Ecography

ECOG-03379
Pinzon, J., Wu, L., He, F. and Spence, J. R. 2017. Fine-scale forest variability and biodiversity in the boreal mixedwood forest. – Ecography doi: 10.1111/ecog.03379

Supplementary material

Appendix 1: Observed and theoretical Ripley's K(r) to assess spatial clustering in each of the tree and tall shrub species in the 1 ha George Lake permanent plot.

Appendix 2: Cluster dendrograms (Average linkage) showing sub-plot groupings for species composition and forest structure variables.

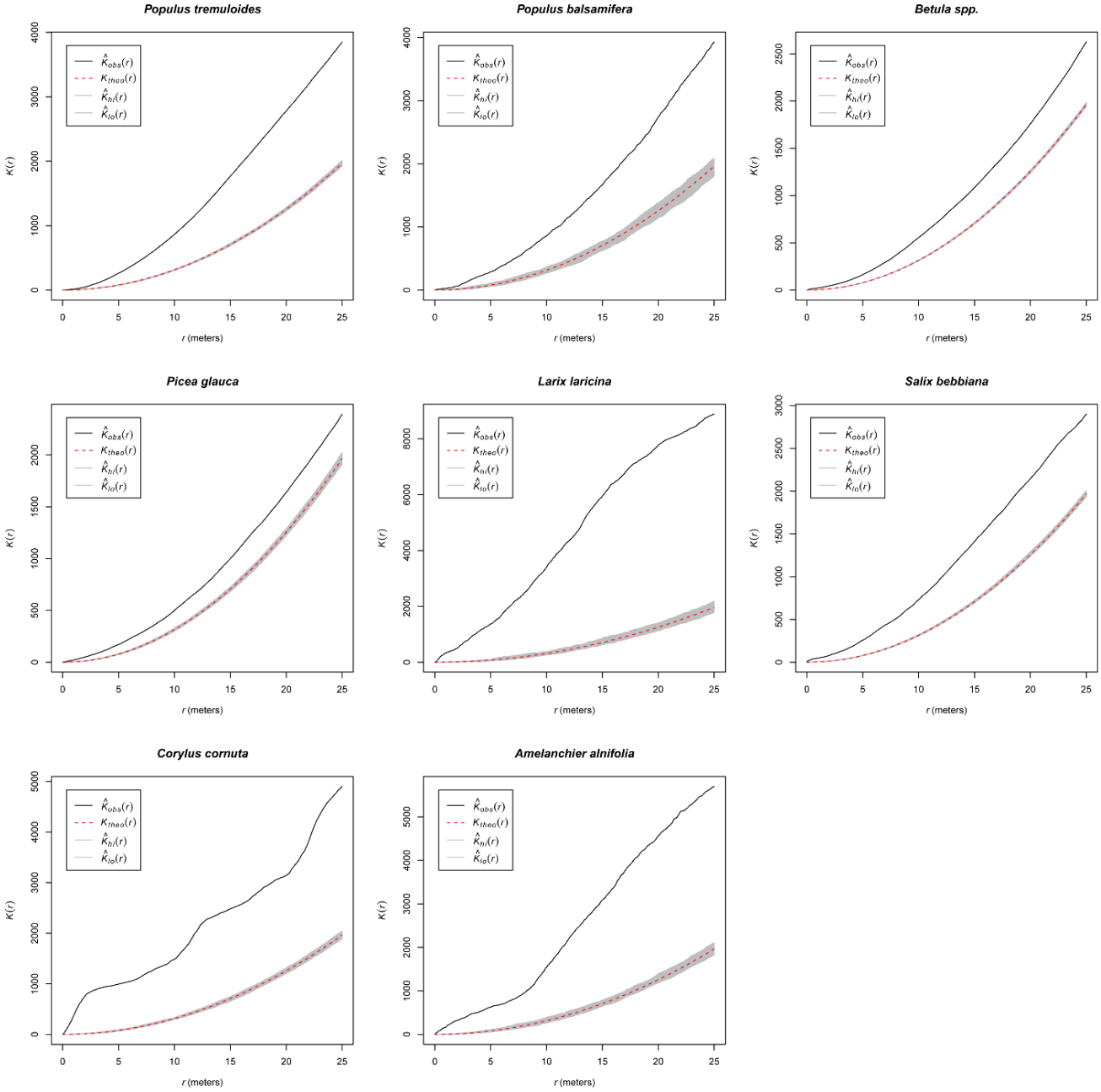
Appendix 3: Association between species composition and forest structure dendrograms.

Appendix 4: Moran's I to assess spatial autocorrelation for forest structure variables, richness and abundance of different taxonomic groups and abundance of dominant species.

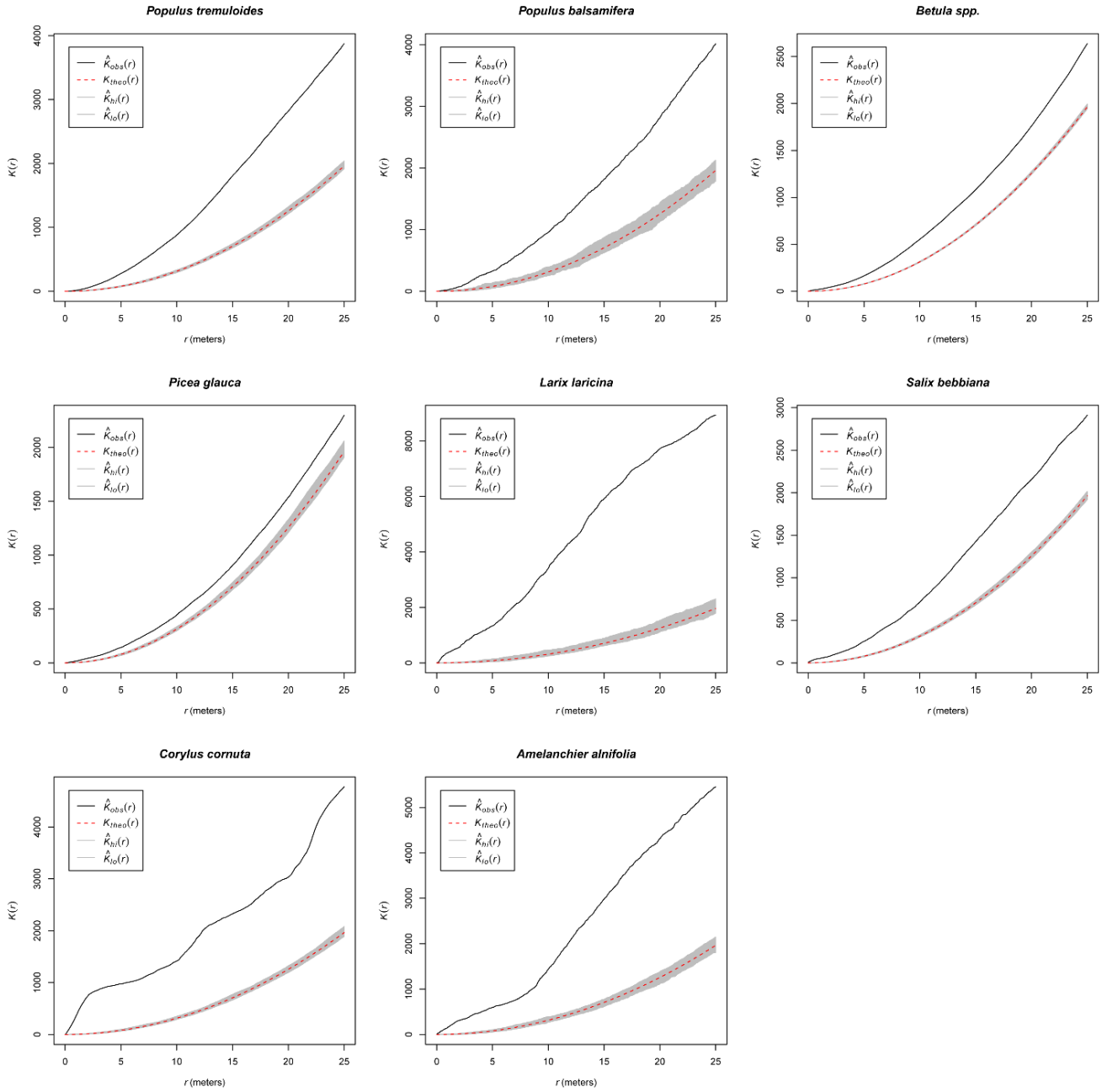
Appendix 5: Effects of forest structure on dominant species within four spatial scales

Appendix 1

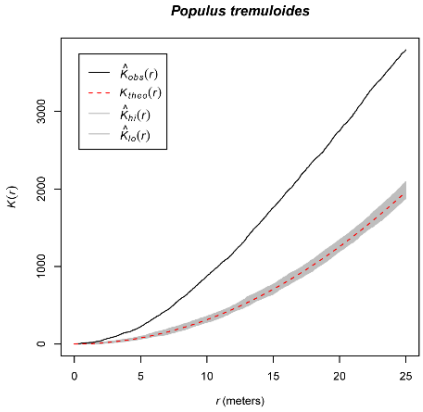
Overall stems (live and dead)

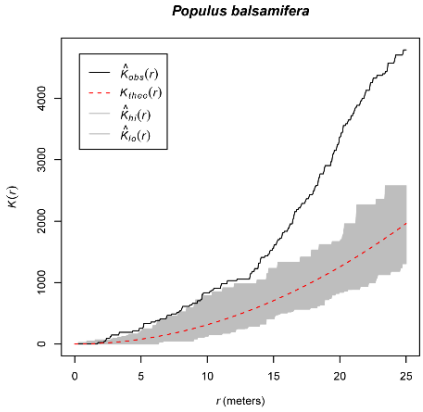


Living stems



Dead stems


Populus tremuloides
$\hat{K}_{obs}(r)$
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
$\hat{K}_{lo}(r)$
K(r)
r (meters)


Populus balsamifera
$\hat{K}_{obs}(r)$
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
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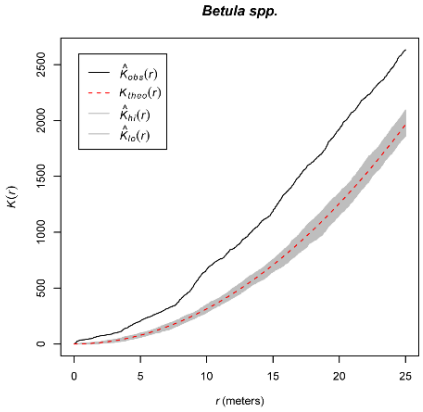
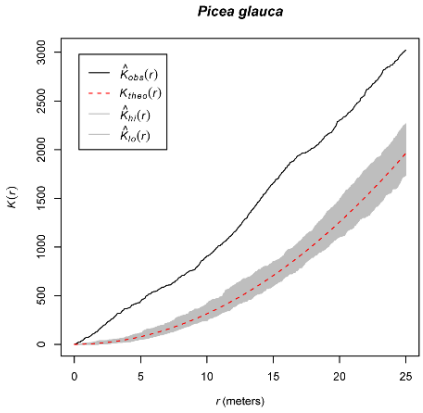
K(r)
r (meters)


Betula spp.
$\hat{K}_{obs}(r)$
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
$\hat{K}_{lo}(r)$
K(r)
r (meters)


Picea glauca
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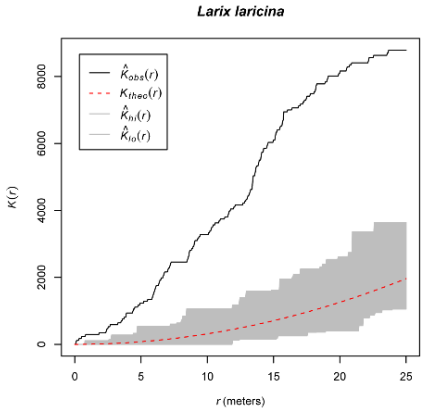
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
$\hat{K}_{lo}(r)$
K(r)
r (meters)


Larix laricina
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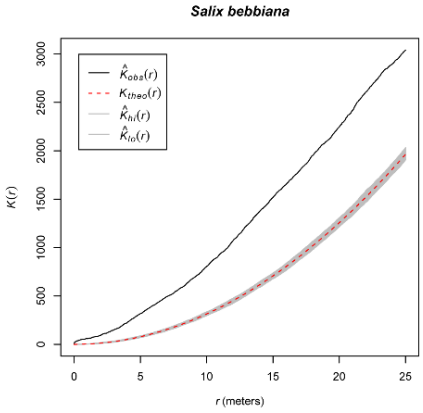
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
$\hat{K}_{lo}(r)$
K(r)
r (meters)


Salix bebbiana
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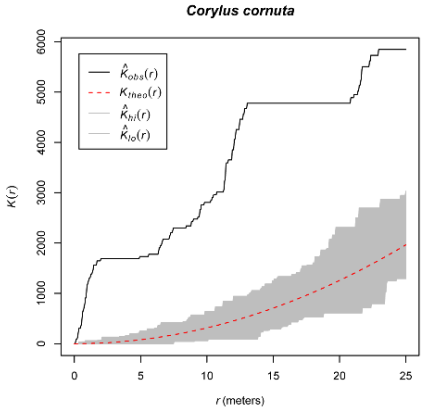
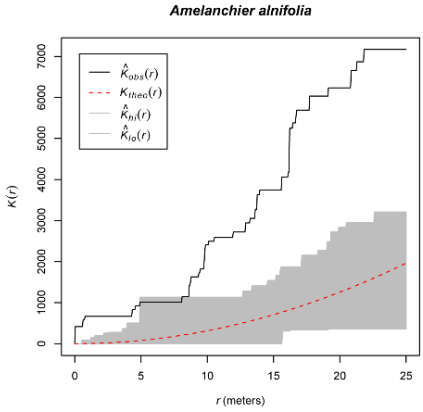
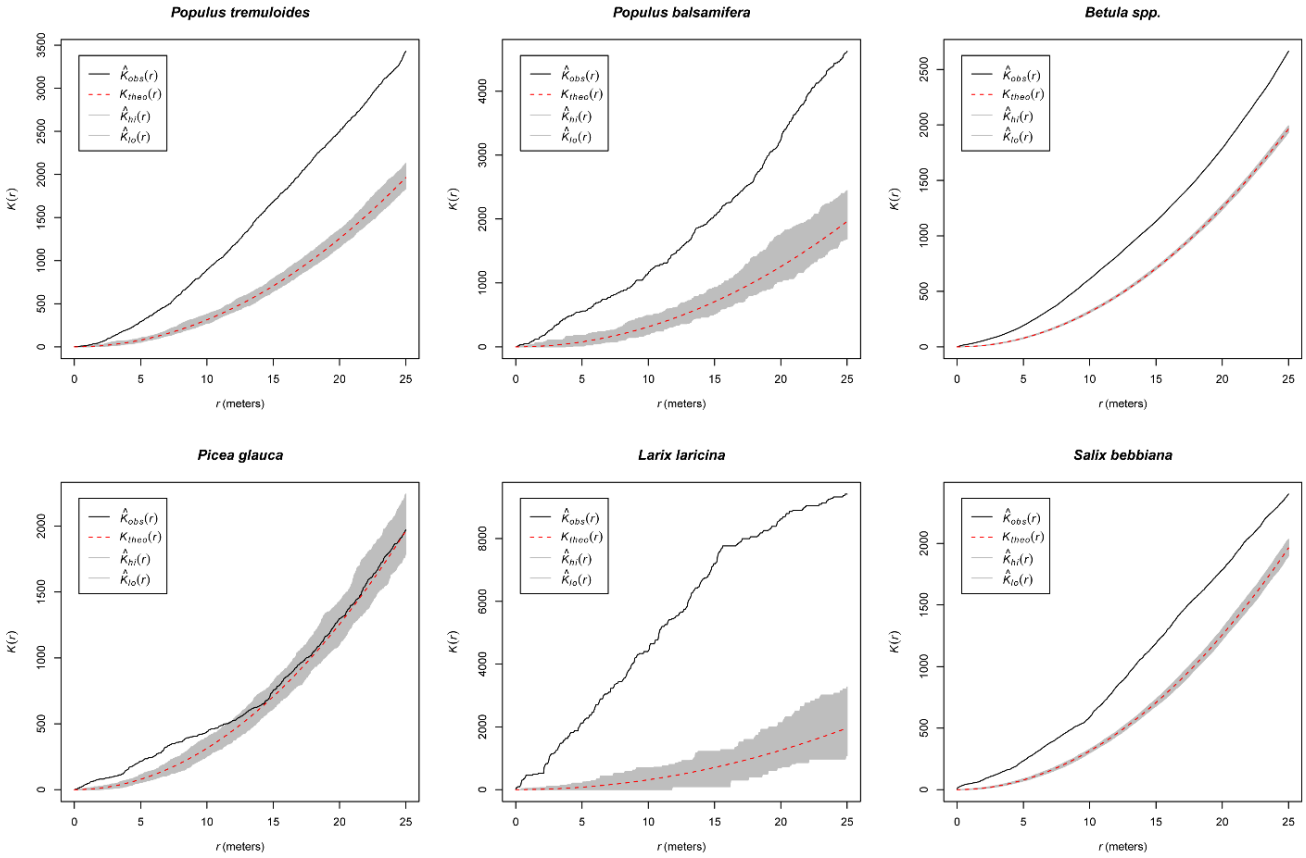
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
$\hat{K}_{lo}(r)$
K(r)
r (meters)

