

Ecography

**E6900**

Jamoneau, A., Chabrierie, O., Closset-Kopp, D. and Decocq, G. 2011. Fragmentation alters beta-diversity patterns of habitat specialists within forest metacommunities. – *Ecography* 34: xxx–xxx.

**Supplementary material**

**Appendix 1**

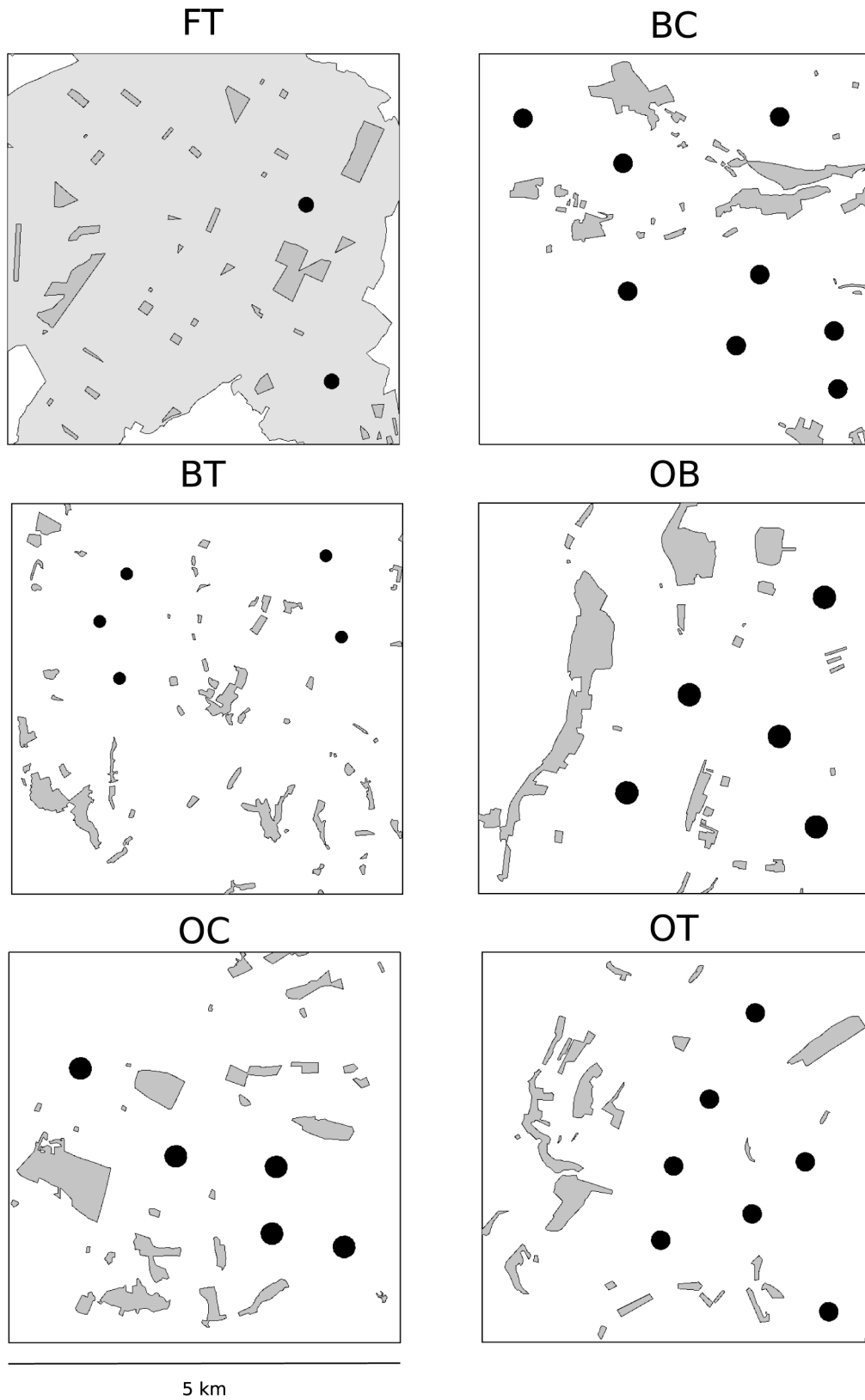


Figure A1. Landscape window maps showing the supplementary objects added for PCNM procedure (black dots).

