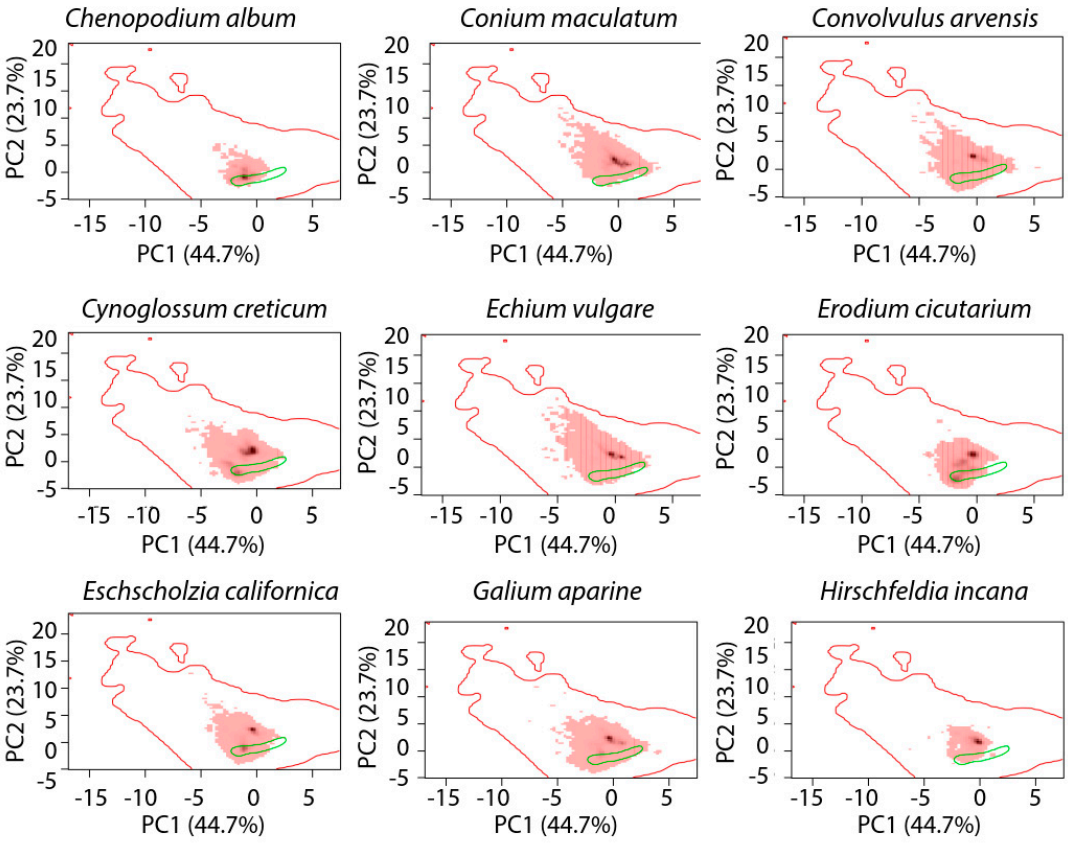

Figure S2: PCA-env for study species. Red line represents global climatic background conditions and green line represents climatic background conditions in study area Red pixels represents global climatic niche. The grey-black gradient represents the most occupied global climatic conditions by species.