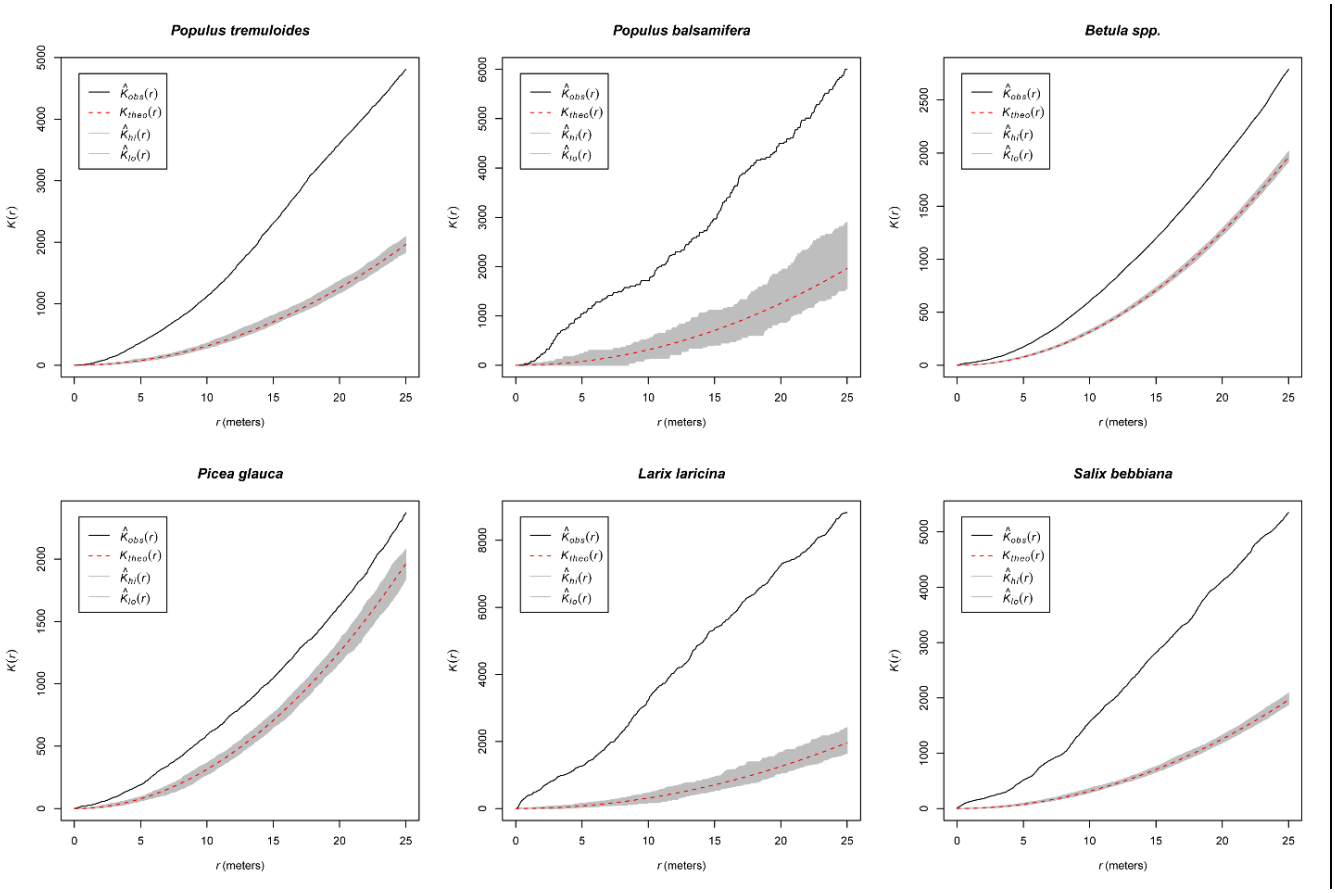

Corylus cornuta
$\hat{K}_{obs}(r)$
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
$\hat{K}_{lo}(r)$
K(r)
r (meters)


Amelanchier alnifolia
$\hat{K}_{obs}(r)$
$K_{theo}(r)$
$\hat{K}_{hi}(r)$
$\hat{K}_{lo}(r)$
K(r)
r (meters)

