

Table S1. Details of the initial 13 dependent variables and the five predictor variables including unit, number of observations (N), minimum and maximum. Medians and standard deviations (st. dev.) of all count and continuous variables are presented. In addition, the prevalence (number of occupied plots) of the occurrence variables is reported. Due to low prevalence, the distribution of *Atriplex littoralis*, *Atriplex longipes*, *Isatis tinctoria*, *Cakile maritima*, *Crambe maritima* and *Carex arenaria* could not be modelled individually and the species were included only in species richness variables. Productivity is defined as the sum cover of all herbaceous vascular plant species found in the 1 m x 2 m plots.

variable	unit	N	min	max	median	st. dev.	prevalence
<i>Honckenya peploides</i>	binomial	497	0	1			112
<i>Atriplex littoralis</i>	binomial	497	0	1			4
<i>Atriplex longipes</i>	binomial	497	0	1			4
<i>Isatis tinctoria</i>	binomial	497	0	1			1
<i>Cakile maritima</i>	binomial	497	0	1			7
<i>Crambe maritima</i>	binomial	497	0	1			1
<i>Lathyrus japonicus</i>	binomial	497	0	1			90
<i>Carex arenaria</i>	binomial	497	0	1			11
<i>Festuca rubra</i> ssp. <i>arctica</i>	binomial	497	0	1			12
<i>Festuca polesica</i>	binomial	497	0	1			44
<i>Leymus arenarius</i>	binomial	497	0	1			221
total richness	count	497	0	18	2	4	
specialist richness	count	497	0	4	1	1	
patch size	m ²	497	1788	912808	29959	240660	
connectivity	dimensionless	497	619	12141	1961	2823.5	
site age	years	497	-136	1726	283	353	
disturbance	%	497	0	100	50	39	
productivity	m ²	497	0	5.1	0.5	1.0	

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Table S2. Spearman rank correlation coefficients between variables included in the analyses. Predictors are highlighted with grey background and strong correlations ($R_s > |0.7|$) with bold text. S = site age, D = disturbance, P = productivity (sum cover of herbaceous vascular species), SR = specialist richness.

	S	D	P	patch size	connectivity	Hon. pep.	Atr. lit.	Atr. lon.	Isa. tin.	Cak. mar.	Cra. mar.	Lat. jap.	Car. are.	Fes. rub.	Fes. pol.	Ley. are.	SR
disturbance	-0.60																
productivity	0.52	-0.78															
patch size	-0.01	0.03	0.02														
connectivity	-0.10	0.04	0.03	0.86													
<i>Honckenya peploides</i>	0.14	-0.19	0.36	0.04	0.03												
<i>Atriplex littoralis</i>	-0.05	-0.02	0.03	0.02	0.00	0.04											
<i>Atriplex longipes</i>	-0.09	0.04	-0.02	0.00	-0.02	-0.05	0.24										
<i>Isatis tinctoria</i>	0.05	-0.01	0.02	-0.05	0.01	-0.02	0.00	0.00									
<i>Cakile maritima</i>	0.02	-0.04	0.08	0.10	0.07	0.14	0.37	0.18	-0.01								
<i>Crambe maritima</i>	0.04	-0.03	0.07	0.03	0.02	0.10	0.00	0.00	0.00	-0.01							
<i>Lathyrus japonicus</i>	0.24	-0.19	0.35	-0.13	-0.12	0.12	-0.04	-0.04	0.09	-0.01	-0.02						
<i>Carex arenaria</i>	0.11	-0.06	0.07	-0.11	-0.11	0.04	-0.01	-0.01	-0.01	-0.02	-0.01	0.04					
<i>Festuca rubra</i> ssp. <i>Arctica</i>	0.05	-0.09	0.11	-0.05	0.02	0.02	-0.01	-0.01	-0.01	-0.02	-0.01	0.00	0.07				
<i>Festuca polesica</i>	0.38	-0.25	0.21	0.00	-0.02	-0.12	-0.03	-0.03	-0.01	-0.04	-0.01	-0.04	0.05	-0.05			
<i>Leymus arenarius</i>	0.33	-0.40	0.66	0.14	0.17	0.27	0.01	-0.08	0.05	0.05	0.06	0.27	0.00	0.12	0.12		
specialist richness	0.44	-0.45	0.70	0.03	0.04	0.57	0.13	0.01	0.07	0.16	0.07	0.51	0.16	0.19	0.29	0.76	
total richness	0.58	-0.82	0.78	-0.06	-0.05	0.24	0.09	0.06	0.05	0.09	0.06	0.24	0.14	0.14	0.27	0.38	0.56