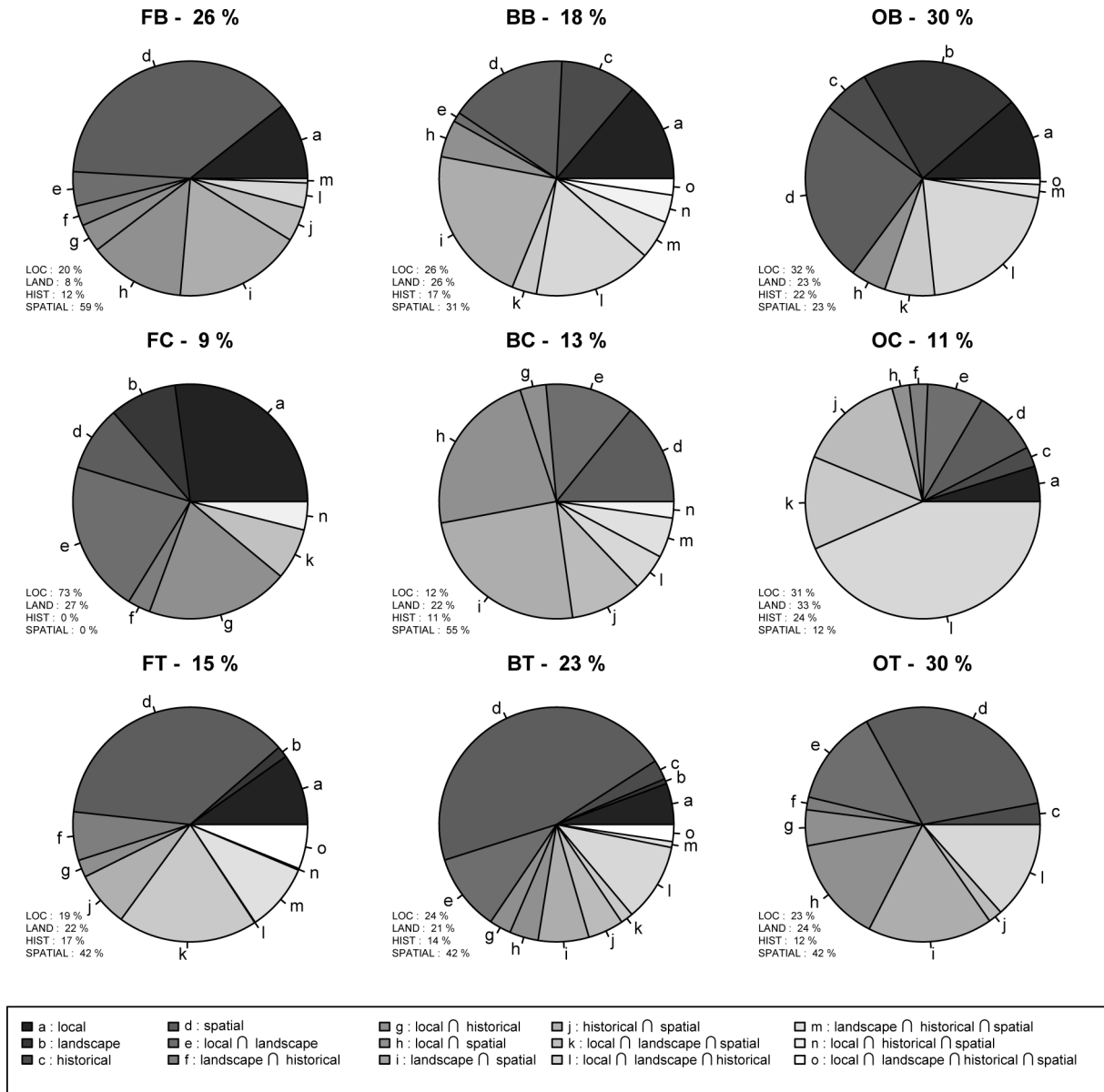


Figure A2. Results of the variation partitioning for forest herb species in the 9 landscape windows. The pie charts give the proportion of variation explained by each group of variables and combination of groups. The percentage at the top of each pie charts is the total variation explained by the variables according to the RDA. LOC, LAND, HIST and SPATIAL is the proportion of variance explained by each group of variables, including pure and shared effects.

Table A1. Local, landscape and historical variables for each landscape window. FB, FC and FT are unfragmented landscape windows, BB, BC and BT are bocage landscapes and OB, OC and OT are open field landscapes. Excepted for cumulated forest area, values are mean ( $\pm 1$  SD).

	Landscape windows								
	FB	FC	FT	BB	BC	BT	OB	OC	OT
Mean patch area (ha)	7.32 (17.68)	6.40 (12.97)	3.04 (5.77)	7.90 (25.39)	4.57 (9.56)	1.89 (3.98)	6.76 (19.57)	6.42 (11.67)	4.69 (6.68)
Cumulated forest area (ha) in the 5 × 5 km window	971.65	2217.27	2260.22	473.99	146.21	117.43	202.90	192.46	135.89
Forest turn over through time *	–	–	–	4649	19606	4830	8390	4817	18568
Local variables									
Perimeter (km)	0 (0)	0 (0)	0 (0)	1.30 (2.49)	0.88 (1.14)	0.64 (0.71)	1.05 (2.01)	1.09 (1.12)	1.09 (0.99)
Pathways (km)	0.99 (2.31)	1.04 (1.68)	0.53 (0.73)	0.38 (1.68)	0.39 (1.02)	0.058 (0.24)	0.55 (1.95)	0.58 (1.54)	0.12 (0.31)
Rivers (m)	0 (0)	0 (0)	117.25 (278.22)	163.76 (663.94)	11.97 (67.73)	65.21 (158.81)	1.54 (8.41)	26.3 (109.08)	0 (0)
Softwood (ha)	0.48 (1.68)	0.42 (1.37)	0.79 (1.67)	1.24 (9.02)	0.41 (1.96)	0.02 (0.17)	0.1 (0.4)	0.78 (2.81)	0 (0)
Cut (ha)	0.36 (1.79)	0.98 (5.1)	0 (0)	0.49 (2.52)	0.26 (0.79)	0.22 (1.11)	0.11 (0.33)	0.35 (1.19)	1.32 (4.13)
Poplar (ha)	0 (0)	0 (0)	0 (0)	0.4 (1.87)	0 (0)	0.08 (0.33)	0.17 (0.88)	0 (0)	0.02 (0.08)
Calcareous sand (ha)	0 (0)	0 (0)	0 (0)	3.93 (13.57)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Clay (ha)	0 (0)	0 (0)	0 (0)	2.4 (9.73)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Chalk (ha)	0.77 (1.98)	0 (0.02)	0.04 (0.17)	0.62 (4.46)	3.53 (8.19)	0.92 (1.97)	3.37 (11.71)	1.31 (2.81)	2.4 (3.48)
Silt (ha)	6.55 (16.09)	6.4 (12.97)	2.71 (4.73)	0.09 (0.68)	0.87 (1.96)	0.72 (2.03)	3.24 (8.96)	4.91 (11.47)	2.29 (4.11)
Acidic sand (ha)	0 (0)	0 (0)	0 (0)	0 (0)	0.17 (0.95)	0 (0.02)	0 (0)	0 (0)	0 (0)
Landscape variables									
Roads (km)	59.65 (7.83)	40.12 (4.59)	58.93 (6.53)	53.42 (4.05)	62.24 (7.17)	59.58 (3.52)	58.43 (8.83)	48.51 (5.67)	53.28 (2.81)
Hedgerows (km)	0.23 (0.41)	0.04 (0.21)	0.67 (1.3)	4.82 (5.34)	3.28 (3.28)	10.89 (3.11)	0.24 (0.42)	1.93 (1.34)	0.66 (0.49)
Built (ha)	16.74 (23.79)	0.5 (1.66)	1.17 (2.31)	43.86 (25.44)	8.57 (4.83)	10.33 (4.96)	5.91 (7.559)	17.95 (12.27)	3.55 (4.64)
Croplands (ha)	23.9 (20.58)	4.6 (10.1)	1.22 (2.75)	27.84 (54.27)	68.45 (35.8)	4.36 (5.13)	116.03 (84.02)	80.1 (38.22)	115.58 (38.96)
Grasslands (ha)	3.91 (5.11)	0.3 (0.83)	6.26 (11.65)	66.64 (42.17)	35.94 (29.2)	94.45 (26.4)	1.7 (3.48)	32.3 (21.23)	4.06 (6.46)
Historical variables									
Age index	5.40 (0.37)	5.67 (0.14)	5.61 (0.22)	3.80 (0.53)	4.23 (0.54)	3.77 (0.42)	4.25 (0.51)	4.12 (0.47)	4.27 (0.44)
Spatio-temporal index (0.10 <sup>5</sup> )	56.45 (9.75)	152.71 (14.81)	121.99 (20.89)	27.13 (13.8)	13.1 (6.61)	12.46 (11.49)	9.82 (4.66)	18.7 (12.59)	5.07 (2.6)