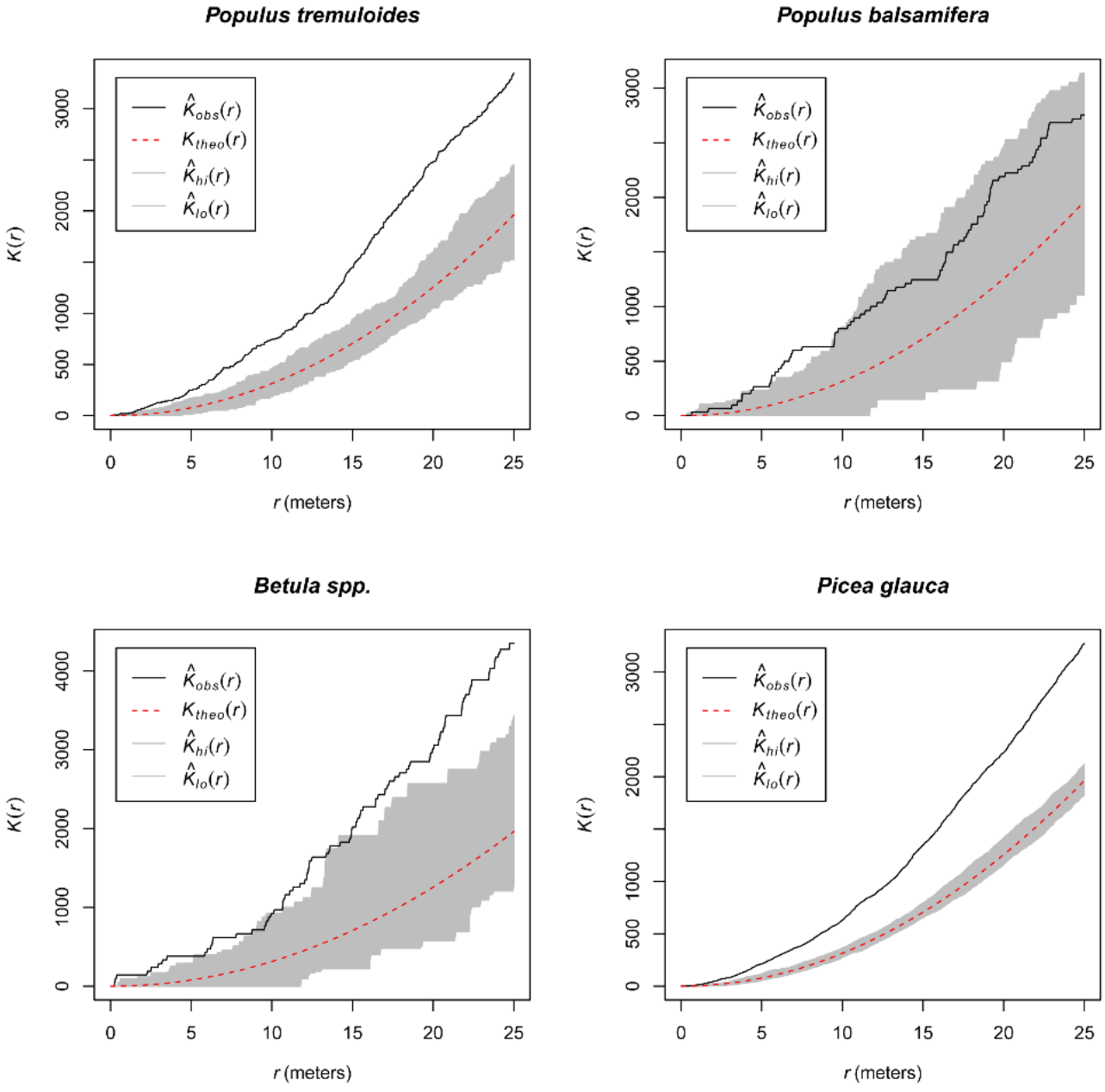
Living stems DBH class 1



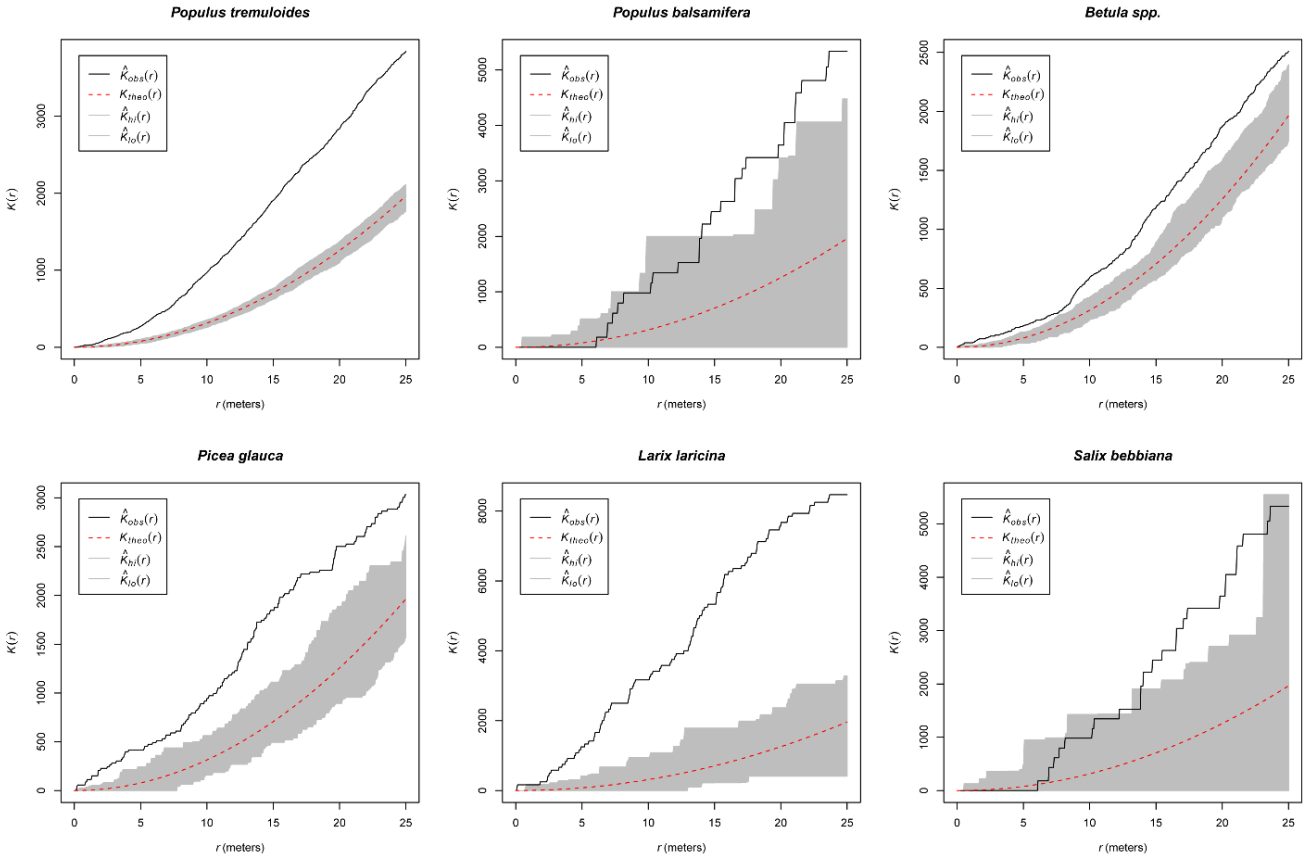
Living stems DBH class 2



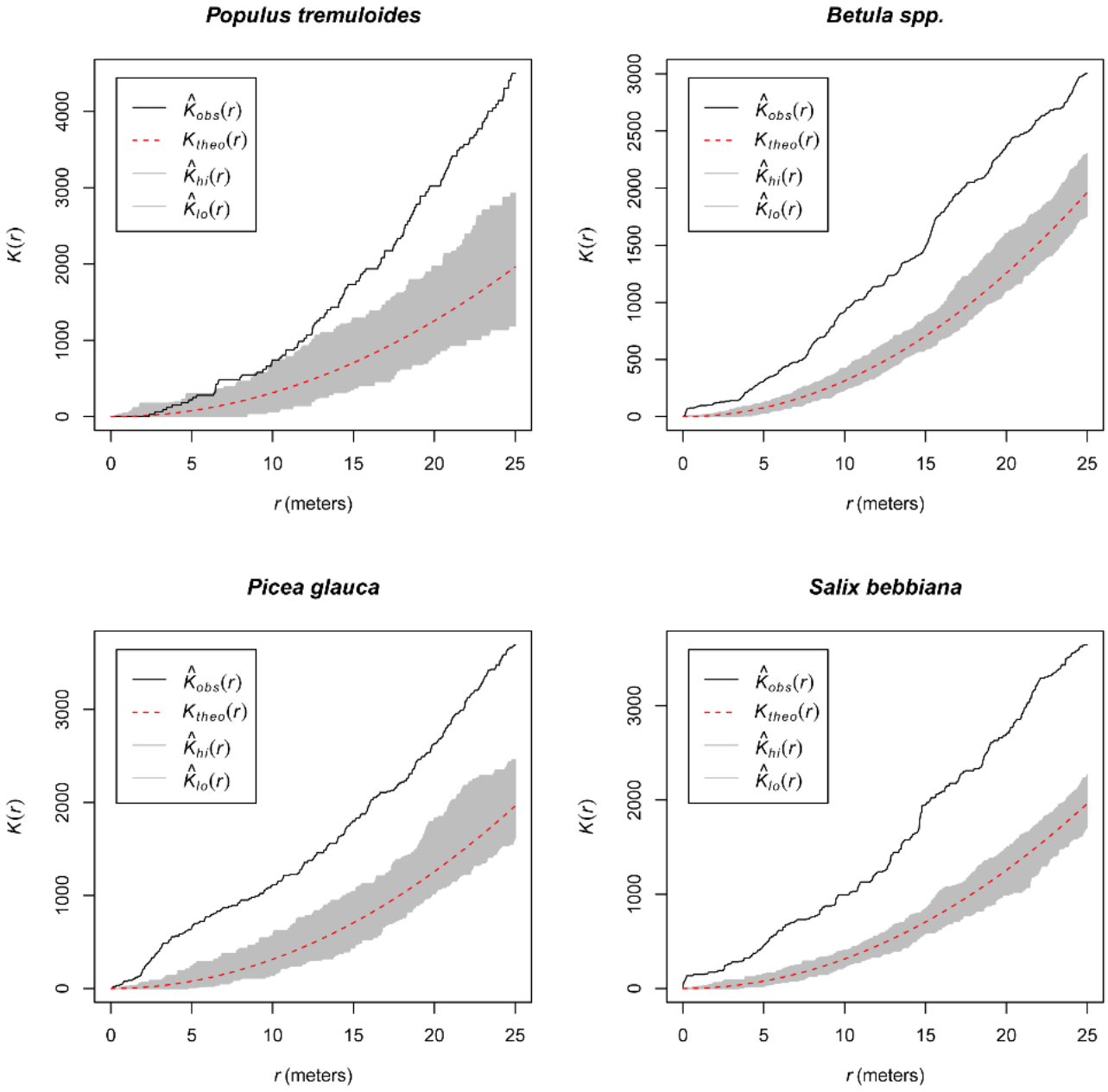
Living stems DBH class 3



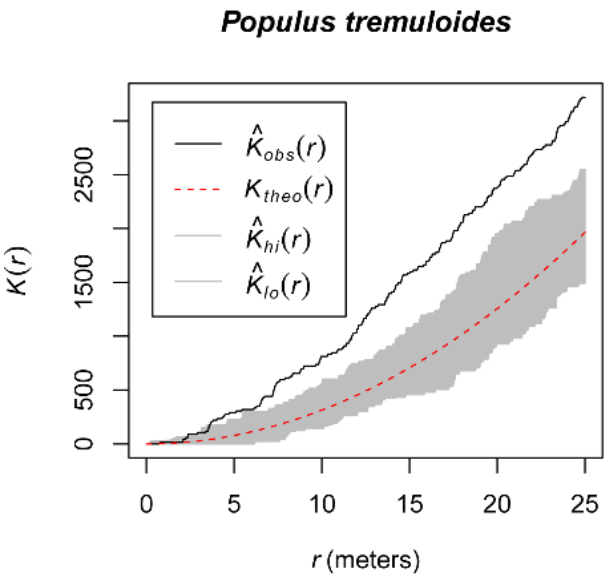
Dead stems DBH class 1

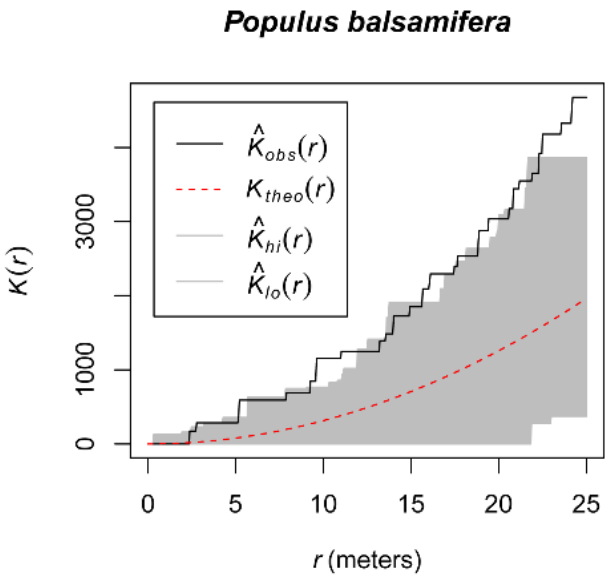


Dead stems DBH class 2



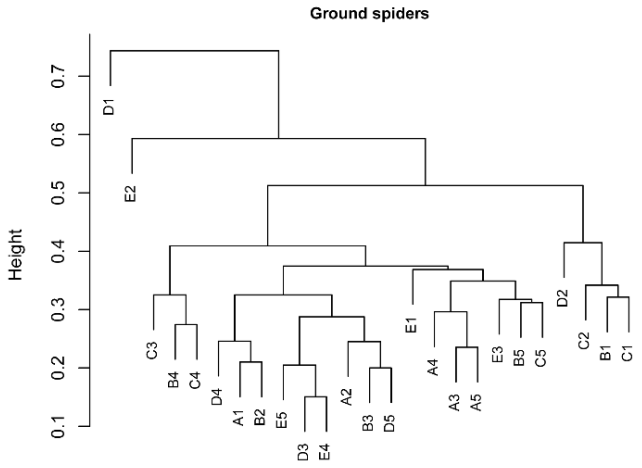
Dead stems DBH class 3

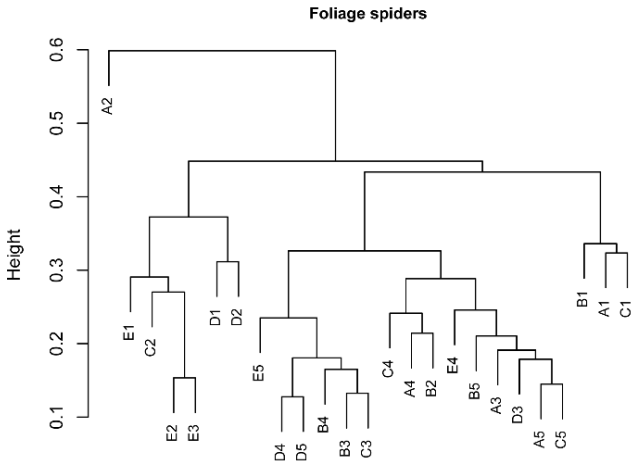


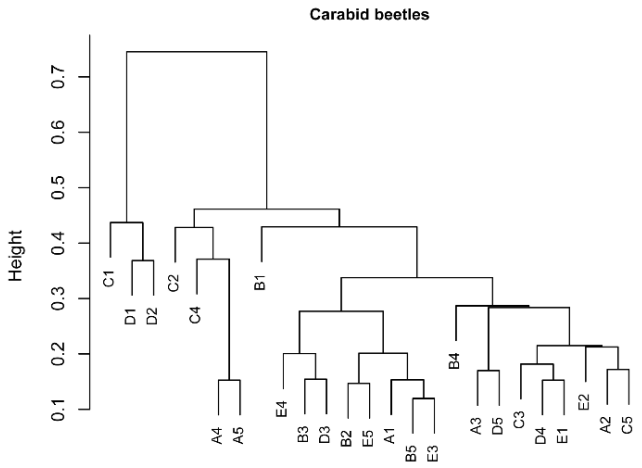


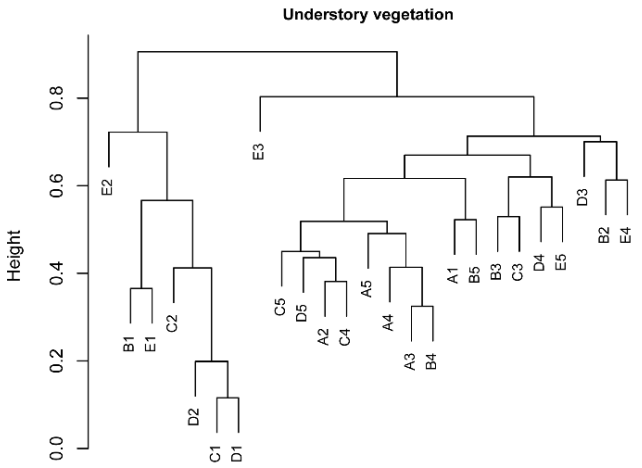
Appendix 2

Species assemblages

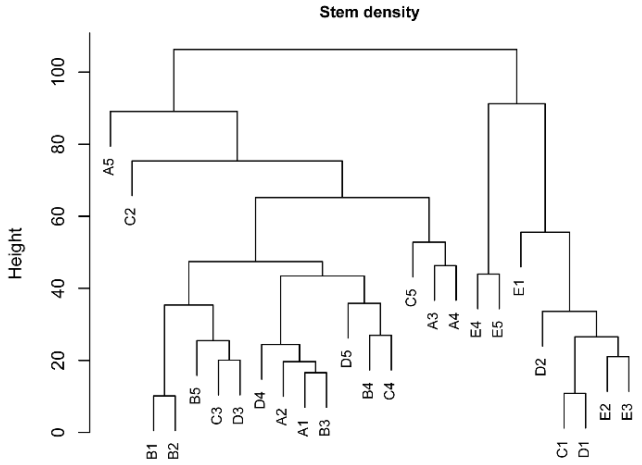


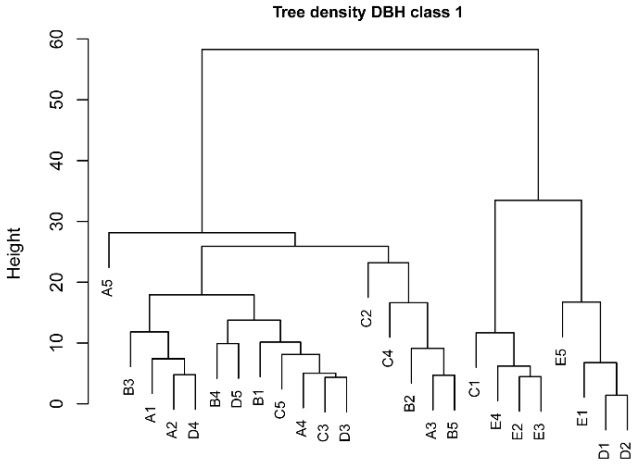


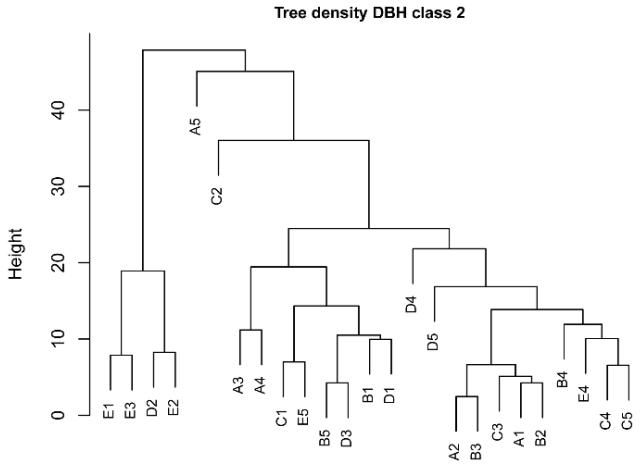


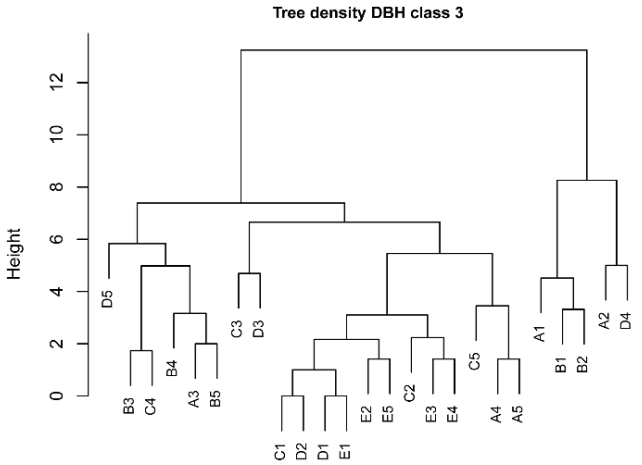


Overall stem density by species (trees and tall shrubs) and tree density by species and DBH class (trees only)

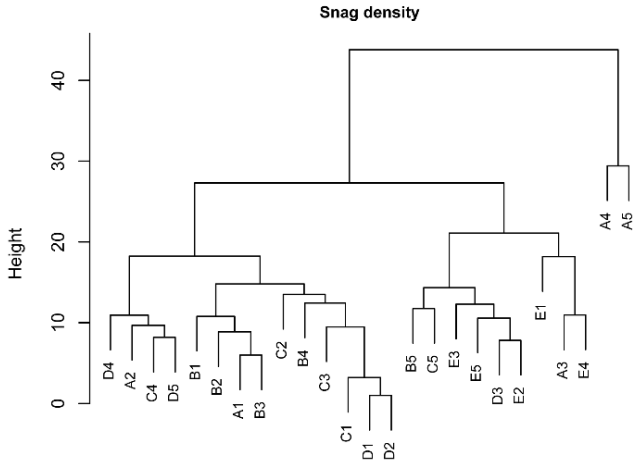


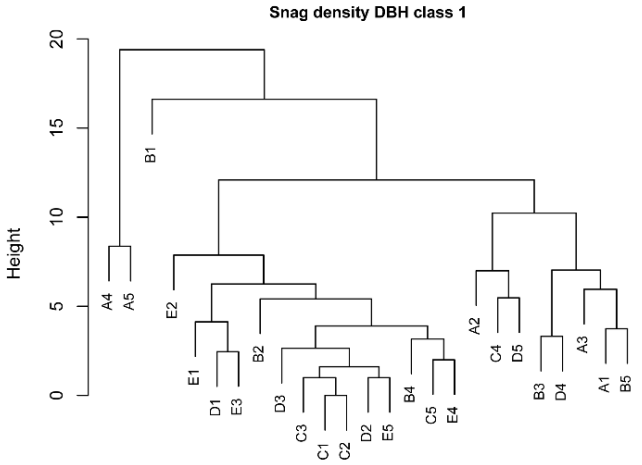


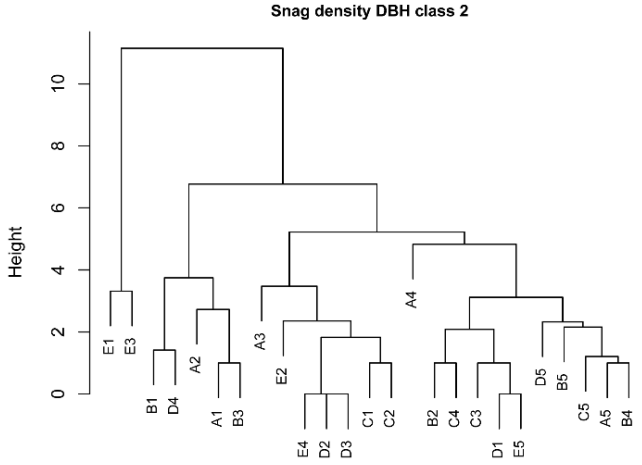


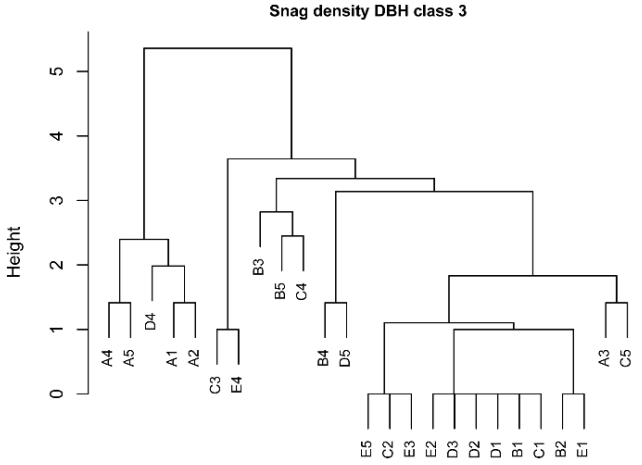


Overall snag density by species (trees and tall shrubs) and snag density by species and DBH class (trees only)

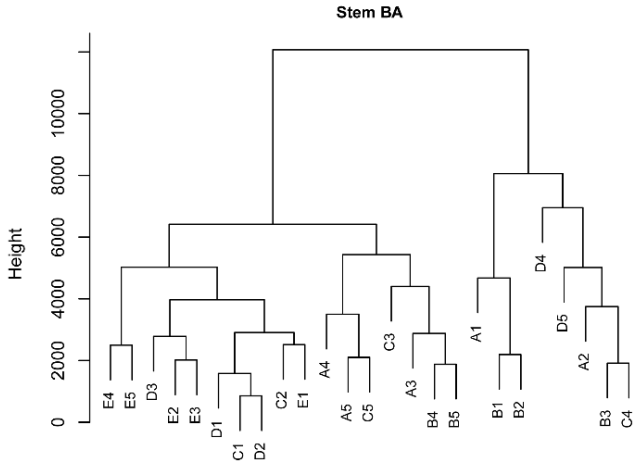


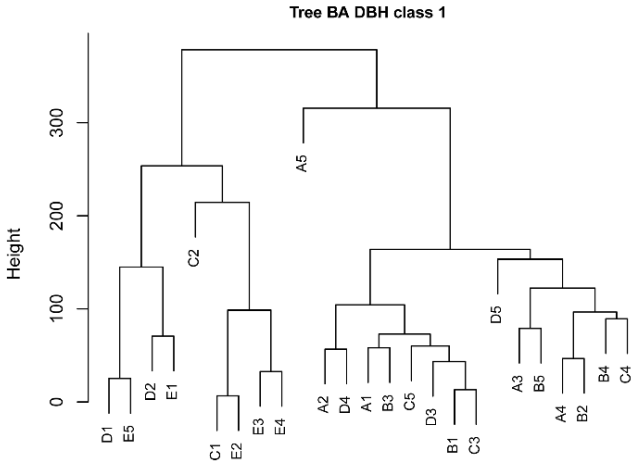


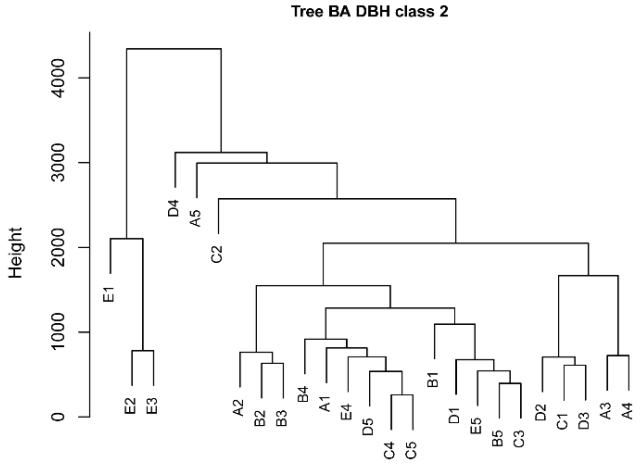


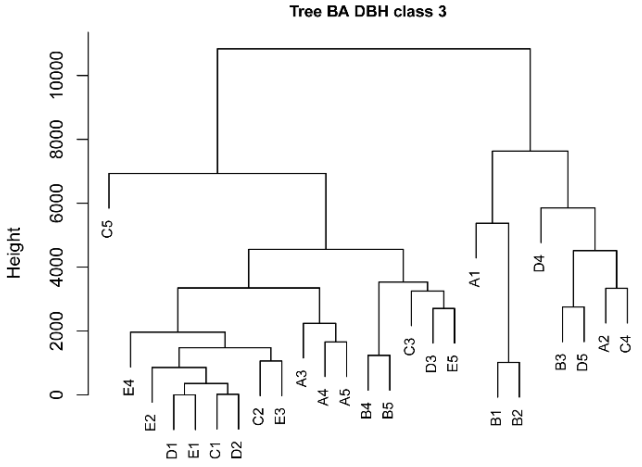


Overall stem basal area by species (trees and tall shrubs) and tree basal area by species and DBH class (trees only)

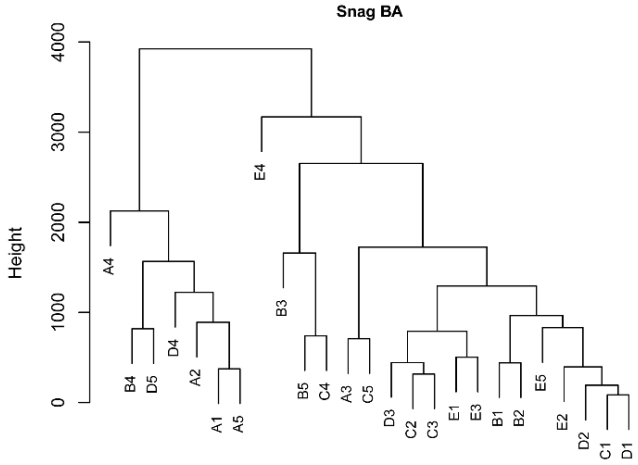


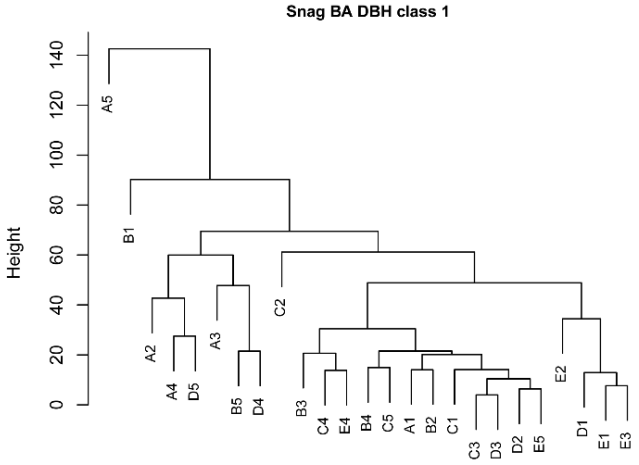


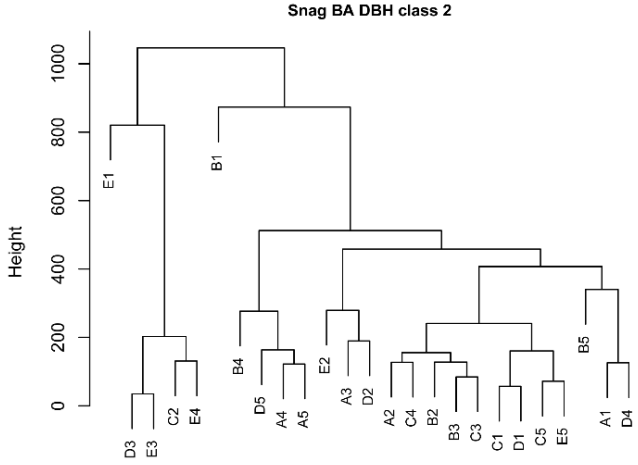


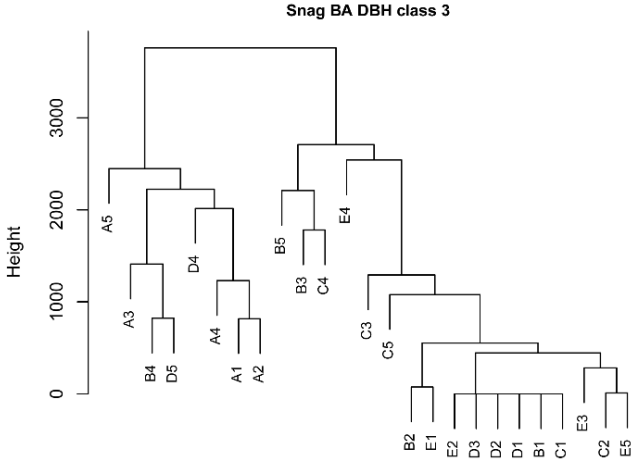


Overall snag basal area (trees and tall shrubs) and snag basal area by DBH class (trees only)