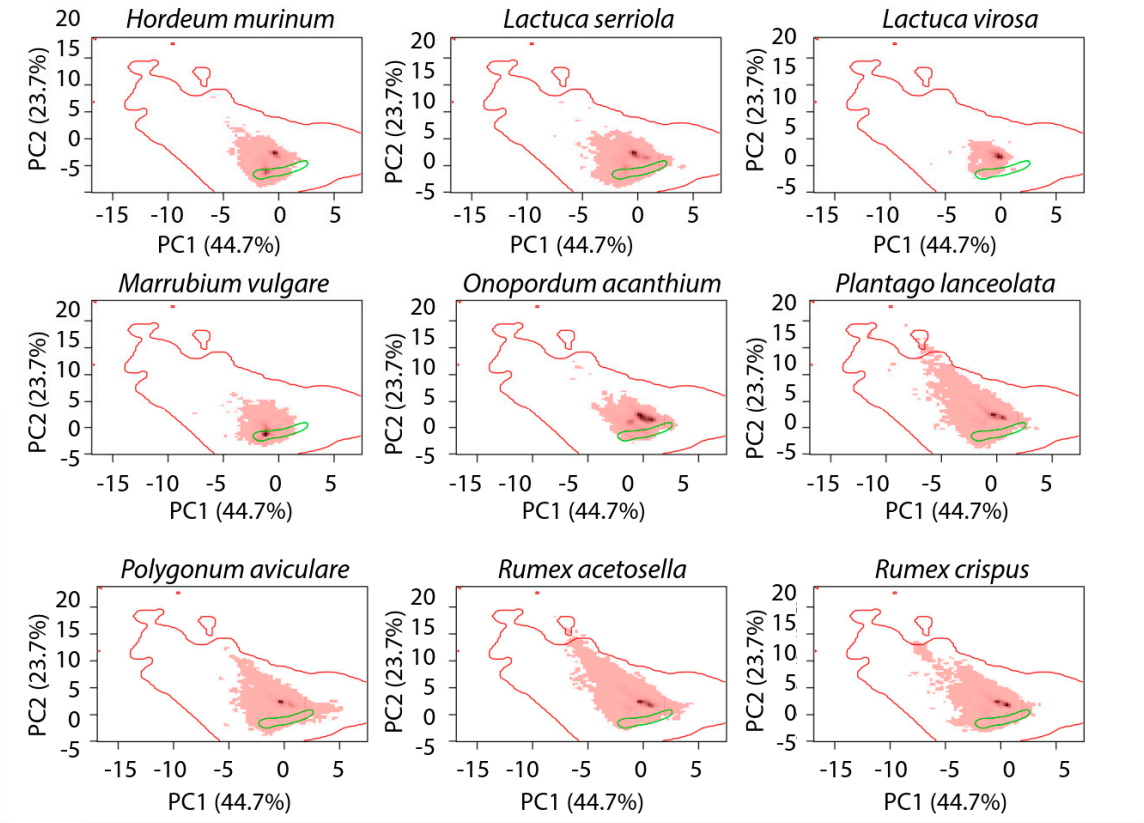

Figure S3: PCA-env for study species. Red line represents global climatic background conditions and green line represents climatic background conditions in study area Red pixels represents global climatic niche. The grey-black gradient represents the most occupied global climatic conditions by species.

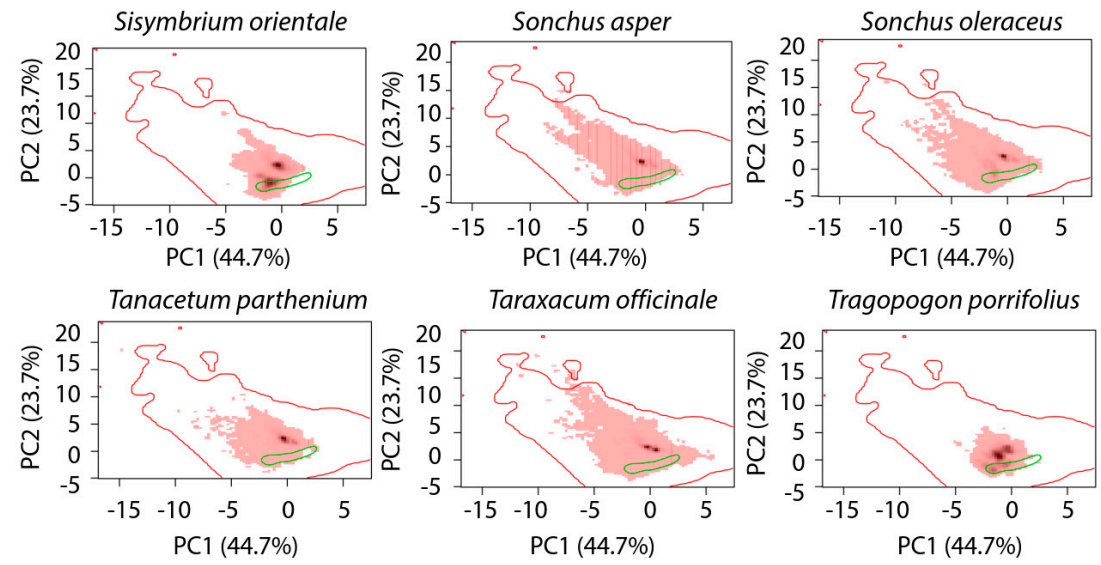

Figure S4: PCA-env for study species. Red line represents global climatic background conditions and green line represents climatic background conditions in study area Red pixels represents global climatic niche. The grey-black gradient represents the most occupied global climatic conditions by species.