\*: calculated for the 20 × 20 km window according to:  $\Sigma((G+L)/(S_t+S_{t+1}))$ , with G and L the forest area gained and lost between time t and t+1, respectively and S<sub>t</sub> and S<sub>t+1</sub> the total forest area at time t and t+1, respectively.

Table A2. Spearman correlations (rho) between mean explanatory variables and mean diversity measures of the nine landscape windows.  $\alpha$  is the mean species richness per fragment,  $\gamma$  the cumulated number of species in the each landscape window,  $\beta_{ADD}$ ,  $\beta_{SOR}$  and  $\beta_{RC}$  the mean additive, Sørensen and Raup and Crick dissimilarity index, respectively. \* indicates a p-value<0.05, \*\*indicates a p-value<0.01 and \*\*\*indicates a p-value<0.001.

	All species		Forest herbs				
	$\alpha$	$\gamma$	$\alpha$	$\gamma$	$\beta_{ADD}$	$\beta_{SOR}$	$\beta_{RC}$
Local variables							
Perimeter	0.03	0.61	-0.83 ***	0.38	0.66	0.85 **	0.75 *
Pathways	-0.48	-0.53	0.38	-0.51	-0.60	-0.32	-0.37
Rivers	0.72	0.54	-0.05	0.48	0.46	0.25	-0.05
Softwood	0.47	0.15	0.33	0.18	-0.12	-0.02	-0.15
Cut	-0.16	0.05	-0.13	0.18	-0.03	0.07	0.40
Poplar	0.18	0.42	-0.68	0.24	0.69 *	0.64	0.64
Calcareous sand	0.55	0.55	-0.27	0.55	0.55	0.55	0.55
Clay	0.55	0.55	-0.27	0.55	0.55	0.55	0.55
Chalk	-0.33	0.25	-0.60	0.06	0.45	0.60	0.52
Silt	-0.57	-0.60	0.40	-0.61	-0.73 *	-0.48	-0.40
Acid sand	0.27	0.39	0.09	0.51	0.5	0.14	-0.07
Landscape variables							
Roads	0.43	0.25	0.33	0.33	0.23	0.02	0.02
Hedgerows	0.70 *	0.82 *	-0.20	0.77 *	0.75 *	0.42	0.17
Built	0.53	0.90 *	-0.15	0.76 *	0.67	0.58	0.45
Croplands	-0.60	0.08	-0.83 ***	-0.18	0.30	0.72 *	0.73 *
Grasslands	0.78 *	0.85	-0.07	0.85 **	0.70 *	0.33	0.13
Historical variables							
Age index	-0.47	-0.91 **	0.43	-0.75 *	-0.92 **	-0.67	-0.40
I.SPAT.TEMP	0.23	-0.30	0.75 *	-0.08	-0.52	-0.55	-0.58

Table A3. A table presenting the threshold distance used in PCNM analysis and the number of PCNM axes retained after the forward selection ( $\alpha=0.1$ ) with the site  $\times$  species matrix of forest herbs.

	FB	FC	FT	BB	BC	BT	OB	OC	OT
Threshold value	239.2	753.3	801.3	830.4	821.6	671.1	689.7	649.6	737.6
Number of PCNM axes retained	9	0	5	7	7	12	4	2	6

Table A4. Spearman correlation (rho) between explanatory variables for each of the nine landscape window (FB, FC, FT, BB, BC, BT, OB, OC, OT). Gray cells represents significant relationships. PER is the forest patch perimeter, ROAD the cumulated road length inside the forest patch, STREAM the cumulated stream length inside the forest patch, SOFTWOOD the estimated area of softwood inside the forest patch, CUT the estimated area of clearcut inside the forest patch, POPLAR the estimated area of poplar inside the forest patch, CALC.SAND the area of calcareous sand inside the forest patch, CLAY the area of clay inside the forest patch, LIMESTONE the area of limestone inside the forest patch, SILT the area of silt inside the forest patch, ACID.SAND the area of acid sand inside the forest patch, ROAD.LAND the cumulated length of road 5000 m around the forest patch, HEDG the cumulated length of hedgerows 500 m around the forest patch, BUILT the cumulated area of built 1000 m around the forest patch, CROP the cumulated area of cropland 500 m around the forest patch, MEADOW the cumulated area of grassland 500 m around the forest patch, AGE the age index of the forest patch (see text), I.SPAT.TEMP the spatio-temporal index of isolation for the forest patch (see text), PCNM represent the PCNM axes scores, x the x centroid of the forest patch and y the y centroid of the forest patch.