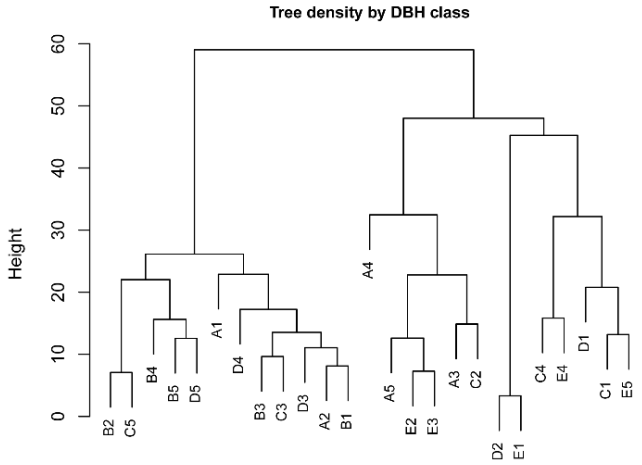


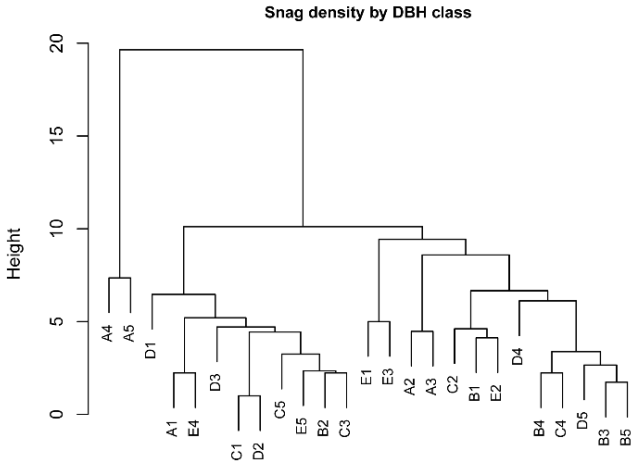


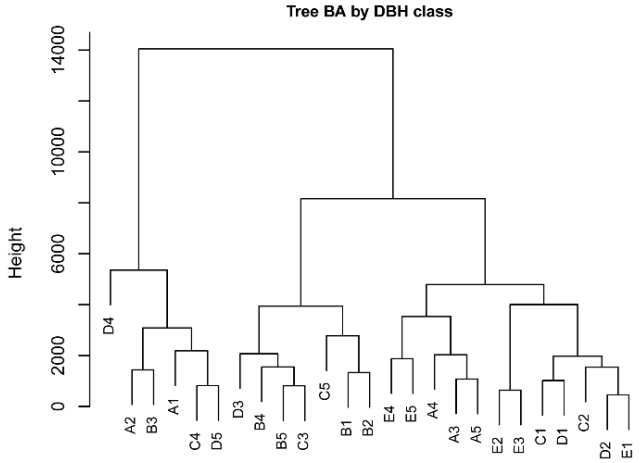


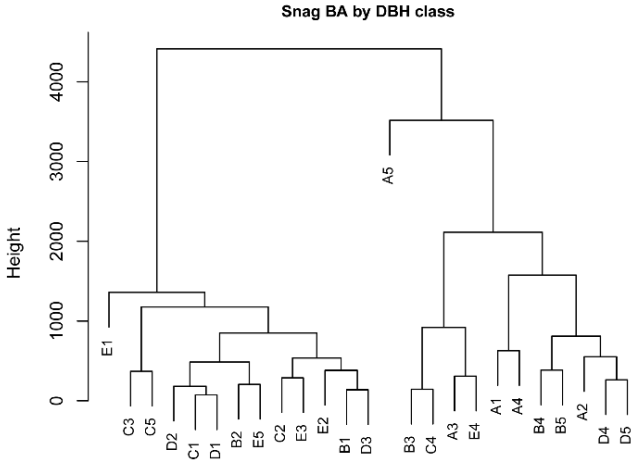


Tree density and basal area by DBH class

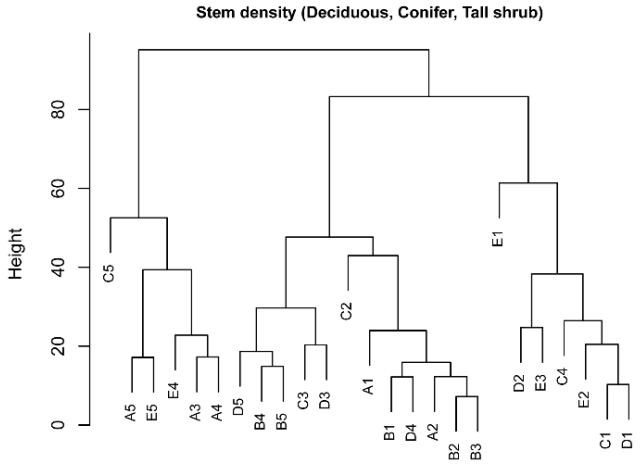


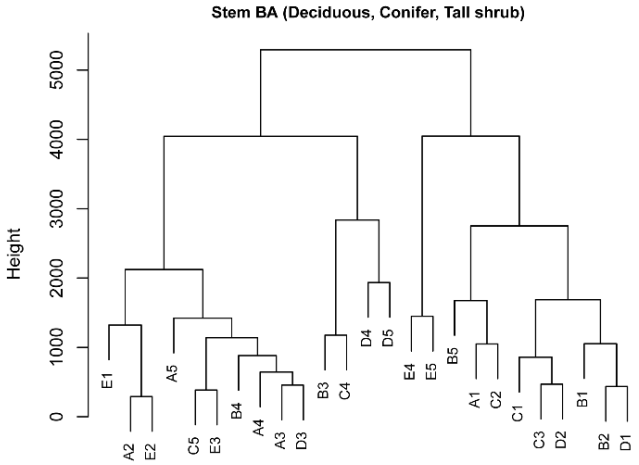






Stem density and basal area pooling conifer, deciduous and tall shrub species

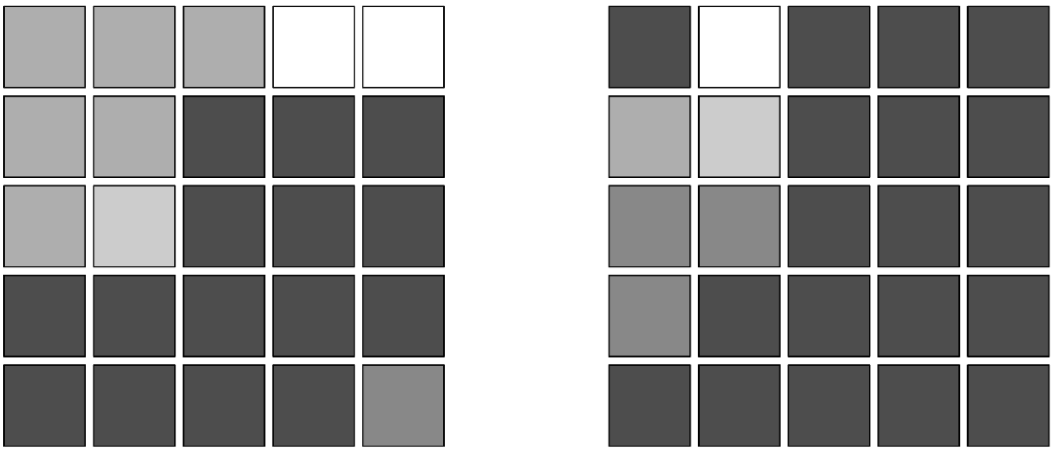




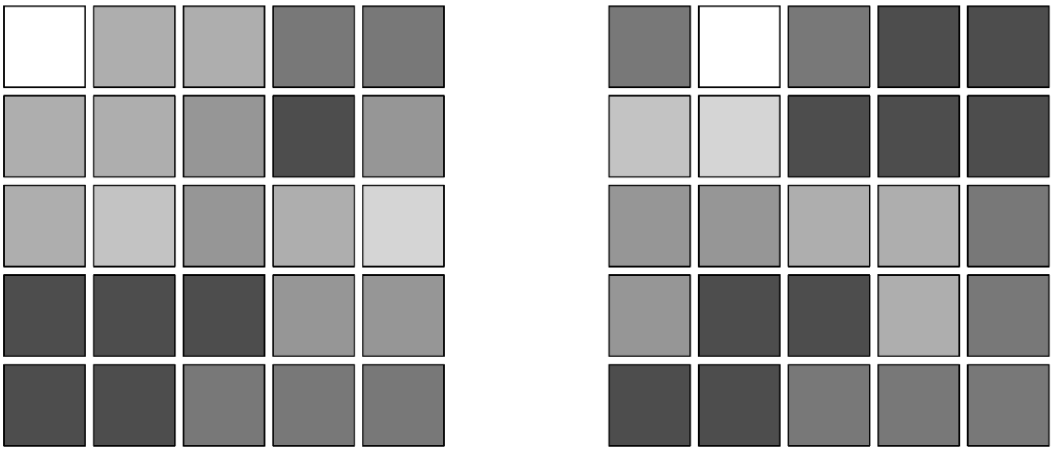
Appendix 3

Ground spiders

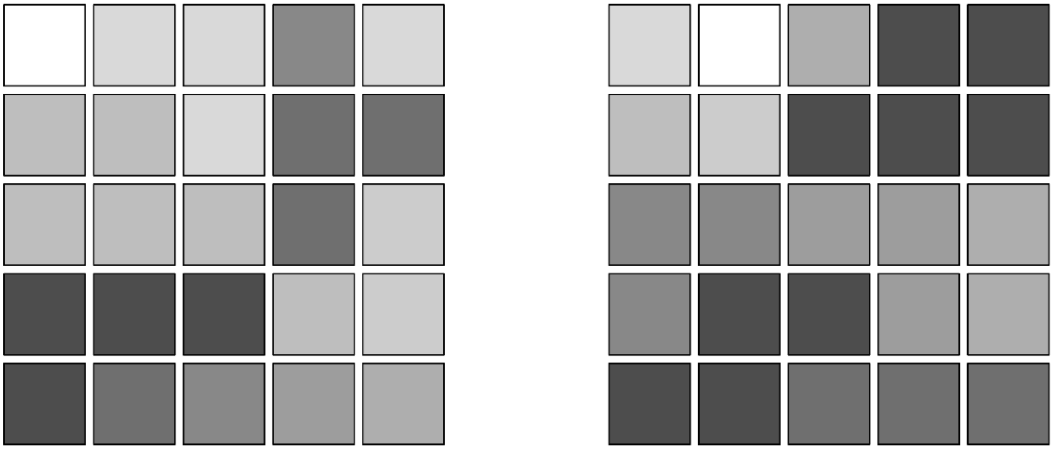
Live stem density by species (nclus= 5; Bk= 0.641)



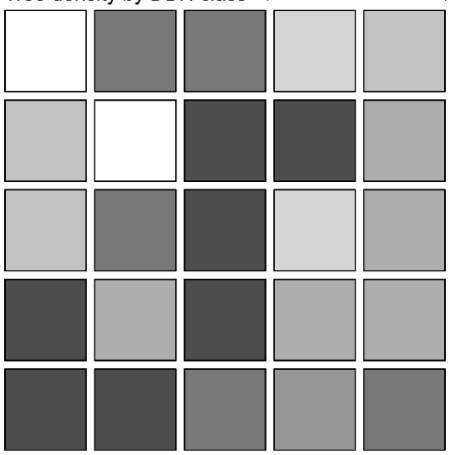
Live stem density by vegetation type (nclus= 7; Bk= 0.285)

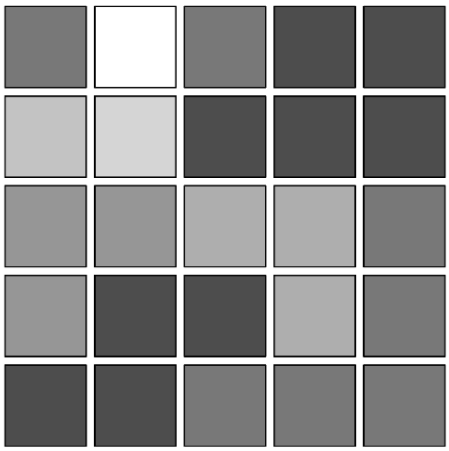


Snag density by species (nclus= 9; Bk= 0.244)

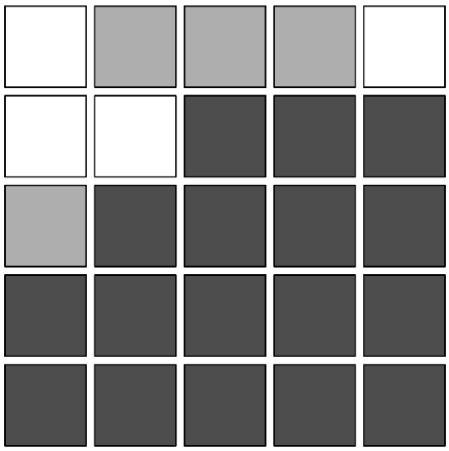


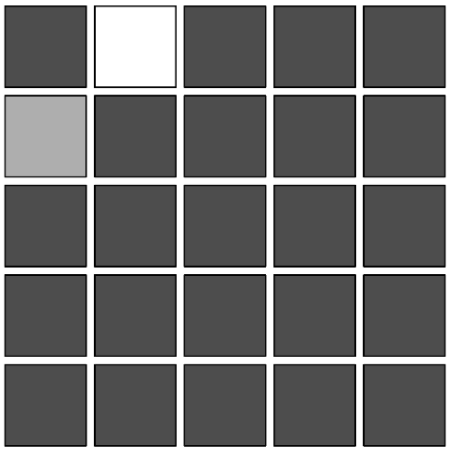
Tree density by DBH class (nclus= 7; Bk= 0.279)



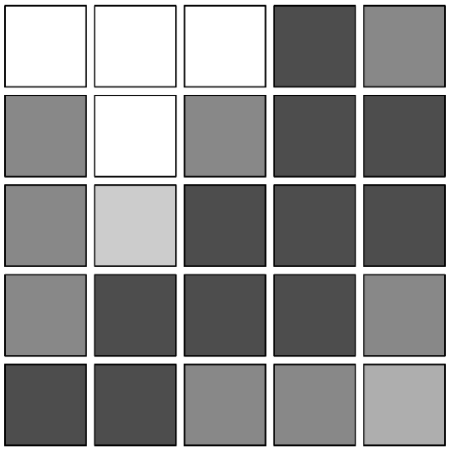


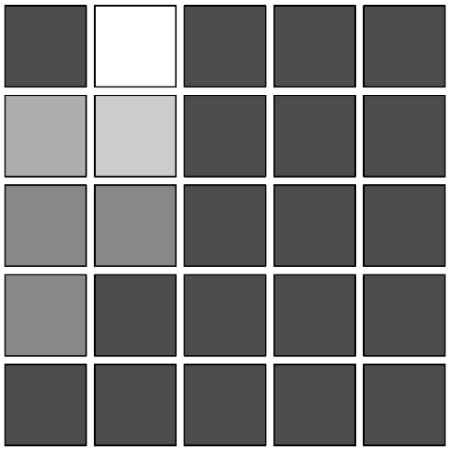
Tree density DBH1 by species (nclus= 3; Bk= 0.734)



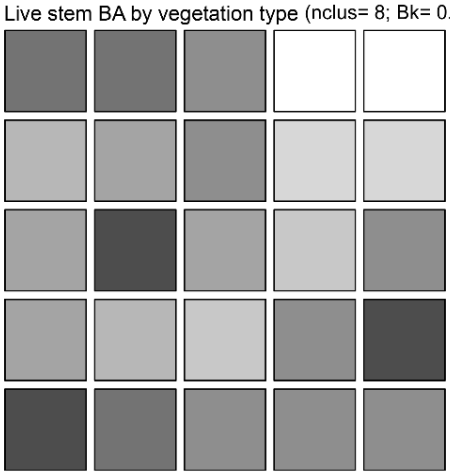


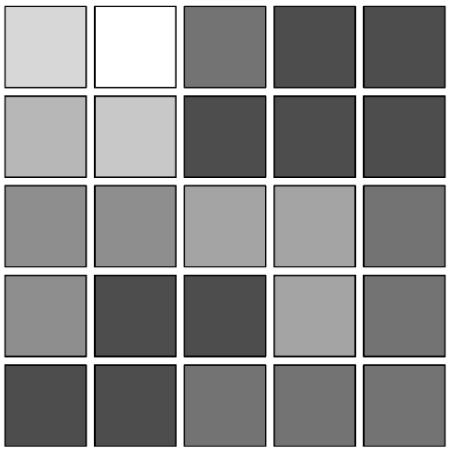
Tree density DBH2 by species (nclus= 5; Bk= 0.538)