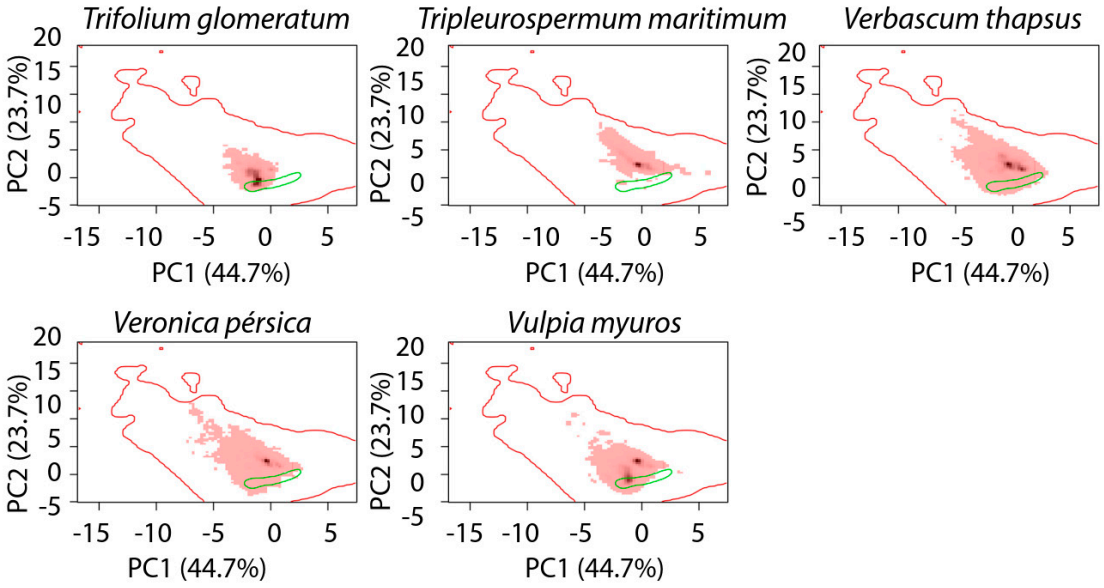

Figure S5: PCA-env for study species. Red line represents global climatic background conditions and green line represents climatic background conditions in study area Red pixels represents global climatic niche. The grey-black gradient represents the most occupied global climatic conditions by species.

Table S1: Comparison between observed and expected UEL for a set of species observed during 2018. Expected UEL was estimated by the average Outer Border (OB) obtained from 100 HOF curves. The quantile 0.025 and 0.975 is presented in the Table (95% CI), and were obtained from the sampling distribution of the 100 values of OB. Delta values represent the difference in meters between the Observed and mean predicted UEL. In (*) the species which are in climatic equilibrium; (**) species which observed UEL is greater than expected by climatic niche.

