

Schuster, M. J. and Dukes, J. S. 2014. Non-additive effects of invasive tree litter addition shift seasonal N release: a potential invasion feedback. – Oikos doi: 10.1111/oik.01078

Appendix 1

Table A1. A summary of the results from mixed-model ANOVAs evaluating single species decomposition and N loss as a function of three fully factorial models: 1) time and species identity, 2) time and initial litter C:N ratio, and 3) time and initial litter N concentration. Significant values ($\alpha = 0.05$) are shown in bold.

Model	Factor (DF)	Mass loss		N loss		
		F	p	F	p	
1)	Time	(1,42)	419.28	<0.01	0.25	0.62
	Species	(7,42)	36.19	<0.01	15.24	<0.01
	Time × Species	(7,42)	11.33	<0.01	10.91	<0.01
2)	Time	(1,48)	31.83	<0.01	7.68	0.03
	C:N ratio	(1,48)	0.21	0.65	1.36	0.25
	Time × C:N ratio	(1,48)	0.58	0.45	6.92	0.01
3)	Time	(1,48)	24.97	<0.01	1.28	0.26
	N concentration	(1,48)	0.07	0.80	0.80	0.37
	Time × N concentration	(1,48)	0.08	0.78	2.31	0.14

Table A2. Slope coefficients and r^2 values (*italic*) from regressions of differences in initial C:N ratio (C:N distance) or N concentration (N ratio) of native and invasive species litter on signed non-additivity values of mixed litter bags at each time point. Mean values represent those resulting from regressions considering all loading ratios. Positive slopes for C:N distance and negative slopes for N ratio indicate more synergistic effects with increasing relative invasive species litter quality. Significant slopes ($\alpha = 0.05$) are presented in bold.

		Loading ratio (% invasive litter)			
		Mean	10	50	90
C:N distance	90d	-1.02 <i>0.01</i>	1.01 <i>0.00</i>	-1.05 <i>0.06</i>	-1.03 <i>0.04</i>
	365d	1.05 <i>0.05</i>	1.00 <i>0.00</i>	1.05 <i>0.05</i>	1.10 <i>0.17</i>
N ratio	90d	2.59 <i>0.01</i>	-1.48 <i>0.00</i>	6.50 <i>0.05</i>	3.94 <i>0.04</i>
	365d	-9.98 <i>0.06</i>	1.09 <i>0.00</i>	-11.23 <i>0.07</i>	-110.87 <i>0.20</i>

Table A3. Decomposition rate constants (k , year⁻¹) for each type of litter bag calculated as slope coefficients for regressions of $\ln(\text{proportion mass remaining})$ over time (Austin and Vivanco 2006). To accommodate litter bags that had fully decomposed at 365 days, 10^{-6} was added to all proportion mass remaining values. Table is organized by contributing native (left) and invasive (top) species.

		Invasive species (k for single-species mass loss)				
		% invasive	<i>M. alba</i> 6.44	<i>E. umbellata</i> 0.44	<i>L. maackii</i> 3.03	<i>A. ginnala</i> 1.17
Native species (k for single-species mass loss)	<i>C. canadensis</i> 1.33	10	0.9	0.96	0.94	1.25
		50	1.52	0.74	1.51	0.92
		90	3.44	0.53	1.61	0.97
	<i>C. glabra</i> 0.39	10	0.64	0.49	0.76	1.1
		50	1.2	0.66	1.38	0.83
		90	2.53	0.52	2.16	1.04
	<i>L. tulipifera</i> 0.90	10	1.25	1.63	1.82	1.6
		50	2.19	0.9	2.4	2.06
		90	5.63	0.79	2.69	1.11
	<i>Q. palustris</i> 0.10	10	0.27	0.22	0.13	0.1
		50	0.98	0.29	0.72	0.6
		90	1.76	0.84	1.57	1.4

Austin, A. T. and Vivanco, L. 2006. Plant litter decomposition in a semi-arid ecosystem controlled by photodegradation. – Nature 442: 555–558.

Figure A1. Initial tissue chemistry of native (black) and invasive (grey) species' litter. Mean C:N ratios (\pm SE; n = 8) for each group are presented (NS denotes no significant difference).