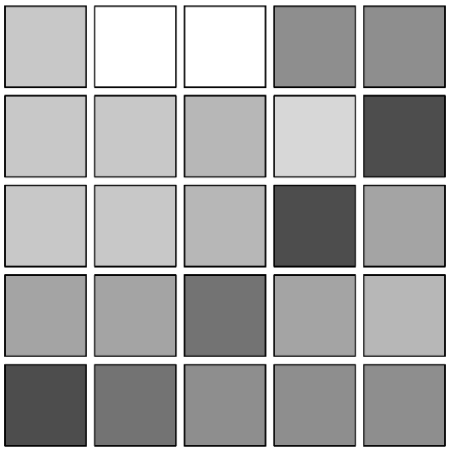


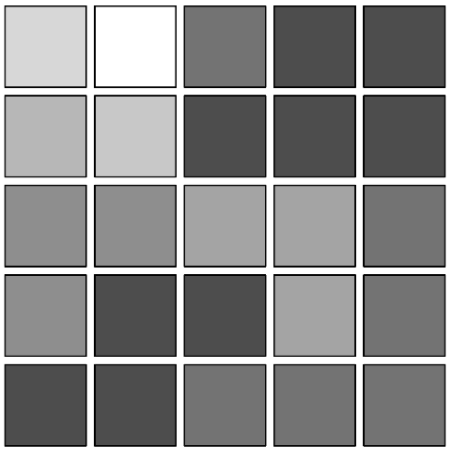
Live stem BA by vegetation type (nclus= 8; Bk= 0.283)



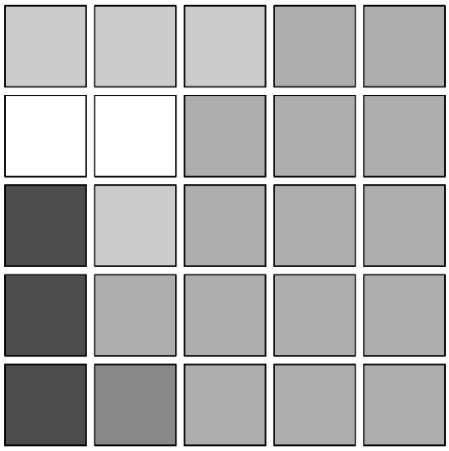


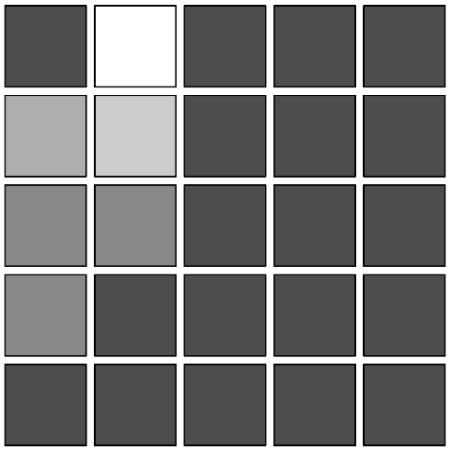
Tree BA by DBH class (nclus= 8; Bk= 0.273)



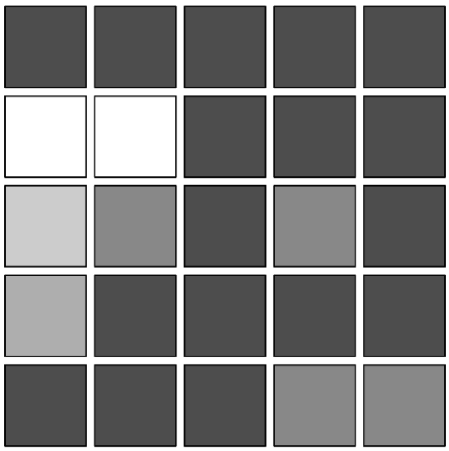


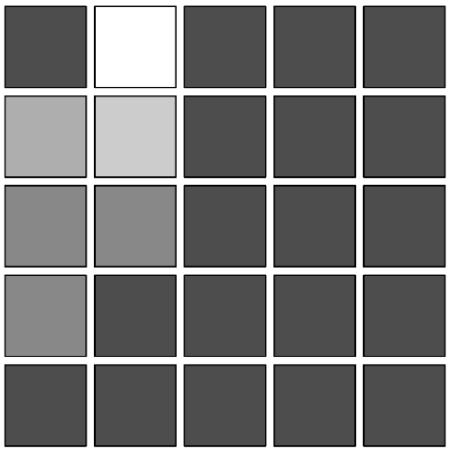
Foliage spiders (nclus= 5; Bk= 0.756)



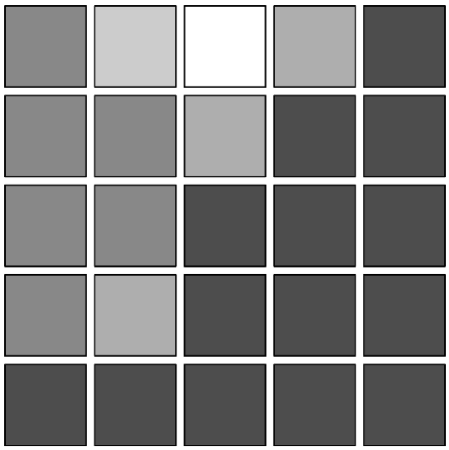


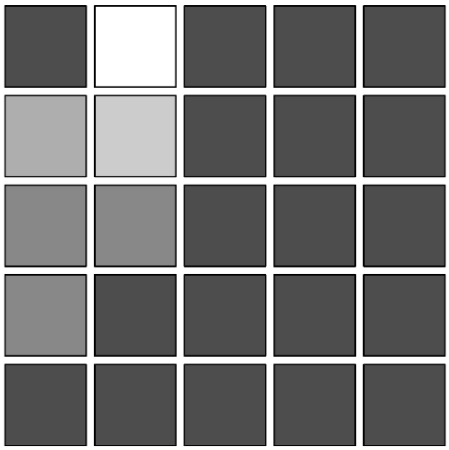
Carabid beetles (nclus= 5; Bk= 0.78)





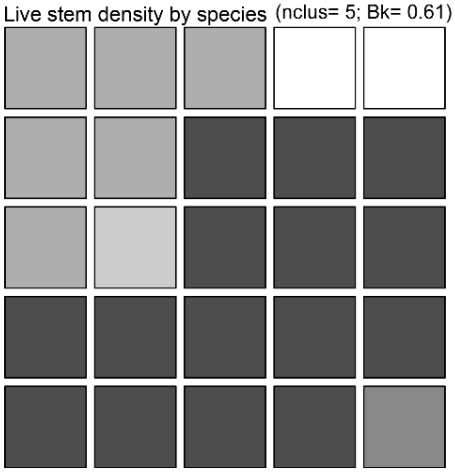
Understory vegetation (nclus= 5; Bk= 0.704)

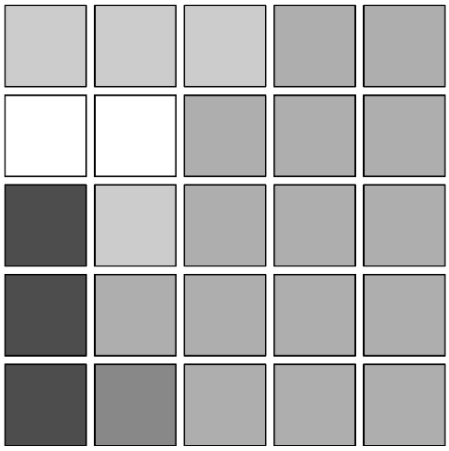




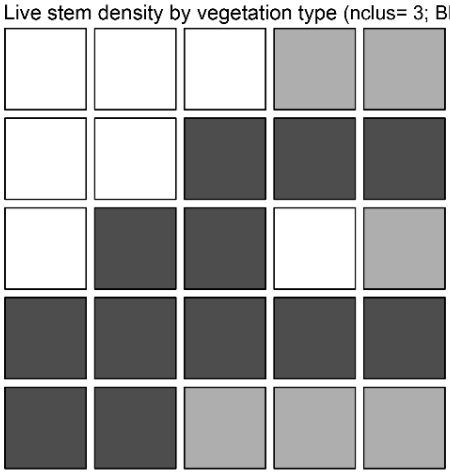
Foliage spiders

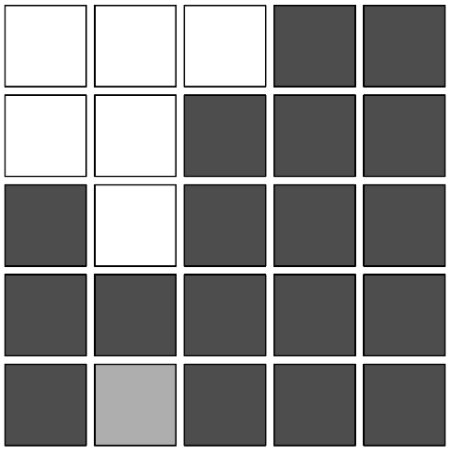
Live stem density by species (nclus= 5; Bk= 0.61)



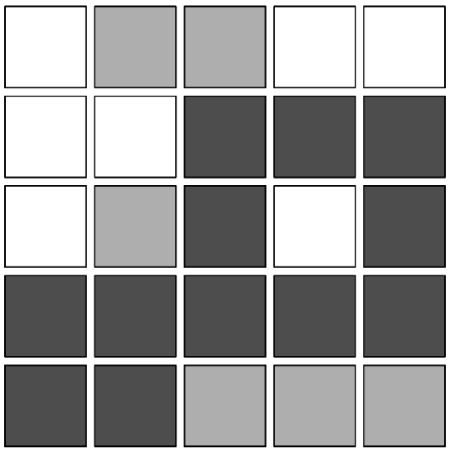


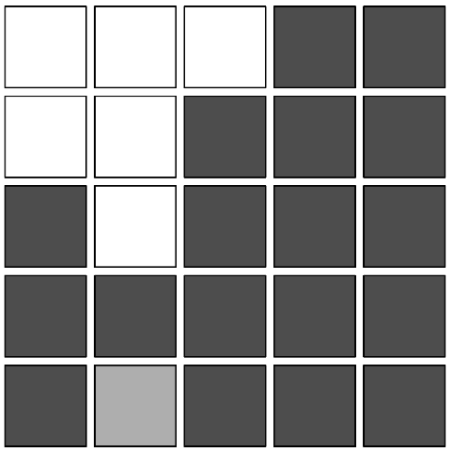
Live stem density by vegetation type (nclus= 3; Bk= 0.542)



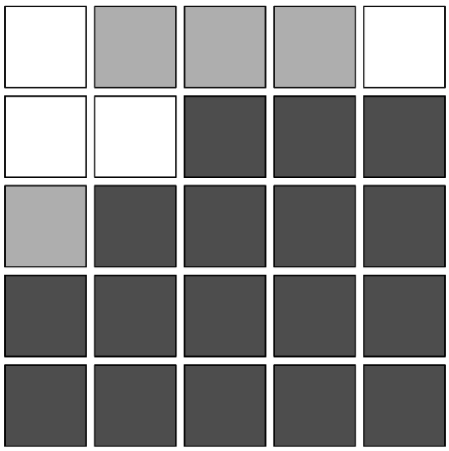


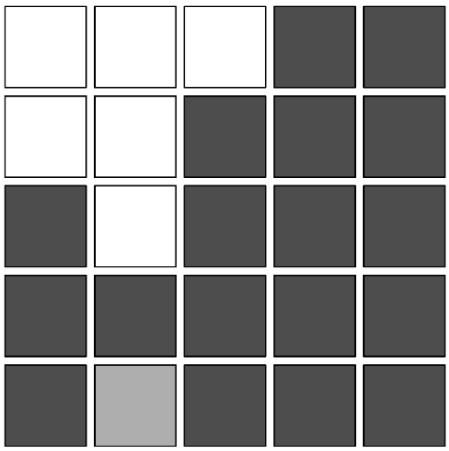
Tree density by DBH class (nclus= 3; Bk= 0.535)



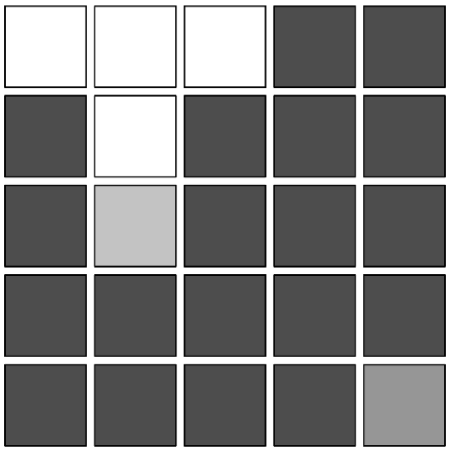


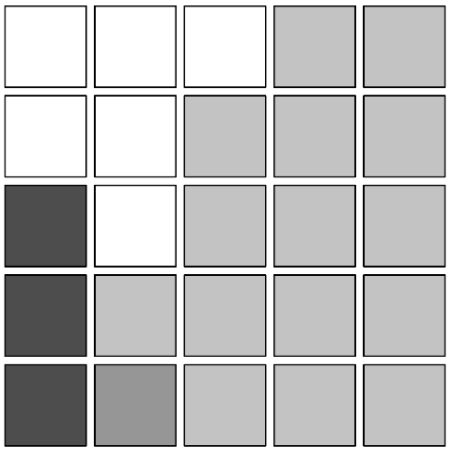
Tree density DBH1 by species (nclus= 3; Bk= 0.698)



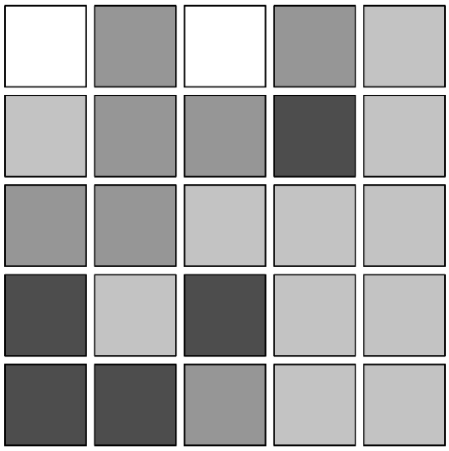


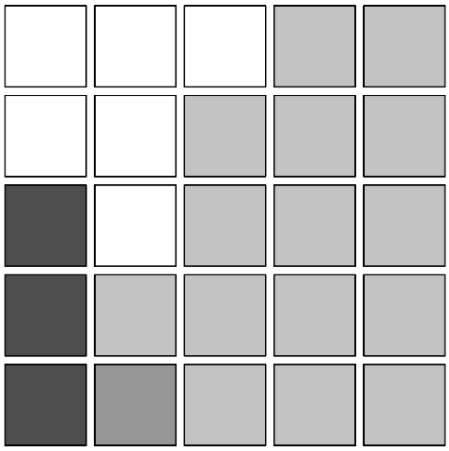
Tree density DBH2 by species (nclus= 4; Bk= 0.678)



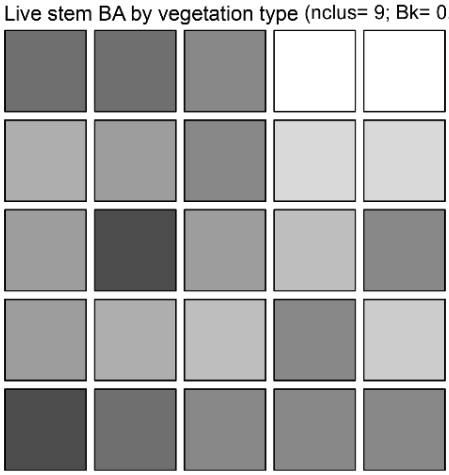


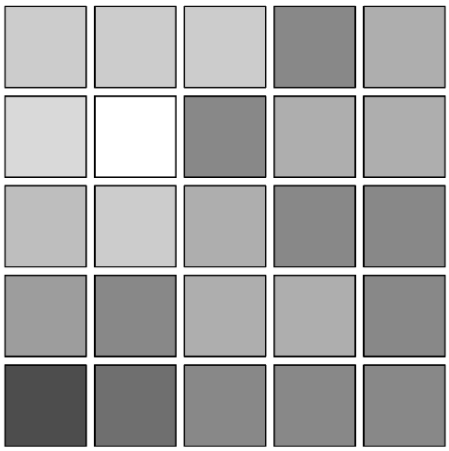
Snag density DBH2 by species (nclus= 4; Bk= 0.522)



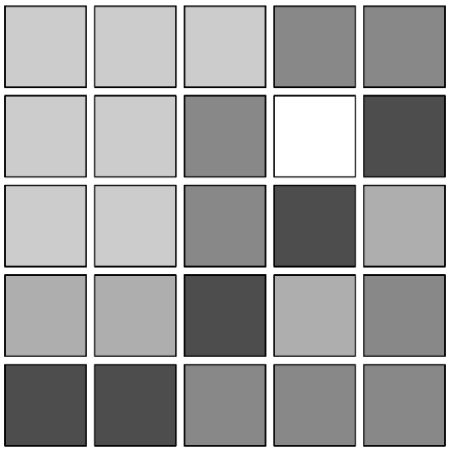


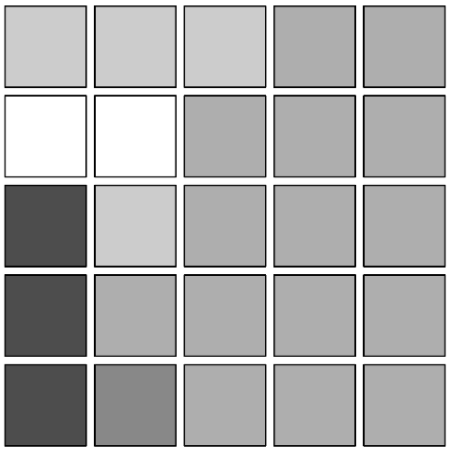
Live stem BA by vegetation type (nclus= 9; Bk= 0.269)