ID	Species	Family	Observed UEL	Mean Predicted UEL	Quantile 0.025	Quantile 0.975	Delta
1	*Anagallis arvensis*	Primulaceae	2190	2796.58	2763.30	2834.94	-606.58
2	*Anthemis cotula*	Asteraceae	2691	3498.94	3450.75	3553.30	-807.94
3	*Avena barbata**	Poaceae	*2505*	*2533.19*	*2490.56*	*2570.91*	*-28.19*
4	*Bromus diandrus***	Poaceae	2691	2625.95	2593.41	2663.78	65.05
5	*Bromus scoparius*	Poaceae	2418	3242.69	3206.48	3292.67	-824.69
6	*Carduus nutans*	Asteraceae	2899	5202.89	4883.28	5413.00	-2303.89
7	*Centaurea melitensis*	Asteraceae	2265	2616.32	2584.08	2653.12	-351.32
8	*Cerastium arvense*	Caryophyllaceae	3467	4401.18	4346.47	4464.10	-934.18
9	*Chamomilla suaveolens*	Asteraceae	2798	3973.00	3919.76	4026.28	-1175.00
10	*Chenopodium álbum*	Amaranthaceae	3370	4098.15	4010.97	4284.31	-728.15
11	*Conium maculatum*	Apiaceae	2798	3465.75	3416.21	3518.94	-667.75
12	*Convolvulus arvensis*	Convolvulaceae	2899	4172.05	4100.76	4248.07	-1273.05
13	*Cynoglossum creticum***	Boraginaceae	3096	2693.30	2653.97	2733.52	402.70
14	*Echium vulgare*	Boraginaceae	2691	4050.44	3984.22	4107.37	-1359.44
15	*Erodium cicutarium*	Geraniaceae	2589	3622.10	3572.01	3682.20	-1033.10
16	*Eschscholzia califórnica*	Papaveraceae	2614	3087.32	3042.99	3127.17	-473.32
17	*Galium aparine*	Rubiaceae	2418	3267.92	3224.59	3307.81	-849.92
18	*Hirschfeldia incana*	Brassicaceae	2614	2808.73	2776.77	2846.00	-194.73
19	*Hordeum murinum*	Poaceae	2418	3080.63	3020.91	3127.04	-662.63
20	*Lactuca serriola*	Asteraceae	3405	3814.59	3774.67	3858.81	-409.59
21	*Lactuca virosa***	Asteraceae	3405	2823.96	2782.64	2855.10	581.04

22	*Marrubium vulgare*	Lamiaceae	2265	3173.28	3127.89	3223.03	-908.28
23	*Onopordum acanthium*	Asteraceae	2505	3908.37	3850.14	3956.14	-1403.37
24	*Plantago lanceolata*	Plantaginaceae	2505	3290.87	3254.16	3334.44	-785.87
25	*Polygonum aviculare*	Polygonaceae	3284	3938.04	3880.76	3996.94	-654.04
26	*Rumex acetosella*	Polygonaceae	3206	4176.92	4010.41	5318.00	-970.92
27	*Rumex crispus*	Polygonaceae	2674	3377.56	3345.28	3417.54	-703.56
28	*Sisymbrium orientale*	Brassicaceae	2614	3125.98	3085.29	3175.62	-511.98
29	*Sonchus asper**	Asteraceae	*3181*	*3340.24*	*1601.28*	*3600.25*	*-159.24*
30	*Sonchus oleraceus*	Asteraceae	2445	3396.89	3339.55	3426.50	-951.89
31	*Tanacetum parthenium*	Asteraceae	3096	3291.47	3252.35	3355.19	-195.47
32	*Taraxacum officinale*	Asteraceae	3585	4388.00	4281.17	4608.61	-803.00
33	*Tragopogon porrifolius*	Asteraceae	2704	3051.58	3013.62	3096.67	-347.58
34	*Trifolium glomeratum*	Fabaceae	1994	2734.86	2700.15	2779.95	-740.86
35	*Tripleurospermum maritimum*	Asteraceae	2674	5230.21	5032.00	5413.00	-2556.21
36	*Verbascum thapsus*	Scrophulariaceae	2704	3746.14	3694.05	3815.60	-1042.14
37	*Veronica persica*	Scrophulariaceae	2190	3286.52	3252.43	3324.02	-1096.52
38	*Vulpia myuros*	Poaceae	2265	3216.55	3174.72	3265.55	-951.55

Table S2: Number of Global and Regional occurrences used for each species for niche estimation in environmental space. For Regional occurrences we used data from MIREN database and field work data collected by authors during the study.