FB	RTE	P.RES	P.CUT	CRAIE	LIMON	RTE.LAND	HEDG	BUILT	CROP	MEADOW	AGE	I.SPAT.TEMP	PCNM 1	PCNM 4	PCNM 5	PCNM 6	PCNM 8	PCNM 11	PCNM 18	PCNM 20	PCNM 27	x	y	
RTE	1																							
P.RES	0.25	1																						
P.CUT	0.19	0.09	1																					
CRAIE	0.43	0.08	0.20	1																				
LIMON	0.65	0.36	0.36	0.21	1																			
RTE.LAND	0.24	-0.05	0.15	0.22	0.26	1																		
HEDG	0.35	-0.01	0.04	0.02	0.25	0.59	1																	
BUILT	0.51	-0.05	0.09	0.14	0.32	0.75	0.65	1																
CROP	0.40	0.18	0.20	-0.04	0.35	-0.05	0.41	0.22	1															
MEADOW	0.50	0.10	-0.01	0.15	0.24	0.63	0.77	0.73	0.40	1														
AGE	0.10	-0.26	-0.11	0.11	0.21	-0.05	-0.10	0.10	-0.37	-0.15	1													
I.SPAT.TEMP	0.40	0.32	0.37	0.26	0.62	-0.01	0.15	0.13	0.21	0.03	0.54	1												
PCNM 1	-0.13	-0.09	0.10	-0.05	0.11	0.53	0.09	0.41	-0.32	0.03	0.29	0.14	1											
PCNM 4	-0.20	-0.07	-0.05	-0.38	-0.10	0.01	0.28	0.12	0.25	0.22	-0.03	0.02	0.07	1										
PCNM 5	-0.35	-0.20	0.06	-0.40	-0.30	-0.19	-0.35	-0.19	0.08	-0.25	-0.45	-0.54	0.06	0.05	1									
PCNM 6	0.14	-0.03	-0.10	-0.09	-0.01	0.24	0.33	0.29	-0.07	0.47	-0.13	-0.22	0.00	0.10	0.10	1								
PCNM 8	-0.12	0.21	0.23	0.21	-0.04	-0.14	-0.11	-0.38	0.07	-0.07	-0.16	0.20	-0.04	-0.09	-0.10	-0.08	1							
PCNM 11	0.11	0.18	-0.12	-0.03	-0.11	0.15	0.21	0.23	0.13	0.16	0.14	0.03	0.10	0.15	0	0.18	0.06	1						
PCNM 18	0.07	0.03	0.05	-0.06	0.24	0.06	0.12	0.11	0.33	0.12	-0.05	0.18	0.06	-0.01	0.04	0.08	0.14	-0.03	1					
PCNM 20	0.01	-0.27	-0.03	0.00	-0.22	-0.16	-0.12	0.05	0.05	0.03	-0.03	-0.07	-0.12	0.10	-0.03	0.02	-0.15	-0.14	-0.17	1				
PCNM 27	-0.12	-0.02	-0.27	0.02	-0.01	-0.09	-0.04	-0.10	-0.12	-0.11	0.19	0.12	-0.03	0.01	0	-0.04	-0.02	0.09	0.10	-0.17	1			
x	0.05	-0.22	-0.05	0.06	-0.06	0.80	0.38	0.62	-0.24	0.50	-0.23	-0.50	0.36	0.05	0.08	0.35	-0.42	0.02	-0.05	-0.04	-0.10	1		
y	0.11	0.22	-0.07	0.10	-0.09	-0.72	-0.54	-0.54	0.12	-0.39	-0.16	-0.18	-0.72	-0.28	0.13	-0.28	-0.03	-0.19	-0.14	0.12	0	-0.42	1	

FC	RTE	P.RES	P.CUT	CRAIE	LIMON	RTE.LAND	HEDG	BUILT	CROP	MEADOW	AGE	I.SPAT. TEMP	x	y
RTE	1													
P.RES	0.06	1												
P.CUT	0.09	-0.32	1											
CRAIE	0.05	-0.12	0.29	1										
LIMON	0.93	0.00	0.12	0.01	1									
RTE.LAND	0.68	0.12	0.00	-0.01	0.61	1								
HEDG	0.08	-0.12	-0.09	-0.03	0.03	-0.14	1							
BUILT	-0.14	0.00	0.15	0.41	-0.17	-0.16	-0.09	1						
CROP	-0.23	-0.17	0.25	-0.13	-0.32	-0.30	0.29	0.50	1					
MEADOW	0.03	-0.13	0.21	-0.08	-0.07	-0.07	0.48	0.63	0.63	1				
AGE	0.06	-0.10	0.13	0.05	0.17	0.22	0.69	-0.14	-0.48	-0.29	1			
I.SPAT.TEMP	-0.26	0.20	0.22	-0.10	0.35	-0.10	-0.29	0.06	0.11	-0.03	0.43	1		
x	-0.17	0.12	-0.23	0.03	-0.18	-0.01	0.29	-0.01	0.01	0.11	-0.37	-0.55	1	
y	-0.06	0.03	-0.04	-0.29	0.01	-0.34	0.23	-0.26	0.02	-0.18	-0.39	0.01	-0.03	1