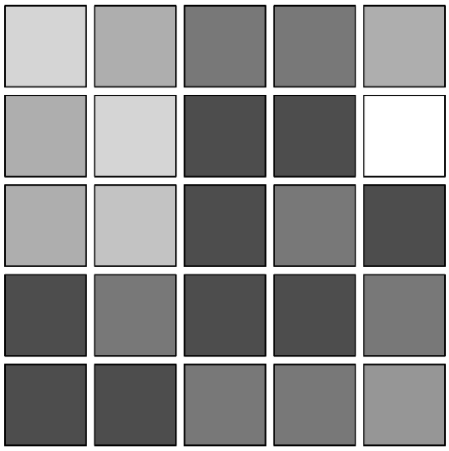


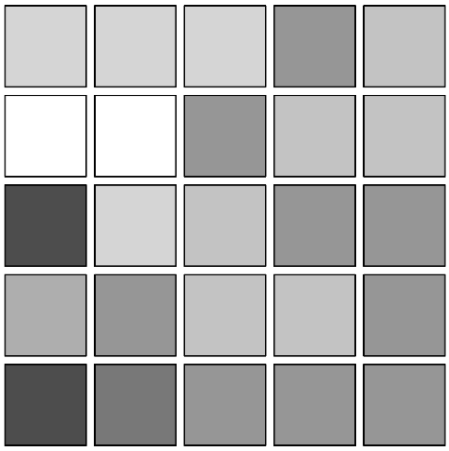
Tree BA by DBH class (nclus= 5; Bk= 0.414)



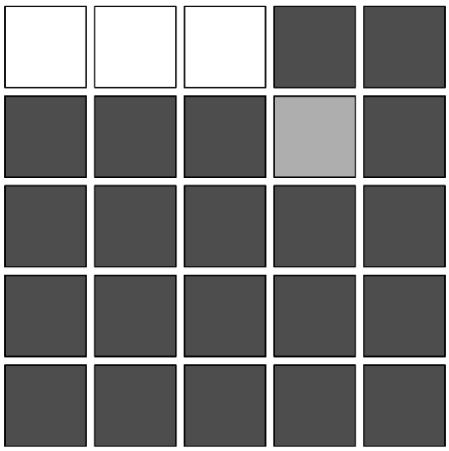


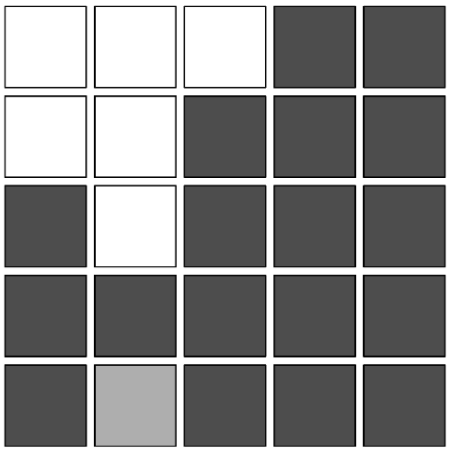
Tree BA DBH1 by species (nclus= 7; Bk= 0.358)



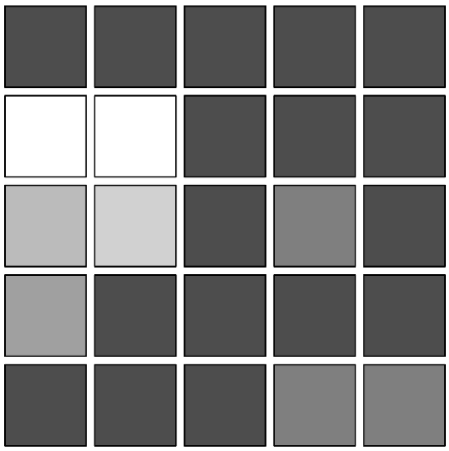


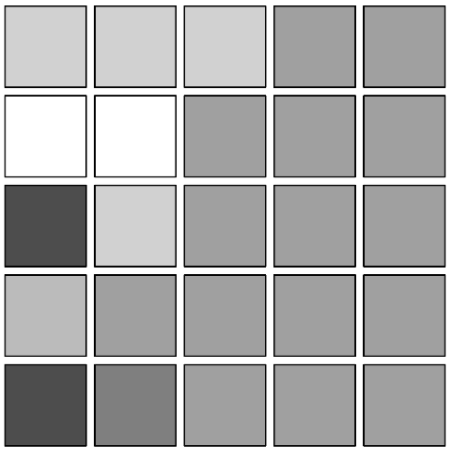
Tree BA DBH2 by species (nclus= 3; Bk= 0.751)



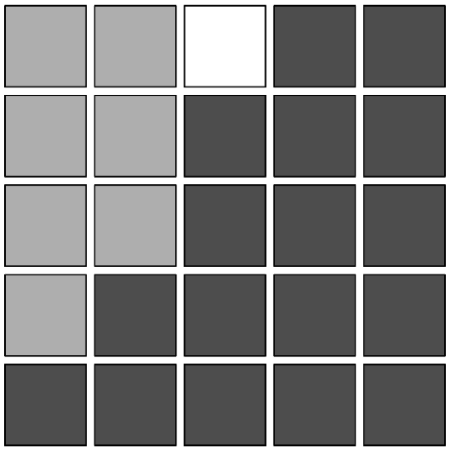


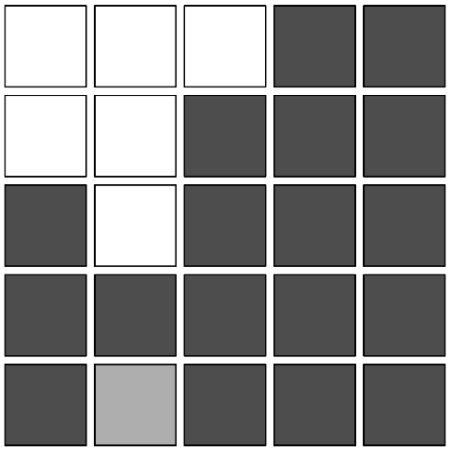
Carabid beetles (nclus= 6; Bk= 0.58)





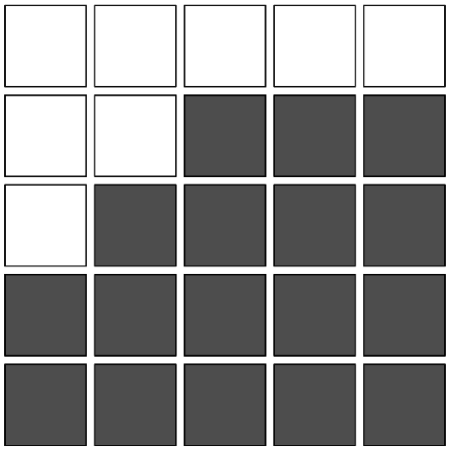
Understory vegetation (nclus= 3; Bk= 0.807)

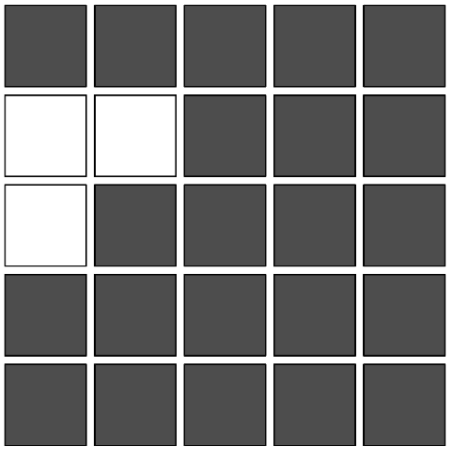




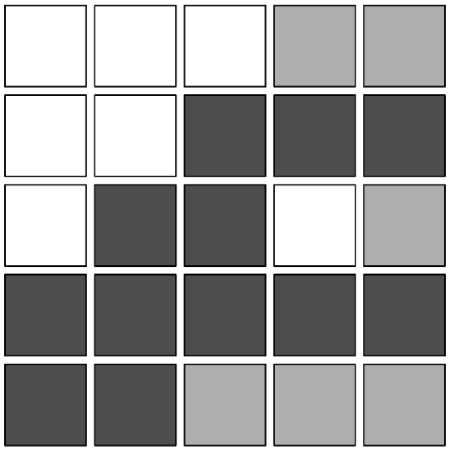
Carabid beetles

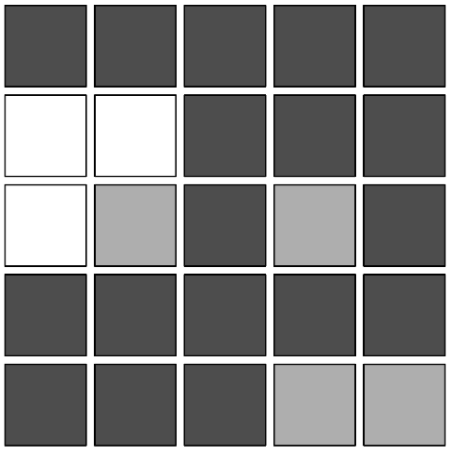
Live stem density by species (nclus= 2; Bk= 0.761)



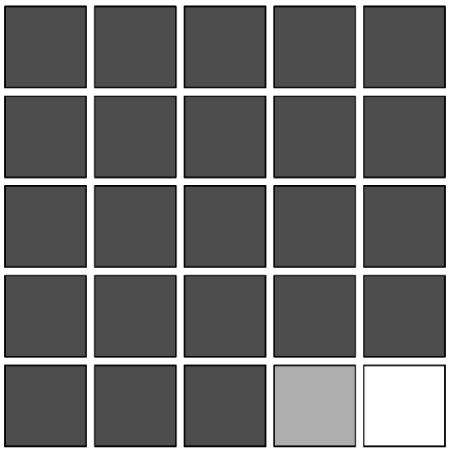


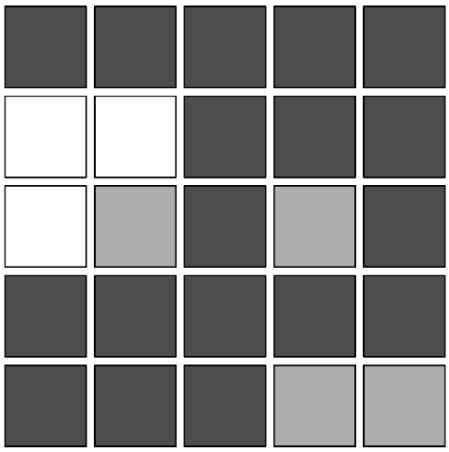
Live stem density by vegetation type (nclus= 3; Bk= 0.529)



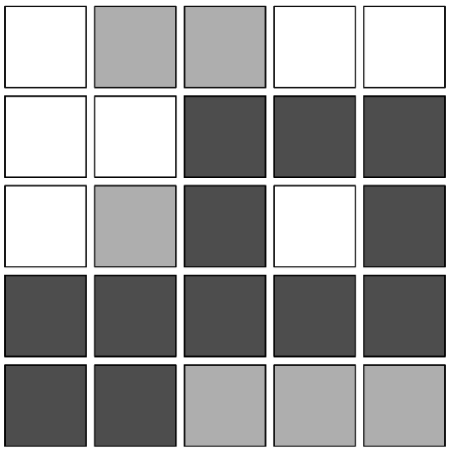


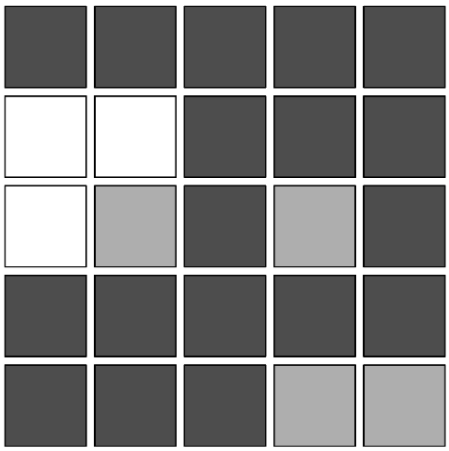
Snag density by species (nclus= 3; Bk= 0.776)



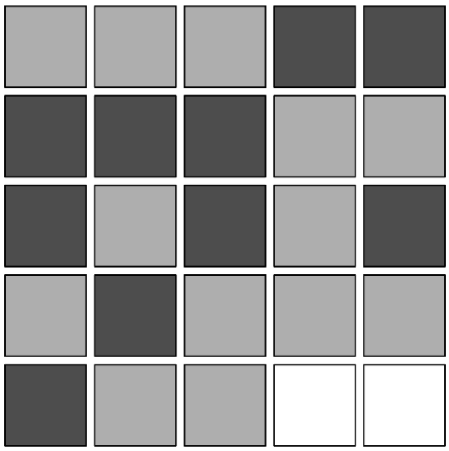


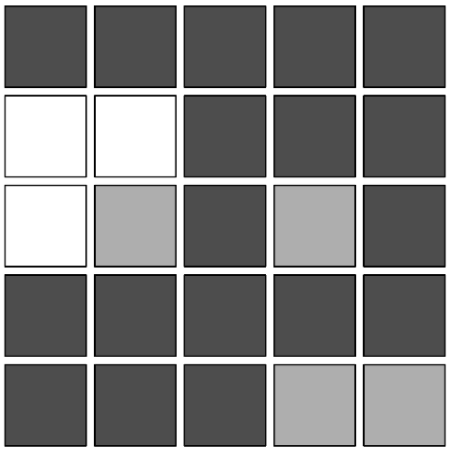
Tree density by DBH class (nclus= 3; Bk= 0.607)



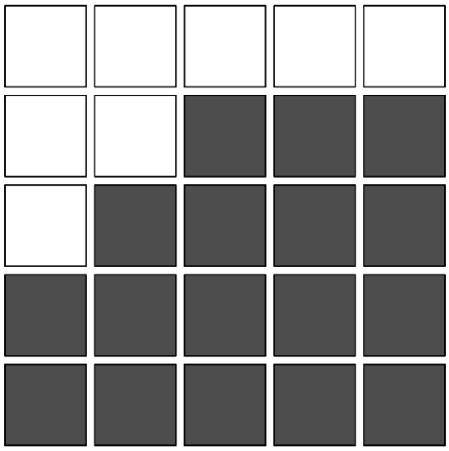


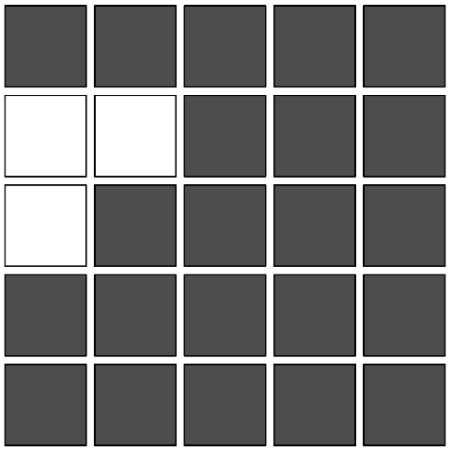
Snag density by DBH class (nclus= 3; Bk= 0.572)



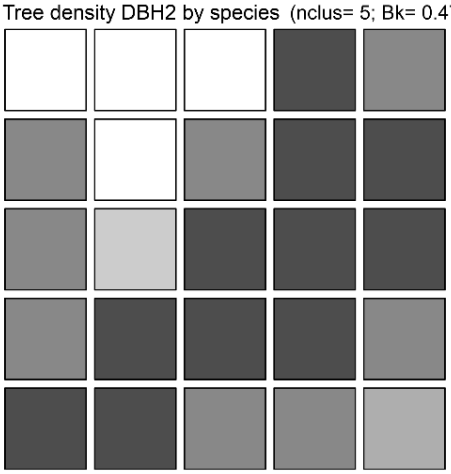


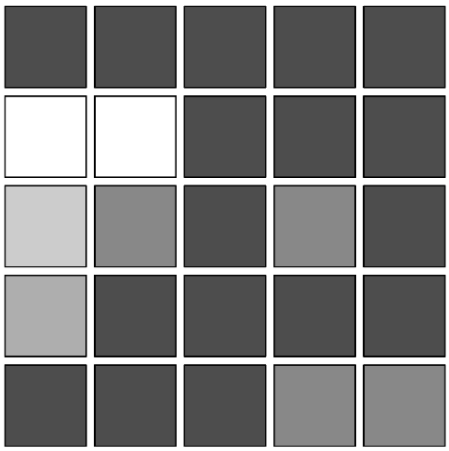
Tree density DBH1 by species (nclus= 2; Bk= 0.761)



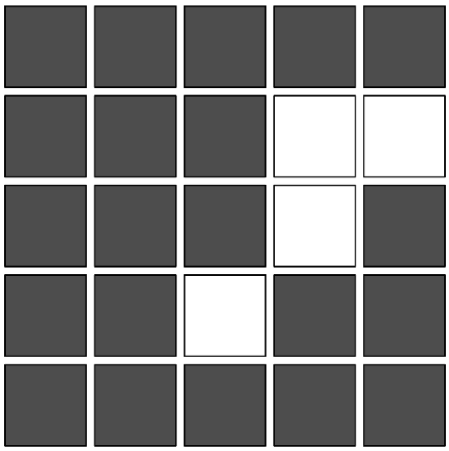


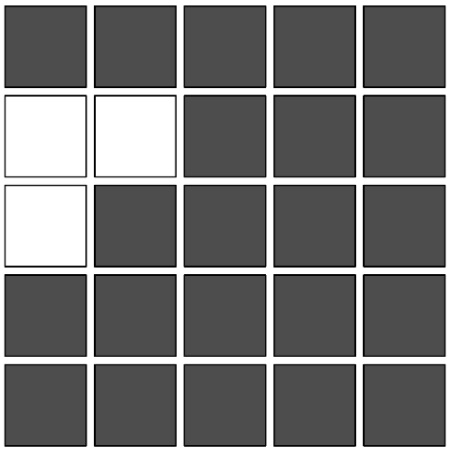
Tree density DBH2 by species (nclus= 5; Bk= 0.479)