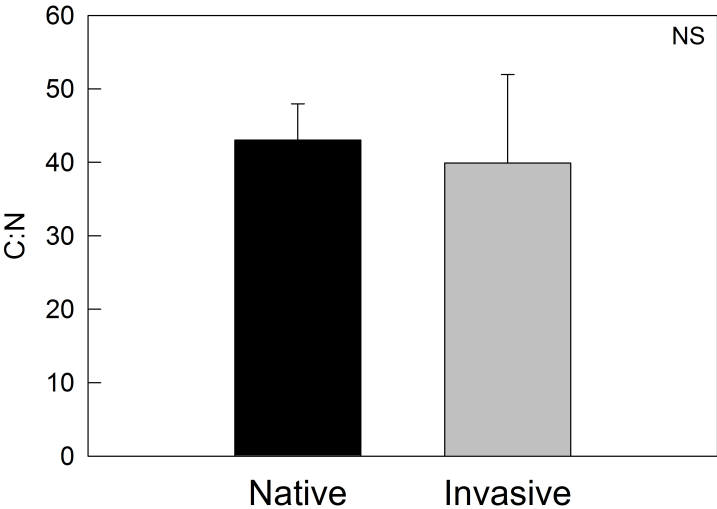


Figure A2. Initial C:N ratio (\pm SE; n = 24) of each species' litter (native: black, invasive: grey).

Groups that do not differ in C:N are identified with the same letter ($\alpha = 0.05$, Tukey HSD).

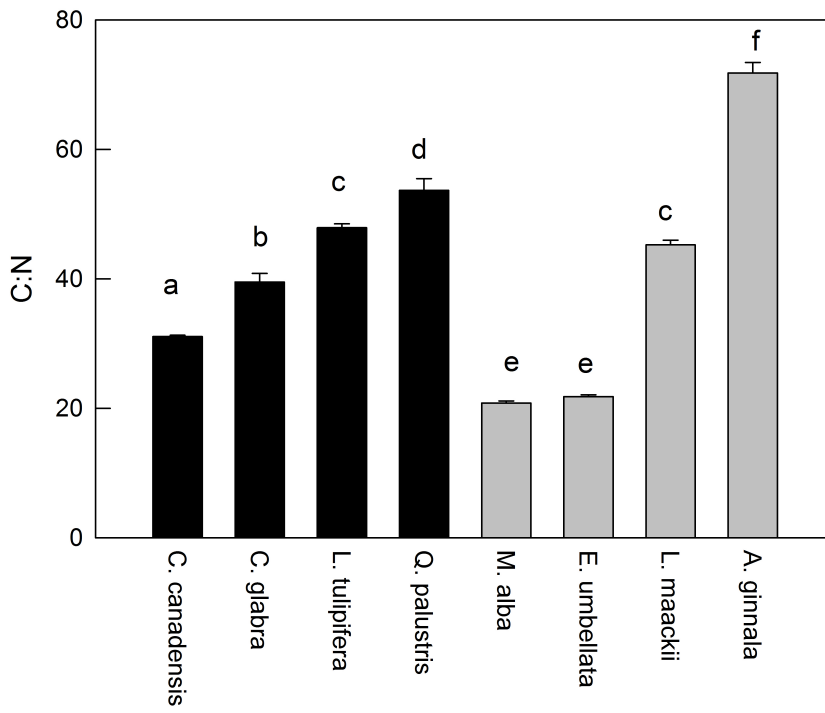


Figure A3. Mass loss and N loss of single species and mixed litter bags after 90 days. Windows are arranged based on contributing invasive species (top) and native species (left). Mean mass loss (closed) and N loss (open) are presented (\pm SE) for bags ranging from 0% invasive species content (i.e. containing only native species' litter) to 100% invasive species content (i.e. containing only invasive species' litter). Lines indicate calculated expected values for mass loss (solid) and N loss (dashed).