FT	RTE	RIV	P.RES	CRAIE	LIMON	RTE.LAND	HEDG	BUILT	CROP	MEADOW	AGE	I.SPAT.EMP	PCNM 1	PCNM 2	PCNM 5	PCNM 8	PCNM 10	x	y
RTE	1																		
RIV	0.40	1																	
P.RES	0.39	0.32	1																
CRAIE	0.38	0.43	0.35	1															
LIMON	0.81	0.48	0.58	0.36	1														
RTE.LAND	0.33	0.06	0.20	0.37	0.18	1													
HEDG	0.33	-0.21	-0.26	0.01	0.06	0.13	1												
BUILT	0.38	0.06	-0.20	0.11	0.10	-0.12	0.78	1											
CROP	0.27	-0.28	-0.22	-0.11	-0.03	0.19	0.81	0.60	1										
MEADOW	0.34	-0.13	-0.20	-0.01	0.09	0.06	0.95	0.83	0.75	1									
AGE	-0.22	0.34	0.21	0.11	0.04	-0.29	-0.77	-0.54	-0.93	-0.71	1								
I.SPAT.EMP	0.22	0.34	0.48	0.22	0.25	-0.21	-0.09	0.11	-0.25	-0.01	0.40	1							
PCNM 1	0.07	0.12	-0.48	-0.06	-0.07	-0.19	0.54	0.59	0.60	0.49	-0.61	-0.51	1						
PCNM 2	-0.14	-0.01	-0.24	0.00	-0.01	-0.49	-0.15	0.00	-0.16	-0.19	0.19	-0.36	0.46	1					
PCNM 5	0.42	-0.32	0.00	0.33	0.22	0.17	0.33	0.44	0.07	0.29	-0.04	0.25	0.23	-0.06	1				
PCNM 8	0.22	0.05	-0.32	0.00	-0.04	0.13	0.20	0.10	0.07	0.24	-0.04	-0.17	0.08	-0.01	0.02	1			
PCNM 10	-0.13	0	-0.17	-0.26	-0.20	-0.19	-0.19	-0.09	-0.03	-0.15	0.13	0.08	-0.06	0.03	-0.10	0.10	1		
x	0.00	0.16	-0.40	-0.03	-0.03	-0.06	0.32	0.31	0.42	0.24	-0.54	-0.79	0.82	0.56	0.01	0.00	-0.17	1	
y	-0.13	-0.12	0.23	-0.02	0.19	-0.46	-0.63	-0.42	-0.68	-0.54	0.63	0.14	-0.31	0.22	-0.31	-0.11	0.16	-0.16	1



BB	PER	RTE	RIV	P.RES	P.CUT	P.POP	SABL. CALC	ARG. PAN	CRAIE	LIMO N	RTE. LAND	HEDG	BUILT	CROP	MEA-DOW	AGE	I.SPA T. TEM p	PCNM 1	PCNM 2	PCNM 3	PCNM 4	PCNM 6	PCNM 8	PCNM 31	x	y	
PER	1																										
RTE	0.57	1																									
RIV	0.41	0.34	1																								
P.RES	0.41	0.52	0.25	1																							
P.CUT	0.40	0.45	0.37	0.53	1																						
P.POP	0.15	0.14	0.33	0.03	0.04	1																					
SABL. CALC	0.67	0.34	0.13	0.25	0.08	0.03	1																				
ARG.PAN	0.33	0.42	0.30	0.19	0.46	0.03	0.09	1																			
CRAIE	-0.08	0.09	0.01	0.10	0.07	0.14	-0.36	-0.18	1																		
LIMON	0.00	0.12	-0.11	0.30	0.26	-0.08	-0.27	-0.09	0.26	1																	
RTE. LAND	0.64	0.57	0.17	0.41	0.33	0.13	0.51	0.41	-0.20	0.11	1																
HEDG	0.49	0.33	0.39	0.24	0.20	0.11	0.28	-0.01	0.04	0.18	0.29	1															
BUILT	0.41	0.39	0.30	0.27	0.26	-0.02	0.29	0.28	-0.31	0.06	0.12	-0.16	1														
CROP	0.32	0.15	0.34	0.30	0.17	0.24	0.17	-0.15	0.32	0.08	0.29	0.06	0.06	1													
MEADOW	0.48	0.35	0.39	0.02	0.15	0.13	0.39	0.27	-0.16	-0.15	0.50	0.66	0.03	-0.14	1												
AGE	0.59	0.32	0.17	0.25	0.28	0.10	0.50	0.40	-0.35	-0.13	0.54	0.17	0.18	0.10	0.33	1											
I.SPAT. TEMP	0.70	0.41	0.20	0.38	0.35	0.11	0.52	0.46	-0.29	0.02	0.58	0.26	0.44	0.26	0.26	0.81	1										
PCNM 1	0.09	0.06	0.15	0.11	0.32	0.13	-0.07	0.31	-0.05	-0.05	0.21	-0.22	-0.04	-0.34	0.17	0.20	0.13	1									
PCNM 2	-0.14	-0.11	-0.28	-0.26	-0.26	-0.22	0.06	-0.14	0.02	-0.01	0.25	-0.05	-0.43	-0.18	0.30	-0.10	-0.20	-0.03	1								
PCNM 3	-0.08	-0.19	0.00	-0.05	-0.11	0.14	0.01	-0.51	0.29	0.03	-0.19	0.07	-0.31	0.30	-0.01	-0.17	-0.13	0.08	0.08	1							
PCNM 4	-0.02	0.05	-0.08	0.01	-0.15	-0.12	0.08	-0.26	0.08	-0.01	-0.29	-0.09	0.47	0.06	-0.25	-0.27	-0.09	-0.07	-0.05	0.12	1						
PCNM 6	0.16	0.21	-0.22	0.05	0.03	0.04	0.46	-0.16	-0.26	-0.04	0.34	-0.07	0.06	-0.03	0.01	-0.21	0.17	-0.02	0.05	0.03	-0.02	1					
PCNM 8	0.00	0.04	0.01	-0.09	-0.14	-0.10	0.14	0.10	-0.27	-0.19	0.05	-0.07	0.30	-0.03	0.08	0.02	0.15	-0.10	0.12	0.29	0.15	-0.12	1				
PCNM 31	-0.08	-0.14	-0.20	-0.32	-0.10	-0.03	-0.14	0.04	0.02	0.02	-0.08	-0.18	-0.16	-0.06	-0.10	0.00	-0.03	0.09	0.09	-0.06	-0.05	0.07	-0.12	1			
x	-0.15	-0.23	0.04	-0.12	-0.22	0.08	-0.08	-0.19	0.00	-0.11	-0.42	-0.01	0.18	0.24	-0.24	-0.16	-0.02	-0.64	-0.34	0.08	0.03	-0.06	0.22	-0.06	1		
y	0.21	0.14	0.21	0.14	0.19	0.05	0.23	0.28	-0.48	-0.26	0.04	-0.09	0.53	-0.25	-0.02	0.28	0.35	0.48	-0.56	-0.09	0.17	0.25	0.17	0.07	-0.08	1	