Specie	Global data	Regional data (MIREN)	Regional data (field work)	Regional data total
Anagallis arvensis	19857	1	0	1
Anthemis cotula	3485	0	4	4
Avena barbata	51497	14	11	25
Bromus diandrus	26550	4	13	17
Bromus scoparius	285	0	3	3
Carduus nutans	13507	6	5	11
Centaurea melitensis	9342	4	0	4
Cerastium arvense	28921	0	25	4
Chamomilla suaveolens	167	0	2	2
Chenopodium album	111833	1	34	35

Conium maculatum	24311	2	13	15
Convolvulus arvensis	89919	10	26	36
Cynoglossum creticum	5809	10	24	34
Echium vulgare	82033	1	7	8
Erodium cicutarium	70388	21	12	33
Eschscholzia californica	39549	14	18	32
Galium aparine	220289	0	3	3
Hirschfeldia incana	8797	20	20	40
Hordeum murinum	56939	14	13	27
Lactuca serriola	60626	20	25	45
Lactuca virosa	2303	0	47	47
Marrubium vulgare	29708	6	0	6
Onopordum acanthium	12869	0	8	8
Plantago lanceolata	357358	1	11	12
Polygonum aviculare	112874	32	45	77
Rumex acetosella	159211	1	4	5
Rumex crispus	157020	4	9	13
Sisymbrium orientale	4626	16	24	40
Sonchus asper	96031	12	5	17
Sonchus oleraceus	115114	3	4	7
Tanacetum parthenium	29745	24	27	51
Taraxacum officinale	151247	42	86	126
Tragopogon porrifolius	7291	0	8	8
Trifolium glomeratum	9807	0	1	1
Tripleurospermum maritimum	14036	11	19	30
Verbascum thapsus	65923	4	13	17
Veronica persica	79079	1	0	1
Vulpia myuros	18985	2	0	2

Table S3: Elevation and coordinates from field survey plots and MIREN database plots (LP: road from Farellones to La Parva, VN: road from Farellones to Valle Nevado).

Longitude	Latitude	Elevation (m.a.s.l.)	Road	Database
-33.3534	-70.3289	1994	LP	field survey
-33.3559	-70.3276	2091	LP	field survey
-33.3531	-70.3270	2050	LP	field survey
-33.3567	-70.3262	2147	LP	field survey
-33.3573	-70.3250	2206	LP	field survey
-33.3553	-70.3201	2260	LP	field survey
-33.3554	-70.3185	2320	LP	field survey
-33.3554	-70.3180	2353	LP	field survey
-33.3554	-70.3185	2418	LP	field survey
-33.3489	-70.3079	2505	LP	field survey
-33.3448	-70.3019	2557	LP	field survey
-33.3413	-70.2944	2614	LP	field survey
-33.3422	-70.2946	2648	LP	field survey

-33.3389	-70.2903	2691	LP	field survey
-33.3363	-70.2882	2754	LP	field survey
-33.3351	-70.2872	2798	LP	field survey
-33.3324	-70.2850	2858	LP	field survey
-33.3292	-70.2869	2899	LP	field survey
-33.3301	-70.2830	2951	LP	field survey
-33.3286	-70.2827	2999	LP	field survey
-33.3268	-70.2797	3059	LP	field survey
-33.3280	-70.2790	3096	LP	field survey
-33.3311	-70.2765	3139	LP	field survey
-33.3298	-70.2730	3206	LP	field survey
-33.3292	-70.2701	3246	LP	field survey
-33.3289	-70.2688	3299	LP	field survey
-33.3249	-70.2660	3348	LP	field survey
-33.3235	-70.2641	3405	LP	field survey
-33.3246	-70.2640	3430	LP	field survey
-33.3254	-70.2623	3467	LP	field survey
-33.3607	-70.2972	2345	VN	field survey
-33.3703	-70.2819	2389	VN	field survey
-33.3704	-70.2748	2445	VN	field survey
-33.3664	-70.2695	2498	VN	field survey
-33.3636	-70.2653	2549	VN	field survey
-33.3618	-70.2624	2599	VN	field survey
-33.3622	-70.2570	2648	VN	field survey
-33.3611	-70.2577	2704	VN	field survey
-33.3605	-70.2573	2741	VN	field survey
-33.3577	-70.2582	2790	VN	field survey
-33.3582	-70.2542	2855	VN	field survey
-33.3590	-70.2537	2897	VN	field survey
-33.3573	-70.2512	2953	VN	field survey
-33.3565	-70.2500	2994	VN	field survey
-33.3516	-70.2487	3059	VN	field survey
-33.3491	-70.2476	3080	VN	field survey
-33.3469	-70.2473	3153	VN	field survey
-33.3437	-70.2478	3195	VN	field survey
-33.3332	70.2463	3256	VN	field survey
-33.3401	-70.2480	3284	VN	field survey
-33.3320	-70.2491	3350	VN	field survey
-33.3297	-70.2508	3382	VN	field survey
-33.3267	-70.2558	3444	VN	field survey
-33.3256	-70.2563	3473	VN	field survey