Table S3. Results of the GLMM analyses. Table reports deviance explained by and AIC (Akaike information criterion value) of final “simple” and “full” models. AUC (area under curve of a receiver operating characteristic plot; Fielding and Bell 1997) is reported for species occurrence models and correlations (R_s) between observed and predicted values for richness models. S, D, P, PS and C are relative importance of each significant variable included in the final models (Thuiller et al. 2009). Larger values indicate higher importance.

	<i>Honckenya peploides</i>		<i>Lathyrus japonicus</i>		<i>Festuca rubra</i> ssp. <i>arctica</i>		<i>Festuca polesica</i>		<i>Leymus arenarius</i>		specialist richness		total richness	
	simple	full	simple	full	simple	full	simple	full	simple	full	simple	full	simple	full
deviance exp	0.37	0.39	0.41	0.43	0.40	0.52	0.51	0.51	0.44	0.44	0.23	0.23	0.44	0.45
AIC	321	315	262	259	86	77	134	134	405	404	1049	1049	1671	1661
R_s											0.78	0.79	0.90	0.91
AUC	0.99	0.99	0.99	0.99	1.00	1.00	1.00	1.00	0.96	0.96				
S		0.21			0.12				0.57		0.03		0.04	0.03
D		0.08			0.04		0.43		0.17		0.13		0.12	0.09
P		0.09			0.09		0.24		0.13		0.09		0.17	0.07
PS		0.02			0.07		0.22							5.0E-03
C		0.01			0.02		0.17			3.6E-03		0.01		4.5E-03

Table S4. Results of the GLM analyses. Table reports deviance explained by and AIC (Akaike information criterion value) of final “simple” and “full” models. AUC (area under curve of a receiver operating characteristic plot; Fielding and Bell 1997) is reported for species occurrence models and correlations (R_s) between observed and predicted values for richness models. S, D, P, PS and C are relative importance of each significant variable included in the final models (Thuiller et al. 2009). Larger values indicate higher importance.

	<i>Honckenya peploides</i>		<i>Lathyrus japonicus</i>		<i>Festuca rubra</i> ssp. <i>arctica</i>		<i>Festuca polesica</i>		<i>Leymus arenarius</i>		specialist richness		total richness	
	simple	full	simple	full	simple	full	simple	full	simple	full	simple	full	simple	full
deviance exp	0.18	0.21	0.24	0.37	0.18	0.30	0.45	0.55	0.44	0.45	0.58	0.60	0.71	0.73
AIC	456	447	373	324	104	99	180	161	403	394	984	983	1701	1680
R_s											0.76	0.77	0.87	0.88
AUC	0.76	0.80	0.82	0.90	0.84	0.91	0.93	0.96	0.89	0.90				
S		0.09			0.12		0.02		0.17		0.08		0.09	0.03
D		0.07			0.03		0.34		0.07		0.17		0.11	0.27
P		0.32			0.20		0.02		0.16		0.19		0.27	0.12
PS		0.10			0.06		0.18		0.17		0.05		0.01	0.01
C		0.10			0.07		0.24		0.03				0.03	0.01

References

- Fielding AH, Bell JF. 1997. A review of methods for the assessment of prediction errors in conservation presence/absence models. Environmental Conservation 24:38–49.
- Thuiller W, Lafourcade B, Engler R, Araujo MB. 2009. BIOMOD – a platform for ensemble forecasting of species distributions. Ecography 32:369–373.