BC	PER	RTE	RIV	P.RES	P.CUT	CRAIE	LIMO N	SABL. ACI	RTE. LAND	HEDG	BUILT	CROP	MEADOW	AGE	I.SPA T. TEM P	PCNM 1	PCNM 2	PCNM 5	PCNM 8	PCNM 12	PCNM 19	PCNM 20	x	y	
PER	1																								
RTE	0.68	1																							
RIV	0.26	0.29	1																						
P.RES	0.39	0.27	-0.06	1																					
P.CUT	0.12	0.17	-0.10	0.13	1																				
CRAIE	0.90	0.70	0.28	0.37	-0.02	1																			
LIMON	0.49	0.33	0.22	0.29	0.28	0.31	1																		
SABL.ACI	0.28	0.33	-0.03	0.60	0.40	0.26	0.30	1																	
RTE.LAND	0.50	0.43	0.26	0.17	0.06	0.63	0.05	0.28	1																
HEDG	0.32	0.48	0.28	-0.11	0.08	0.28	0.23	-0.15	0.05	1															
BUILT	0.19	0.47	0.20	0.04	0.43	0.15	0.42	0.11	0.07	0.72	1														
CROP	0.43	0.04	0.01	0.34	-0.05	0.45	0.36	0.30	0.37	-0.29	-0.25	1													
MEADOW	0.39	0.59	0.30	-0.04	0.24	0.34	0.23	0.03	0.09	0.80	0.64	-0.41	1												
AGE	0.34	0.25	0.28	0.19	0.35	0.21	0.44	0.22	0.20	-0.01	0.25	0.06	0.10	1											
I.SPAT.TEMP	0.45	0.22	0.22	0.21	0.28	0.22	0.44	0.05	-0.12	-0.10	0.09	0.23	0.14	0.56	1										
PCNM 1	0.02	-0.14	0.15	0.08	0.26	-0.06	-0.13	0.09	-0.08	-0.15	-0.13	0.10	0.12	-0.11	0.18	1									
PCNM 2	-0.10	-0.10	0.07	-0.06	0.11	-0.19	0.44	-0.09	-0.72	0.30	0.31	-0.09	0.23	-0.02	0.22	0.00	1								
PCNM 5	0.03	-0.14	0.22	0.02	-0.12	0.00	-0.19	0.20	0.19	-0.36	-0.54	0.27	-0.31	-0.19	-0.12	0.12	-0.25	1							
PCNM 8	0.44	0.24	0.09	0.13	-0.06	0.48	0.15	0.26	0.14	-0.01	-0.16	0.30	0.19	0.14	0.07	0.10	0.09	0.07	1						
PCNM 12	-0.29	-0.29	-0.18	-0.27	-0.17	-0.16	-0.33	-0.24	-0.23	-0.04	-0.13	-0.22	-0.11	-0.26	-0.27	-0.04	0.01	-0.14	-0.09	1					
PCNM 19	-0.17	-0.23	0.01	0.09	-0.20	-0.06	0.16	-0.17	-0.12	0.07	-0.02	0.16	-0.09	-0.14	-0.08	0.01	0.26	-0.26	0.15	-0.14	1				
PCNM 20	0.15	0.31	0.20	-0.20	0.09	0.14	0.14	-0.13	0.03	0.17	0.06	0.01	0.14	0.12	0.22	0.02	0.12	-0.03	0.16	-0.10	0.05	1			
x	-0.09	-0.13	0.11	-0.02	0.19	-0.24	0.24	-0.15	-0.67	0.10	0.11	-0.02	0.13	-0.04	0.50	0.47	0.72	-0.14	-0.14	-0.01	0.07	0.12	1		
y	-0.04	-0.13	0.01	0.13	0.27	0.02	-0.15	0.26	0.47	-0.28	-0.09	0.17	-0.11	0.02	-0.17	0.50	-0.51	0.05	-0.20	-0.01	-0.14	-0.02	-0.11	1	