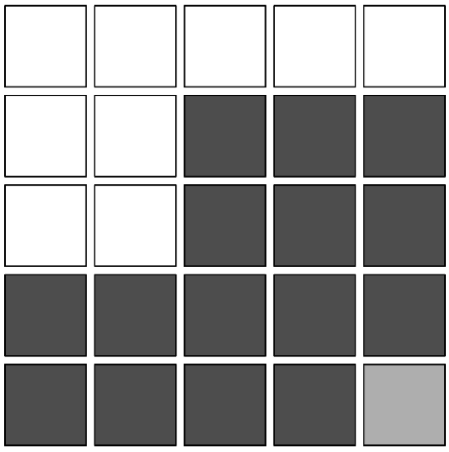


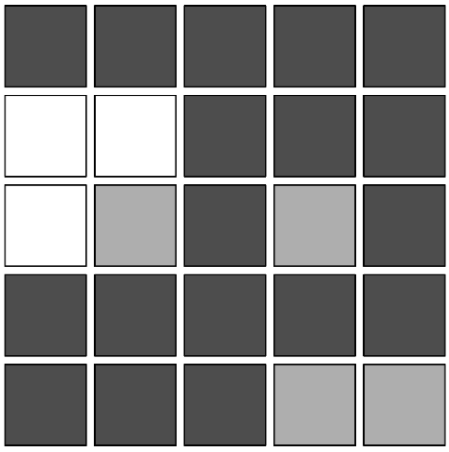
Live stem BA by vegetation type (nclus= 2; Bk= 0.721)



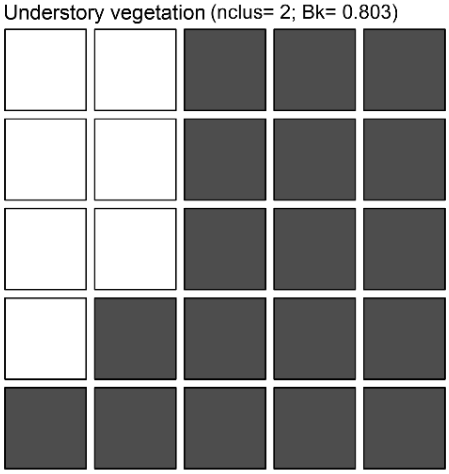


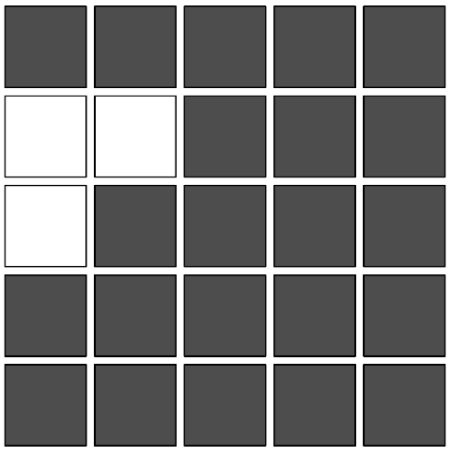
Tree BA DBH1 by species (nclus= 3; Bk= 0.637)





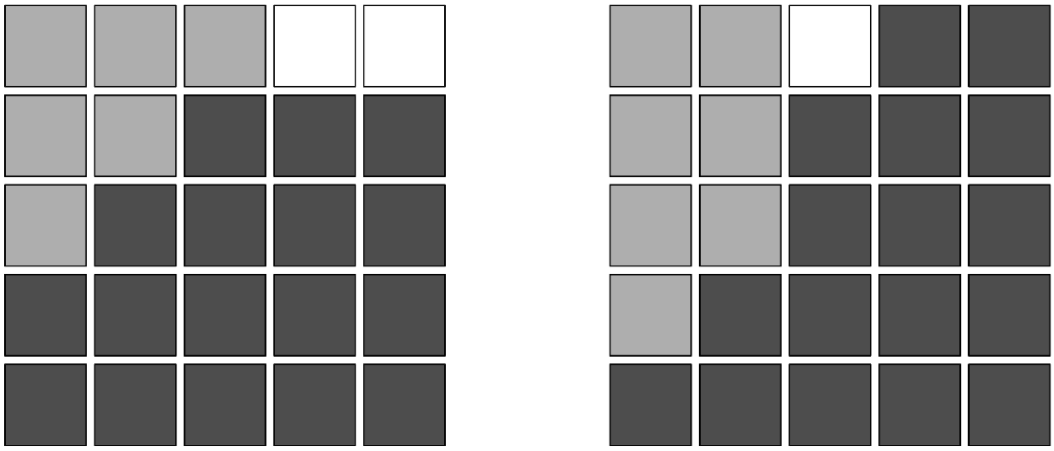
Understory vegetation (nclus= 2; Bk= 0.803)



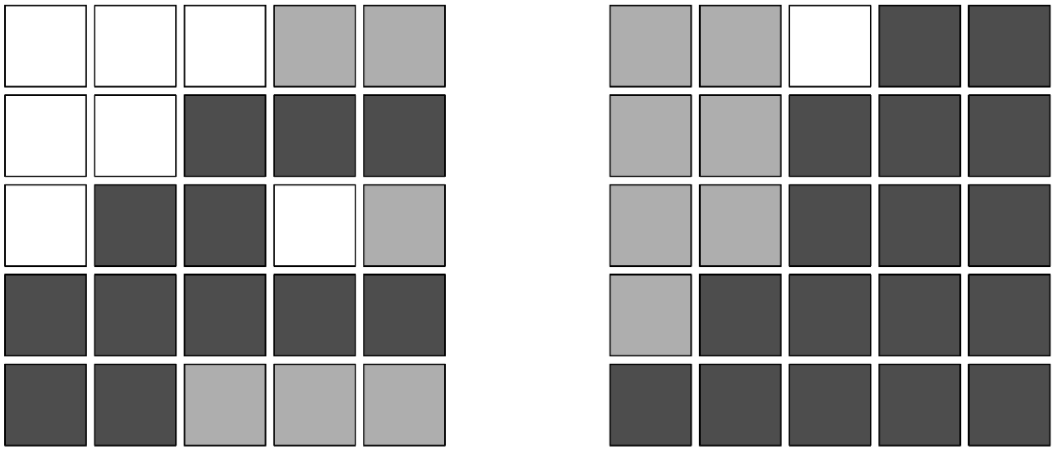


Understory vegetation

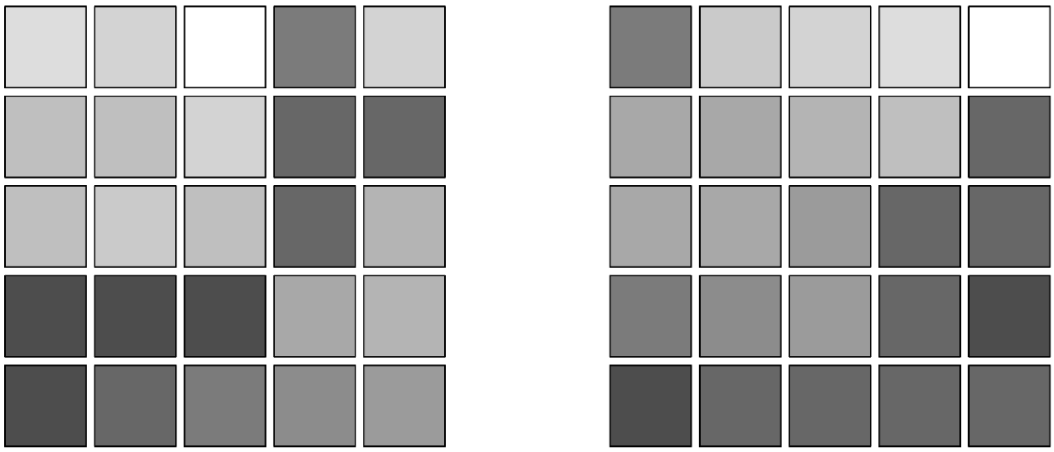
Live stem density by species (nclus= 3; Bk= 0.757)



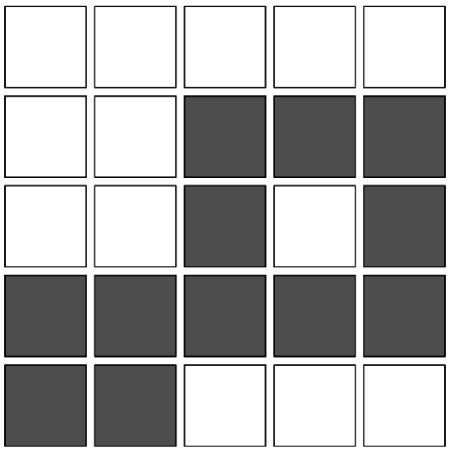
Live stem density by vegetation type (nclus= 3; Bk= 0.561)

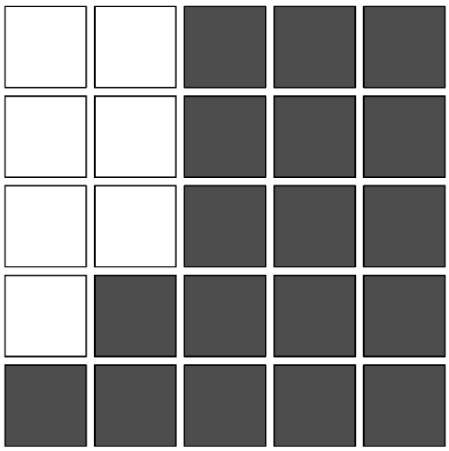


Snag density by species (nclus= 12; Bk= 0.206)

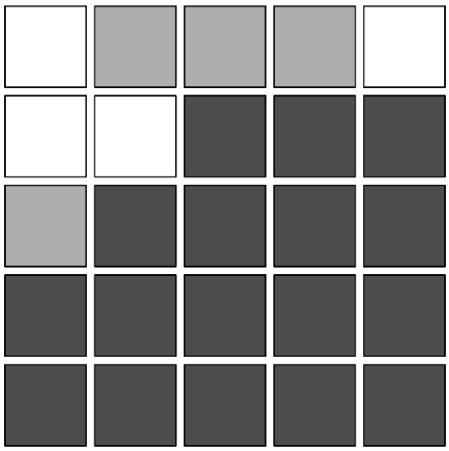


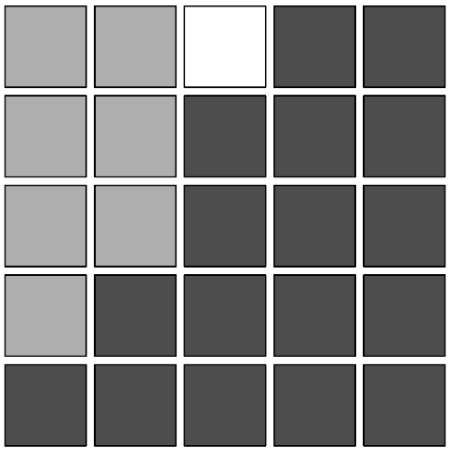
Tree density by DBH class (nclus= 2; Bk= 0.575)



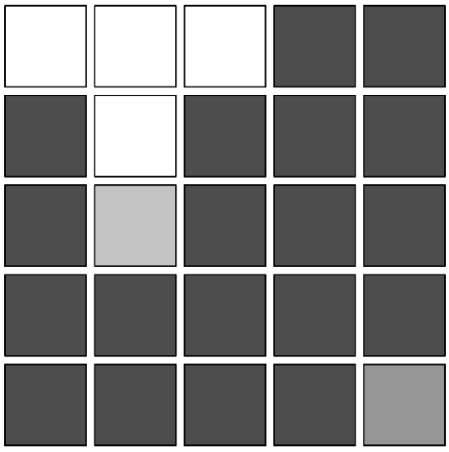


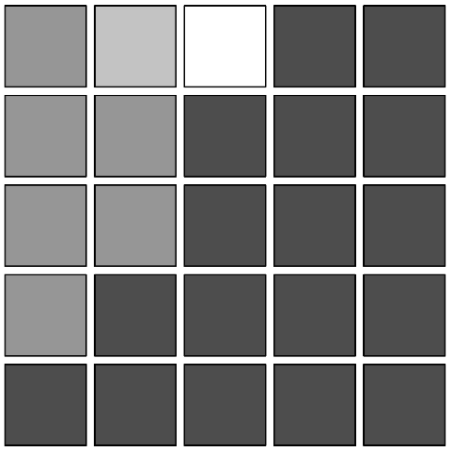
Tree density DBH1 by species (nclus= 3; Bk= 0.722)



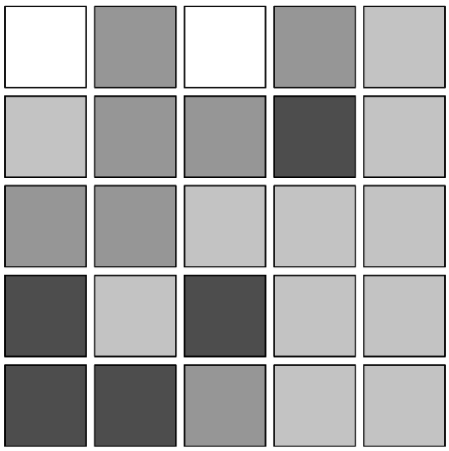


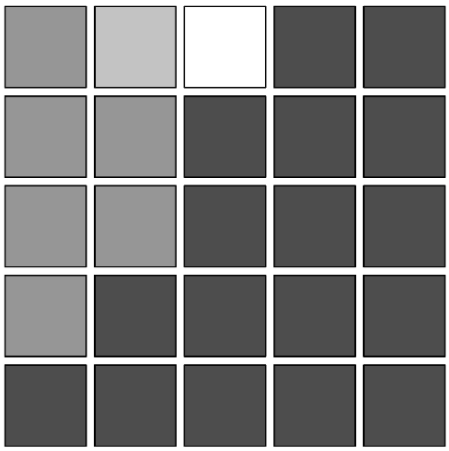
Tree density DBH2 by species (nclus= 4; Bk= 0.758)



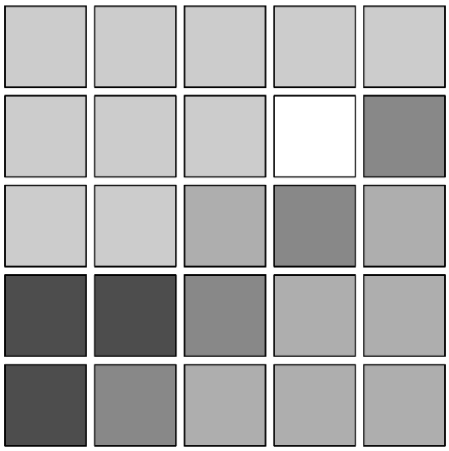


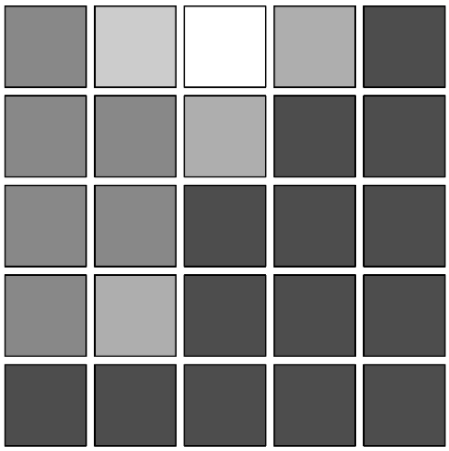
Snag density DBH2 by species (nclus= 4; Bk= 0.497)



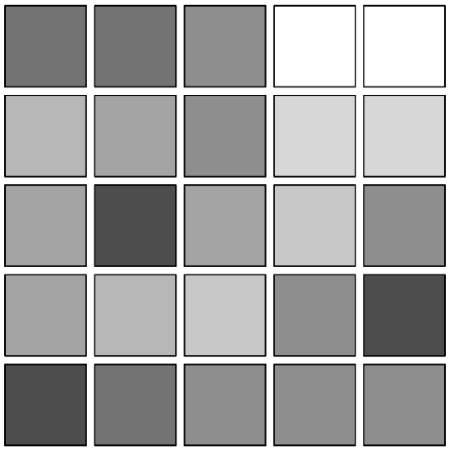


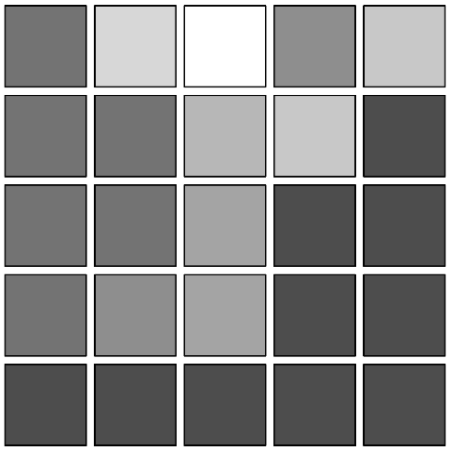
Live stem BA by species (nclus= 5; Bk= 0.42)



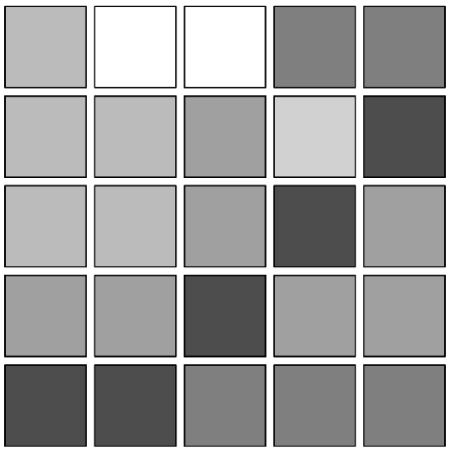


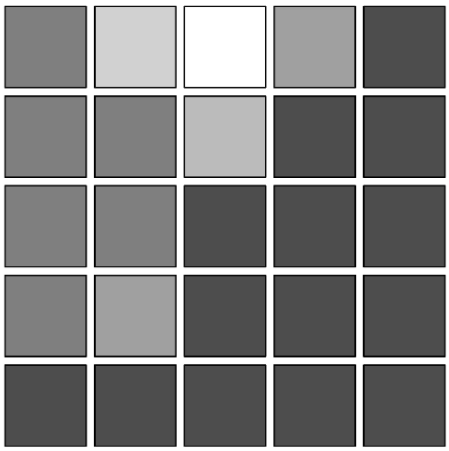
Live stem BA by vegetation type (nclus= 8; Bk= 0.29)