-70.3318	-33.3488	1900	LP	MIREN
-70.3277	-33.3546	1998	LP	MIREN
-70.3277	-33.3578	2190	LP	MIREN
-70.3201	-33.3553	2265	LP	MIREN
-70.2964	-33.3426	2589	LP	MIREN
-70.2917	-33.3401	2674	LP	MIREN
-70.2861	-33.3303	2890	LP	MIREN
-70.2803	-33.3281	3061	LP	MIREN
-70.2690	-33.3292	3283	LP	MIREN
-70.2657	-33.3265	3370	LP	MIREN
-70.2573	-33.3251	3471	LP	MIREN
-70.2586	-33.3200	3585	LP	MIREN
-70.2726	-33.3679	2470	VN	MIREN
-70.2645	-33.3635	2554	VN	MIREN
-70.2555	-33.3631	2653	VN	MIREN
-70.2578	-33.3571	2784	VN	MIREN
-70.2536	-33.3599	2885	VN	MIREN
-70.2477	-33.3493	3070	VN	MIREN
-70.2510	-33.3418	3181	VN	MIREN
-70.2506	-33.3296	3377	VN	MIREN
-70.2554	-33.3259	3451	VN	MIREN

Table S4: Ecological traits and factors of 38 exotic species in study region. Residence time (First year report), Dispersal mode (A=Animal, W=Wind and Un=Unassisted) and life span (A=Annual; B=Biannual; P=Perennial). Data obtained from Fuentes et al. 2012).

Specie	Family	Life span	Dispersal mode	Residence time
Anagallis arvensis	Primulaceae	A	Un	1849
Anthemis cotula	Asteraceae	A	Un	1848
Avena barbata	Poaceae	A	A	1854
Bromus diandrus	Poaceae	A	A	-
Bromus scoparius	Poaceae	A	A	1875
Carduus nutans	Asteraceae	B	W	1960
Centaurea melitensis	Asteraceae	A	A	1848
Cerastium arvense	Caryophyllaceae	P	Un	1846
Chamomilla suaveolens	Asteraceae	A	Un	-
Chenopodium album	Amaranthaceae	A	Un	1948
Conium maculatum	Apiaceae	B	Un	1848
Convolvulus arvensis	Convolvulaceae	P	Un	1848
Cynoglossum creticum	Boraginaceae	B	A	1907
Echium vulgare	Boraginaceae	A	Un	1907
Erodium cicutarium	Geraniaceae	A	Un	1846

Eschscholzia californica	Papaveraceae	A	Un	1881
Galium aparine	Rubiaceae	A	A	1848
Hirschfeldia incana	Brassicaceae	A	Un	1963
Hordeum murinum	Poaceae	A	A	-
Lactuca serriola	Asteraceae	A	W	1905
Lactuca virosa	Asteraceae	A	W	1933
Marrubium vulgare	Lamiaceae	P	A	1849
Onopordum acanthium	Asteraceae	B	W	1881
Plantago lanceolata	Plantaginaceae	A	Un	1910
Polygonum aviculare	Polygonaceae	A	A	1851
Rumex acetosella	Polygonaceae	P	W	1851
Rumex crispus	Polygonaceae	P	Un	1851
Sisymbrium orientale	Brassicaceae	A	Un	1929
Sonchus asper	Asteraceae	A	W	1848
Sonchus oleraceus	Asteraceae	A	W	1848
Tanacetum parthenium	Asteraceae	P	Un	1848
Taraxacum officinale	Asteraceae	P	W	1875
Tragopogon porrifolius	Asteraceae	B	W	1881
Trifolium glomeratum	Fabaceae	A	Un	1922
Tripleurospermum maritimum	Asteraceae	B	Un	-
Verbascum thapsus	Scrophulariaceae	B	Un	1881
Veronica persica	Scrophulariaceae	A	A	1909
Vulpia myuros	Poaceae	A	W	-