BT	PER	RTE	RIV	P.RES	P.CUT	P.POP	CRAI	LIMO	SABL.	RTE.	HEDG	BUILT	CROP	MEAD	AGE	I.SPA	PCNM	1	2	4	9	10	11	12	16	18	24	29	35	x	y		
PER	1																																
RTE	0.19	1																															
RIV	0.40	0.23	1																														
P.RES	0.03	0.17	0.12	1																													
P.CUT	0.33	0.09	0.18	0.27	1																												
P.POP	0.10	0.22	0.32	-0.05	0.13	1																											
CRAIE	0.49	0.17	0.05	0.05	0.37	-0.03	1																										
LIMON	0.34	0.14	0.12	0.19	-0.01	-0.07	-0.30	1																									
SABL.ACI	0.00	0.13	-0.11	-0.03	-0.06	-0.05	-0.02	0.10	1																								
RTE.LAND	0.39	-0.09	-0.22	0.28	0.29	-0.12	0.17	0.10	-0.20	1																							
HEDG	0.68	0.05	0.15	0.04	0.31	-0.02	0.56	0.17	0.21	0.38	1																						
BUILT	0.15	0.16	0.12	0.05	-0.07	0.21	0.10	0.08	-0.03	-0.12	0.22	1																					
CROP	0.19	-0.19	-0.04	0.05	0.02	-0.31	0.37	0.05	0.04	0.25	0.25	-0.08	1																				
MEAD	0.82	0.18	0.35	0.10	0.34	0.05	0.35	0.34	0.05	0.49	0.79	0.17	0.02	1																			
W	0.39	-0.02	0.09	0.11	0.37	-0.16	0.38	0.09	-0.01	0.32	0.36	-0.08	0.22	0.38	1																		
AGE	0.34	-0.08	0.33	0.04	0.23	-0.12	0.24	0.17	-0.09	0.27	0.24	0.12	0.28	0.25	0.54	1																	
I.SPAT.	-0.08	0.19	0.12	0.02	-0.26	0.12	-0.39	0.22	-0.17	-0.08	-0.32	0.03	-0.20	-0.09	-0.26	0.26	1																
TEMP	0.17	-0.06	0.24	0.13	0.09	-0.17	0.03	0.13	0.06	0.16	0.15	-0.09	0.42	0.09	0.06	0.34	-0.01	1															
PCNM 1	-0.17	0.12	-0.05	-0.05	-0.03	0.17	-0.07	-0.09	0.18	-0.62	-0.08	0.40	-0.34	-0.21	-0.21	-0.27	-0.08	-0.05	1														
PCNM 2	-0.17	-0.17	-0.17	-0.05	-0.21	-0.01	-0.23	-0.02	0.14	-0.15	-0.17	-0.17	0.15	-0.12	-0.21	-0.37	0.11	-0.09	-0.10	1													
PCNM 9	-0.17	-0.09	-0.20	-0.04	-0.25	-0.10	0.10	-0.05	-0.22	0.08	-0.01	0.32	0.16	-0.23	-0.16	-0.10	0.13	-0.16	0.05	-0.24	1												
PCNM 10	0.03	0.07	0.06	0.03	0.13	0.03	0.26	-0.25	0.16	0.02	0.20	-0.05	-0.14	0.00	0.14	0.06	-0.13	0.11	0.08	-0.27	0.07	1											
PCNM 11	-0.26	0.01	0.08	0.08	-0.04	0.12	-0.21	0.04	0.09	-0.08	-0.18	-0.07	-0.07	-0.30	-0.25	-0.04	-0.06	0.03	0.15	-0.23	0.02	0.20	1										
PCNM 12	-0.14	-0.03	-0.12	0.13	-0.08	-0.09	-0.04	-0.13	0.05	-0.07	-0.07	-0.14	-0.15	-0.19	-0.10	-0.14	-0.03	-0.05	0.01	0.11	0.12	-0.06	0.13	1									
PCNM 16	0.31	-0.14	0.18	-0.14	-0.09	-0.03	0.00	0.37	0.04	0.07	0.27	0.20	0.07	0.25	0.04	0.03	-0.04	0.01	0.02	-0.06	0.04	-0.06	0.01	-0.06	1								
PCNM 18	-0.09	-0.17	0.15	-0.11	0.00	0.09	0.05	-0.07	-0.03	0.03	0.15	-0.05	0.12	0.05	-0.03	0.16	0.02	0.05	0.05	-0.05	-0.07	-0.01	0.20	-0.16	-0.06	1							
PCNM 24	-0.02	-0.19	-0.13	-0.07	-0.03	0.06	-0.16	0.14	0.17	-0.10	0.11	0.04	0.11	-0.07	-0.05	-0.11	-0.09	0.05	0.08	0.10	-0.03	-0.06	0.08	-0.11	-0.01	-0.01	1						
PCNM 29	-0.13	-0.21	-0.20	0.03	-0.05	-0.23	-0.16	0.08	0.02	-0.14	-0.13	-0.14	0.06	-0.19	0.12	0.03	0.03	0.05	0.03	0.01	-0.03	-0.01	0.06	-0.07	-0.04	-0.10	0.15	1					
PCNM 35	-0.18	0.03	-0.24	0.02	-0.21	0.11	-0.21	-0.06	-0.04	-0.07	-0.20	-0.18	-0.28	-0.06	-0.22	-0.77	0.44	-0.58	-0.02	0.38	0.16	-0.05	-0.08	0.05	0.02	-0.09	-0.04	-0.02	1				
x	-0.03	-0.20	-0.09	-0.11	0.08	-0.17	0.24	-0.37	0.24	0.41	0.35	-0.07	0.26	0.13	0.24	0.14	-0.48	0.22	-0.26	0.02	-0.03	0.40	-0.03	-0.03	0.05	0.01	-0.05	-0.01	-0.23	1			
y																																	

OB	PER	RTE	RIV	P.RES	P.CUT	P.POP	CRATE	LIMON	RTE.LAND	HEDG	BUILT	CROP	MEA-DOW	AGE	I.SPAT. TEMP	PCNM 1	PCNM 3	PCNM 4	PCNM 8	x	y	
PER	1																					
RTE	0.52	1																				
RIV	0.20	0.32	1																			
P.RES	0.35	-0.16	-0.05	1																		
P.CUT	0.11	-0.01	-0.10	0.22	1																	
P.POP	0.23	0.42	0.72	-0.07	-0.15	1																
CRATE	0.59	0.26	-0.08	0.39	0.29	0.03	1															
LIMON	0.58	0.32	0.01	-0.03	0.01	-0.01	-0.04	1														
RTE.LAND	0.30	-0.13	-0.12	-0.35	0.26	-0.05	-0.40	0.12	1													
HEDG	0.32	0.48	0.28	0.20	0.09	0.42	0.42	-0.17	0.05	1												
BUILT	-0.09	0.12	-0.25	-0.09	-0.11	-0.10	0.14	-0.06	-0.47	0.17	1											
CROP	0.87	0.36	0.16	0.35	0.02	0.14	0.36	0.68	0.39	0.00	-0.17	1										
MEADOW	0.30	0.47	0.20	-0.05	-0.28	0.32	0.36	-0.09	-0.19	0.51	0.32	-0.02	1									
AGE	0.54	0.38	0.23	0.00	-0.10	-0.03	0.02	0.60	0.00	-0.01	-0.24	0.56	0.02	1								
I.SPAT.TEMP	0.81	0.51	0.23	0.06	0.03	0.13	0.34	0.57	0.17	0.20	-0.05	0.74	0.27	0.60	1							
PCNM 1	0.06	0.41	-0.03	-0.43	-0.27	-0.14	-0.14	0.35	-0.62	-0.25	0.45	0.06	0.27	0.32	0.16	1						
PCNM 3	-0.01	-0.12	0.03	-0.12	0.06	0.08	-0.41	0.13	0.19	-0.22	-0.42	0.17	-0.40	0.04	-0.34	0.04	1					
PCNM 4	0.01	-0.11	0.05	-0.03	-0.10	0.18	0.18	-0.24	0.16	-0.18	-0.13	0.05	0.29	-0.21	-0.01	-0.06	0.04	1				
PCNM 8	0.10	0.29	-0.03	-0.06	0.27	-0.12	0.23	0.08	0.37	0.20	-0.40	-0.02	-0.05	0.05	-0.08	-0.13	0.04	0.04	1			
x	-0.11	-0.34	-0.31	-0.03	0.16	-0.30	-0.26	0.16	0.26	-0.55	-0.23	0.14	-0.63	-0.11	-0.21	0.70	-0.15	-0.07	0.00	1		
y	-0.02	0.33	-0.14	-0.20	-0.14	-0.29	-0.08	0.15	-0.71	-0.10	0.49	-0.16	0.18	0.18	-0.03	0.78	-0.36	-0.39	0.00	-0.16	1	

