

Title: Do non-native plants affect terrestrial arthropods in the sub-Antarctic Kerguelen Islands?

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Online resource 4: Results and model outputs of the comparison between patch model and single CWM_{TRAIT} models

Table S1. Comparison between the patch model (LMM or GLMM) testing for the effects of island, type of patch (non-native or native) and their two-way interaction, and CWM_{TRAIT} models (LMM or GLMM) testing for the effects of island, CWM_{TRAITS} and their two-way interaction on taxa richness and abundances. Comparisons are based on the difference between $AICc$ (second-order Akaike Information Criterion corrected for small samples) of the two models when CWM_{TRAIT} was selected in the simplified model. Significant positive differences ($\Delta AICc > 2$) between the models are in bold and indicate that CWM_{TRAIT} model was better than the patch model. * indicates that CWM_{TRAIT} had a simple significant effect. Empty cells indicate either singular fit issues or non-significant effect of CWM_{TRAIT} .

Arthropod taxa and metrics	$AICc(\text{Patch model}) - AICc(CWM_{TRAIT} \text{ model})$						
	CWM	CWM	CWM	CWM	CWM	CWM	CWM
	<i>PH</i>	<i>PW</i>	<i>LL</i>	<i>LA</i>	<i>LT</i>	<i>LDMC</i>	<i>SLA</i>
Macro-arthropod richness							
Native species		4.86	0.62	5.86			-2.63
Non-native taxa							-4.90
All taxa	1.08	-0.57	1.93				-3.44
Decomposers		1.46		6.26		4.84	
Predators					-0.10		-1.77
Macro-arthropod abundance							
Native species	-12.96	-13.10	-16.87	-23.74	-5.82	-35.13	-13.58
Herbivores	-0.29		3.41*	-7.42	-1.76		4.01*
Decomposers							
Predators							
Micro-arthropod abundance							
Oribatida mites					0.12		
Symphyleona springtails	-75.79	171.12*	72.90	-28.65	-49.67	-92.74	-76.76

Table S2. Effect of island, CWM_{TRAIT} and their two-way interaction on arthropod taxa diversity and abundance. Taxa richness was calculated by pooling pitfall trap and yellow pan counts. Taxa abundance was calculated using pitfall trap data (Symphypleona) or yellow pan data (macro-arthropods: herbivores). Significance of Type II Wald Chi-square tests, χ^2 , realized on all fixed effects tested in GLMM (Symphypleona abundance) or LMM (other models) models. Significant fixed effects in the simplified models are in bold. Shown are CWM_{TRAIT} models (LMM or GLMM) when they were selected as the best models compared to the patch model

Arthropod taxa and metrics	CWM_{TRAIT}	Island		CWM_{TRAIT}		Island \times CWM_{TRAIT}	
		χ^2	$P (>\chi^2)$	χ^2	$P (>\chi^2)$	χ^2	$P (>\chi^2)$
Macro-arthropod							
Native species richness	CWM_{PW}	10.75	0.0046	0.92	0.3365	18.91	<0.0001
	CWM_{LA}	11.66	0.0029	3.76	0.0524	18.99	<0.0001
Decomposer richness	CWM_{LA}	15.57	0.0004	3.97	0.0461	11.86	0.0026
	$CWML_{LMDC}$	10.84	0.0044	1.09	0.2949	15.25	0.0005
Herbivore abundance	CWM_{LL}	0.55	0.7563	25.71	<0.0001	1.47	0.4798
	CWM_{SLA}	1.99	0.3694	10.21	0.0014	2.38	0.3028
Micro-arthropod							
Symphypleona abundance	CWM_{PW}	12.60	0.0018	183.33	<0.0001	2.81	0.2465
	CWM_{LL}	11.05	0.0040	150.90	<0.0001	26.84	<0.0001

Table S3. Parameter estimates in LMM or GLMM testing for the effects of island, CWM_{TRAIT} and their two-way interaction on arthropod taxa diversity and abundance. Taxa richness was calculated by pooling pitfall trap and yellow pan counts. Taxa abundance was calculated using pitfall trap data (Symphypleona) or yellow pan data (macro-arthropods: herbivores). Parameter estimates, values and significance of Type II Wald Chi-square tests, χ^2 , realized on all fixed effects tested in GLMM (Symphypleona abundance) or LMM (other models) models. Significant fixed effects in the simplified models are in bold. Shown are CWM_{TRAIT} models (LMM or GLMM) when they were selected as the best models compared to the patch model

Species richness of native macro-arthropods (LMM)

Fixed effects	CWM_{PW}			CWM_{LA} (sqrt-transformed)		
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>
Intercept	1.35	0.77	0.0936	1.14	0.71	0.1209
<i>Île aux cochons</i>	4.32	1.26	0.0024	5.31	1.51	0.0020
<i>Île Mayes</i>	-0.12	1.64	0.9402	0.49	1.15	0.6715
CWM_{TRAIT}	0.10	0.04	0.0154	0.42	0.13	0.0027
<i>Île aux cochons</i> × CWM_{TRAIT}	-0.29	0.07	0.0010	-1.24	0.32	0.0011
<i>Île Mayes</i> × CWM_{TRAIT}	-0.06	0.08	0.4532	-0.36	0.18	0.0507

Species richness of macro-arthropod decomposers (sqrt-transformed) (LMM)

Fixed effects	CWM_{LA} (sqrt-transformed)			CWM_{LDMC}		
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>
Intercept	1.83	0.29	<0.0001	3.00	0.81	0.0013
<i>Île aux cochons</i>	1.03	0.61	0.1046	-3.81	1.23	0.0059
<i>Île Mayes</i>	-1.14	0.47	0.0246	-0.47	0.94	0.6231
CWM_{TRAIT}	0.07	0.05	0.1933	-3.47	3.32	0.3084
<i>Île aux cochons</i> × CWM_{TRAIT}	-0.35	0.13	0.0148	12.58	4.71	0.0153
<i>Île Mayes</i> × CWM_{TRAIT}	0.05	0.07	0.4514	-1.37	3.93	0.7309

Herbivore abundance (log-transformed) (LMM)

Fixed effects	CWM_{LL}			CWM_{SLA}		
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>
Intercept	0.32	1.03	0.7553	0.94	1.39	0.5092
<i>Île aux cochons</i>						
<i>Île Mayes</i>						
CWM_{TRAIT}	1.17	0.24	0.0002	0.023	0.008	0.0118
<i>Île aux cochons</i> × CWM_{TRAIT}						
<i>Île Mayes</i> × CWM_{TRAIT}						

Abundance of *Symphyleona* springtails (GLMM, Poisson)

Fixed effects	CWM_{LL} (sqrt-transformed)			CWM_{PW}		
	Estimate	SE	<i>p</i>	Estimate	SE	<i>p</i>
Intercept	7.72	0.54	<0.0001	7.16	0.63	<0.0001
<i>Île aux cochons</i>	-2.43	0.90	0.0071	-3.05	0.88	0.0006
<i>Île Mayes</i>	-3.65	0.83	<0.0001	-0.82	0.84	0.3301
CWM_{TRAIT}	-1.19	0.11	<0.0001	-0.20	0.01	<0.0001
<i>Île aux cochons</i> × CWM_{TRAIT}	0.11	0.19	0.5650			
<i>Île Mayes</i> × CWM_{TRAIT}	0.79	0.16	<0.0001			