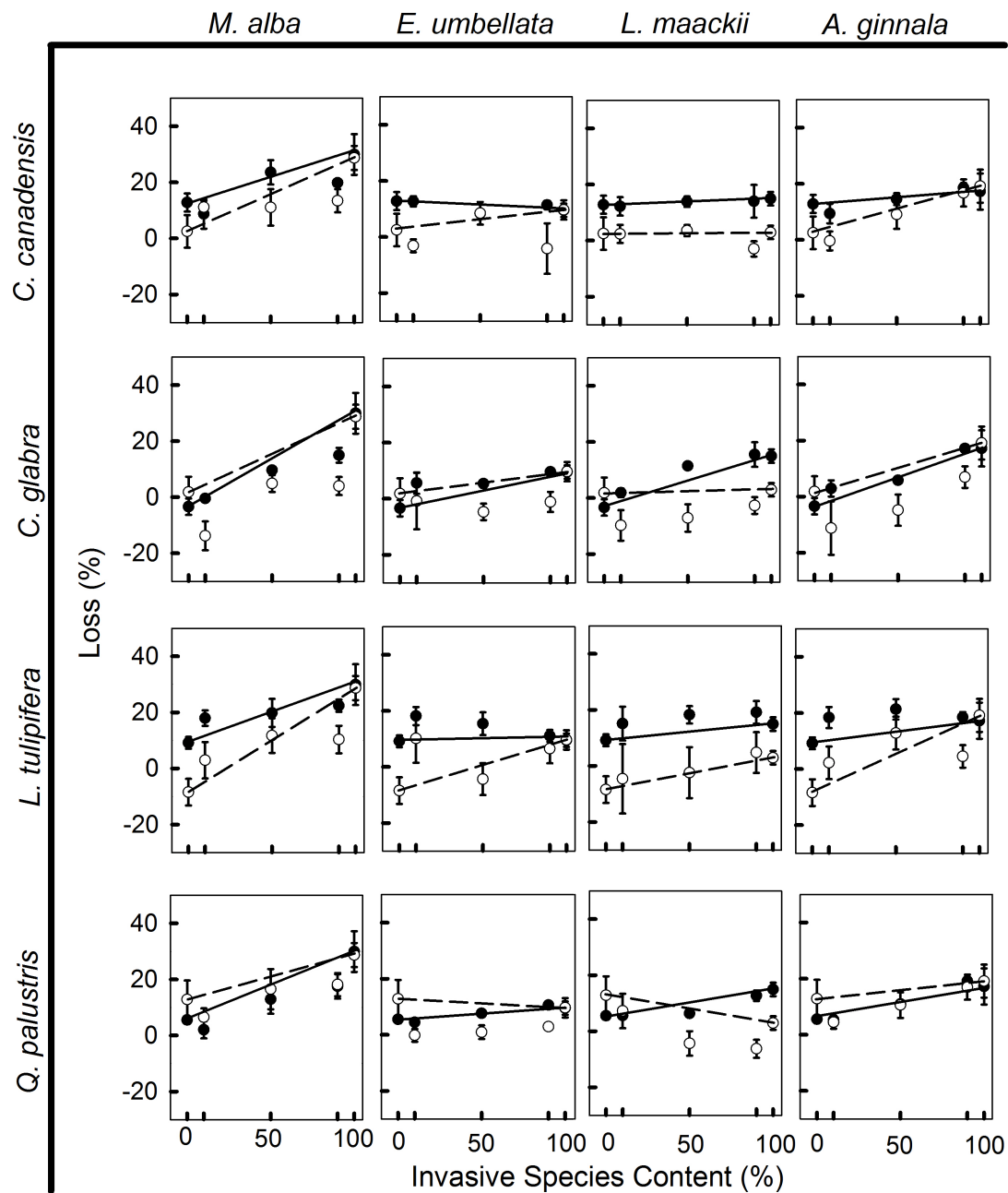


Figure A4. Mass loss and N loss of single species and mixed litter bags after 365 days. Windows are arranged based on contributing invasive species (top) and native species (left). Mean mass loss (closed) and N loss (open) are presented (\pm SE) for bags ranging from 0% invasive species content (i.e. containing only native species' litter) to 100% invasive species content (i.e. containing only invasive species' litter). Lines indicate calculated expected values for mass loss (solid) and N loss (dashed).