OC	PER	RTE	RIV	P.RES	P.CUT	CRAIE	LIMON	RTE.LAND	HEDG	BUILT	CROP	MEADOW	AGE	I.SPAT.T EMP	PCNM 1	PCNM 7	x	y
PER	1																	
RTE	0.76	1																
RIV	0.16	-0.20	1															
P.RES	0.53	0.55	-0.10	1														
P.CUT	0.35	0.52	-0.12	0.44	1													
CRAIE	0.37	0.18	0.17	0.26	-0.17	1												
LIMON	0.80	0.71	0.15	0.36	0.49	-0.02	1											
RTE.LAND	0.52	0.51	0.39	0.17	0.28	-0.06	0.63	1										
HEDG	0.61	0.44	0.30	0.14	0.10	0.14	0.54	0.78	1									
BUILT	0.59	0.52	0.16	0.23	0.25	-0.16	0.62	0.72	0.82	1								
CROP	0.54	0.42	0.06	0.47	0.11	0.49	0.32	-0.02	-0.10	-0.16	1							
MEADOW	0.52	0.41	0.19	0.18	0.22	-0.06	0.48	0.58	0.80	0.86	-0.33	1						
AGE	0.40	0.59	-0.10	0.34	0.40	0.04	0.59	0.16	0.06	0.12	0.39	-0.03	1					
I.SPAT.TEMP	0.24	0.35	-0.29	0.49	0.34	0.21	0.16	-0.31	-0.28	-0.23	0.50	-0.26	0.57	1				
PCNM 1	0.07	0.06	0.23	0.10	0.18	-0.54	0.24	0.47	0.34	0.65	-0.43	0.56	-0.13	-0.47	1			
PCNM 7	-0.18	0.13	-0.43	-0.07	0.17	-0.21	-0.06	0.14	0.17	0.16	-0.40	0.13	-0.16	-0.12	0.08	1		
x	0.27	-0.03	0.01	-0.12	-0.26	0.55	-0.07	-0.17	0.10	-0.24	0.39	-0.16	-0.21	0.09	-0.58	-0.23	1	
y	-0.18	-0.17	-0.34	0.05	-0.16	0.29	-0.38	-0.70	-0.45	-0.53	0.28	-0.43	0.02	0.70	-0.69	-0.13	0.40	1

OT	PER	RTE	P.CUT	P.POP	CRAIE	LIMON	RTE.LAND	HEDG	BUILT	CROP	MEA-DOW	AGE	I.SPAT.TEMP	PCNM 1	PCNM 2	PCNM 6	PCNM 10	PCNM 12	PCNM 17	x	y	
PER	1																					
RTE	0.50	1																				
P.CUT	0.49	0.51	1																			
P.POP	-0.02	-0.12	-0.11	1																		
CRAIE	0.82	0.54	0.50	-0.25	1																	
LIMON	0.75	0.50	0.39	0.07	0.38	1																
RTE.LAND	0.69	0.38	0.53	-0.20	0.51	0.62	1															
HEDG	0.40	0.15	0.29	-0.14	0.43	0.21	0.51	1														
BUILT	-0.11	0.00	-0.15	0.09	0.01	-0.20	-0.25	-0.07	1													
CROP	0.97	0.51	0.43	0.02	0.82	0.75	0.60	0.35	-0.08	1												
MEADOW	0.33	0.13	0.25	0.02	0.34	0.16	0.43	0.41	0.12	0.23	1											
AGE	0.64	0.48	0.23	-0.07	0.49	0.65	0.41	0.25	0.20	0.62	0.21	1										
I.SPAT.TEMP	0.40	0.37	0.16	0.02	0.20	0.52	0.22	-0.23	0.18	0.38	-0.13	0.67	1									
PCNM 1	-0.19	-0.16	-0.33	0.11	-0.20	-0.16	-0.18	-0.30	0.22	-0.18	-0.25	0.16	0.02	1								
PCNM 2	0.14	0.07	0.05	-0.32	0.08	0.10	0.19	-0.10	-0.55	0.04	-0.21	0.24	0.27	0.16	1							
PCNM 6	-0.20	-0.03	-0.14	-0.32	0.18	-0.50	-0.06	0.11	-0.07	-0.22	0.04	-0.33	-0.26	-0.07	0.19	1						
PCNM 10	-0.17	0.25	-0.01	0.18	-0.17	0.02	-0.14	-0.19	0.13	-0.13	-0.24	0.00	0.17	0.21	-0.15	-0.05	1					
PCNM 12	-0.12	-0.07	-0.23	-0.25	0.05	-0.19	-0.29	-0.24	-0.08	-0.09	-0.10	-0.06	-0.02	0.19	0.07	0.11	0.28	1				
PCNM 17	-0.19	-0.21	-0.05	0.23	-0.14	-0.18	-0.07	-0.06	-0.21	-0.21	0.06	-0.26	-0.21	-0.22	-0.07	0.25	-0.07	-0.07	1			
x	-0.06	0.05	-0.20	0.18	0.01	-0.12	-0.16	-0.22	0.20	-0.10	0.13	0.21	0.12	0.69	0.19	0.22	-0.05	0.03	-0.06	1		
y	0.26	0.19	0.30	0.00	0.30	0.13	0.19	0.27	-0.37	0.27	0.45	-0.28	-0.35	-0.59	-0.21	0.12	-0.26	-0.29	0.09	-0.22	1	