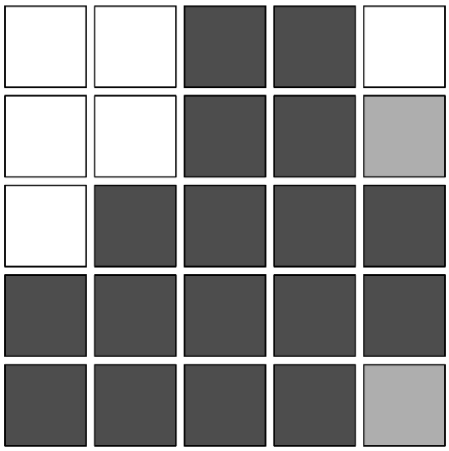


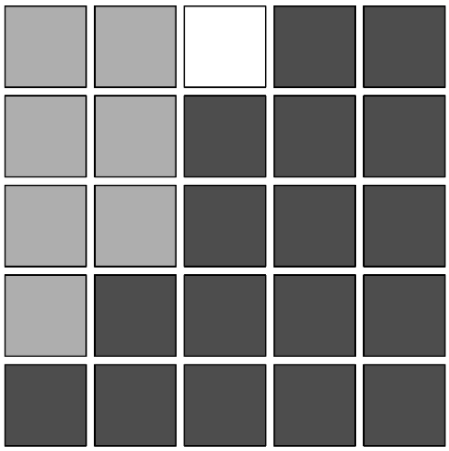
Tree BA by DBH class (nclus= 6; Bk= 0.429)



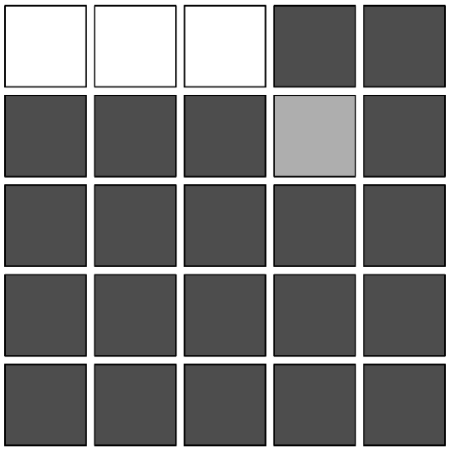


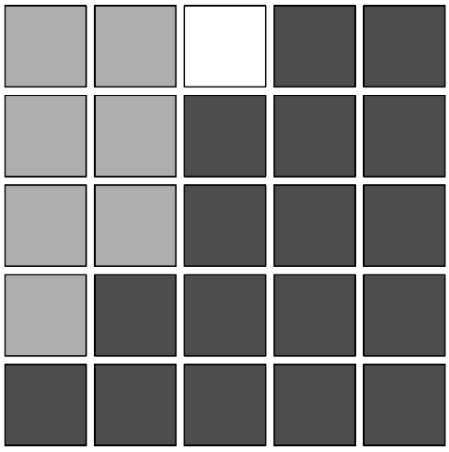
Tree BA DBH1 by species (nclus= 3; Bk= 0.667)



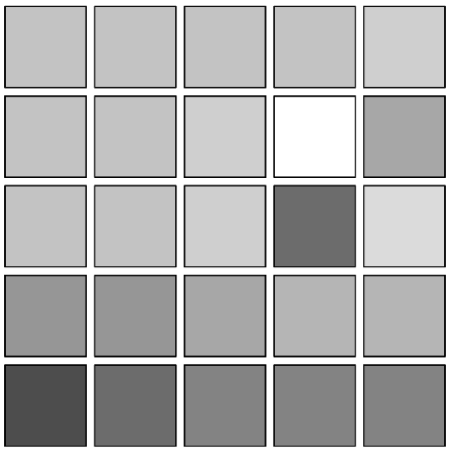


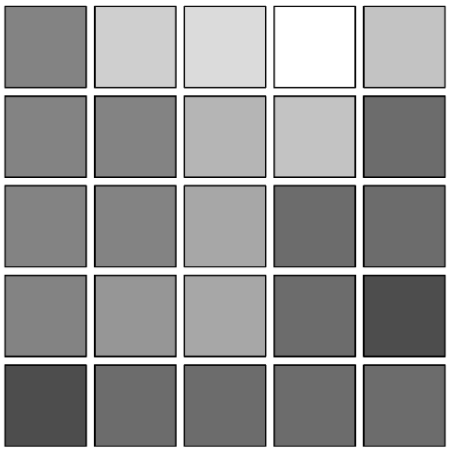
Tree BA DBH2 by species (nclus= 3; Bk= 0.716)



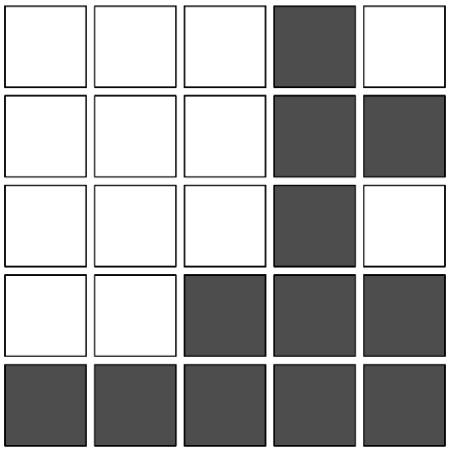


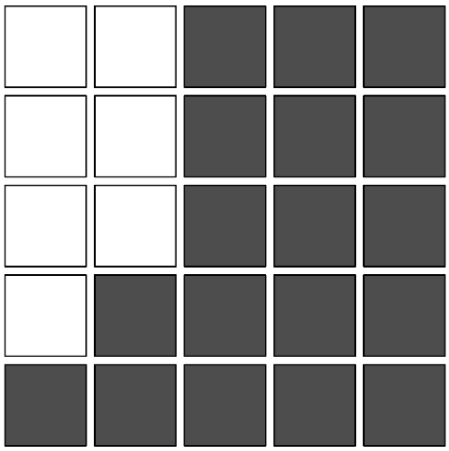
Tree BA DBH3 by species (nclus= 10; Bk= 0.335)



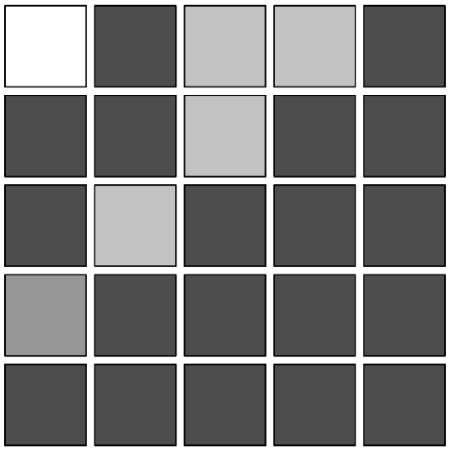


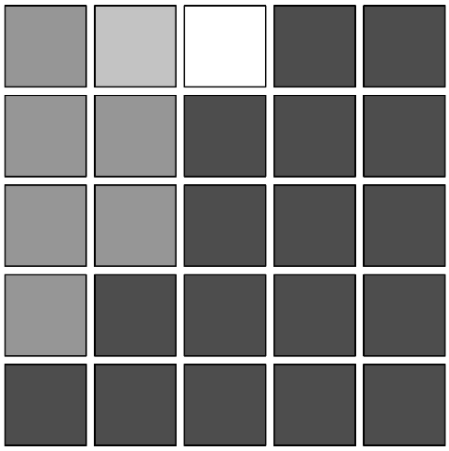
Snag BA by DBH class (nclus= 2; Bk= 0.644)





snag BA DBH2 by species (nclus= 4; Bk= 0.667)





Appendix 4

Table A1. Spatial autocorrelation between sub-plots measured using Moran's I estimate (± 2 x Standard deviation). Lack of autocorrelation is determined if estimate is not significantly different from zero. Each lag corresponds to 1/5 of half the maximum distance between the two farthest points: 11.3 m (correlograms are included below).

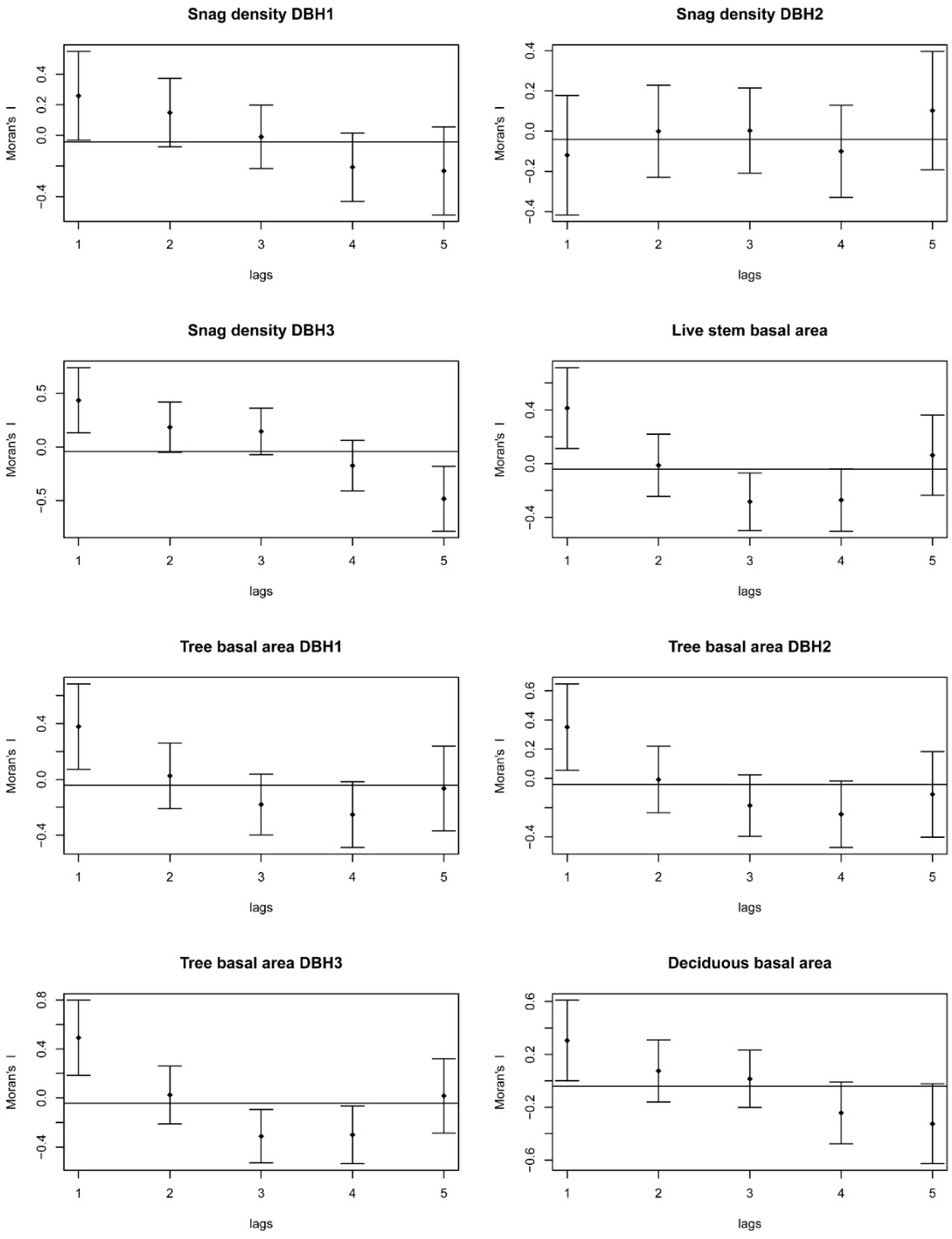
	Lag 1	**Lag 2**	**Lag 3**	**Lag 4**	**Lag 5**
(A) Forest structure					
Live stem density	0.39 (0.31)**	0.05 (0.24)	-0.23 (0.22)	-0.2 (0.24)	-0.07 (0.3)
Tree density DBH1	0.43 (0.3)**	0.1 (0.23)	-0.13 (0.22)	-0.19 (0.23)	-0.12 (0.3)
Tree density DBH2	0.35 (0.31)*	0.03 (0.24)	-0.25 (0.22)	-0.31 (0.24)*	-0.05 (0.3)
Tree density DBH3	0.51 (0.31)***	0.02 (0.24)	-0.3 (0.22)*	-0.25 (0.24)	0.08 (0.3)
Deciduous stem den.	0.42 (0.3)**	0.17 (0.23)	-0.22 (0.22)	-0.32 (0.23)*	-0.17 (0.3)
Conifer stem den.	0.14 (0.29)	0.06 (0.22)	-0.02 (0.21)	-0.18 (0.22)	-0.20 (0.28)
Tall shrub stem den.	0.44 (0.3)**	0.17 (0.23)	-0.02 (0.22)	-0.14 (0.23)	-0.25 (0.3)
Snag density	0.45 (0.28)***	0.06 (0.22)	-0.10 (0.2)	-0.19 (0.22)	-0.27 (0.28)
Snag density DBH1	0.26 (0.29)*	0.15 (0.22)	-0.01 (0.21)	-0.21 (0.22)	-0.23 (0.29)
Snag density DBH2	-0.12 (0.3)	0.01 (0.23)	0.01 (0.21)	-0.10 (0.23)	0.1 (0.29)
Snag density DBH3	0.44 (0.3)**	0.19 (0.23)	0.15 (0.22)	-0.17 (0.23)	-0.48 (0.3)**
Live stem BA	0.41 (0.3)**	-0.01 (0.23)	-0.28 (0.21)*	-0.27 (0.23)*	0.06 (0.3)

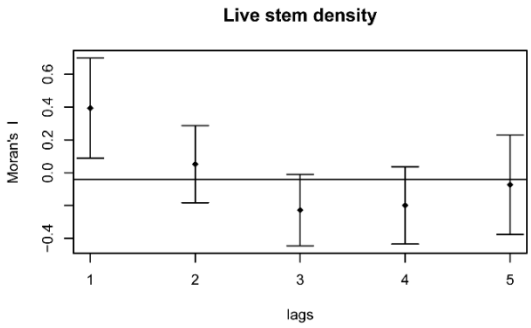
Tree BA DBH1	0.38 (0.31)**	0.03 (0.24)	-0.18 (0.22)	-0.25 (0.24)	-0.06 (0.3)
Tree BA DBH2	0.35 (0.3)**	-0.01 (0.23)	-0.19 (0.21)	-0.25 (0.23)	-0.11 (0.29)
Tree BA DBH3	0.49 (0.31)***	0.03 (0.24)	-0.31 (0.22)*	-0.30 (0.24)*	0.02 (0.3)
Deciduous BA	0.31 (0.3)*	0.08 (0.23)	0.02 (0.22)	-0.24 (0.23)	-0.33 (0.3)
Conifer BA	-0.16 (0.3)	0.04 (0.23)	-0.06 (0.21)	-0.07 (0.23)	-0.02 (0.3)
Tall shrub BA	0.31 (0.3)**	0.08 (0.23)	0.02 (0.22)	-0.24 (0.23)	-0.33 (0.3)
Snag basal area	0.49 (0.3)***	0.19 (0.23)*	0.04 (0.22)	-0.19 (0.23)	-0.44 (0.3)**
Snag BA DBH1	0.18 (0.29)	0.1 (0.23)	0.01 (0.21)	-0.17 (0.23)	-0.12 (0.29)
Snag BA DBH2	-0.1 (0.29)	-0.08 (0.22)	0.13 (0.21)	-0.07 (0.22)	-0.21 (0.29)
Snag BA DBH3	0.52 (0.31)***	0.25 (0.24)*	0.11 (0.22)	-0.2 (0.24)	-0.51 (0.3)**
(B) Richness					
Ground spiders	-0.08 (0.29)	-0.12 (0.22)	0.05 (0.21)	-0.15 (0.22)	0.07 (0.29)
Foliage spiders	0.48 (0.29)***	0.13 (0.23)	-0.05 (0.21)	-0.16 (0.23)	-0.18 (0.29)
Carabid beetles	0.32 (0.30)*	0.01 (0.23)	-0.09 (0.22)	-0.27 (0.23)	-0.12 (0.30)
Understory vegetation	0.69 (0.31)***	0.38 (0.24)***	-0.09 (0.22)	-0.36 (0.24)**	-0.49 (0.30)**
(C) Abundance					
Ground spiders	-0.07 (0.26)	-0.20 (0.20)	-0.06 (0.18)	0.06 (0.20)	0.01 (0.25)
Foliage spiders	0.57 (0.30)***	0.29 (0.23)**	0.02 (0.21)	-0.11 (0.23)	-0.29 (0.30)

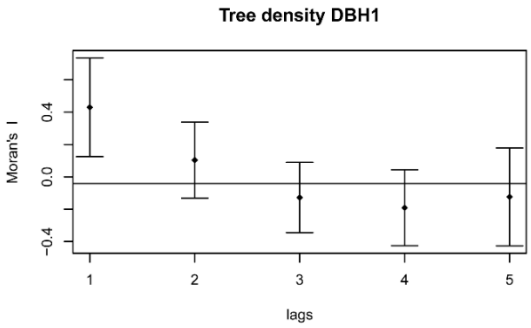
Carabid beetles	0.39 (0.31)**	-0.05 (0.24)	-0.22 (0.22)	-0.25 (0.24)	-0.09 (0.30)
Understory vegetation	0.40 (0.30)	0.14 (0.23)	-0.13 (0.22)	-0.26 (0.23)	-0.10 (0.30)
(D) Dominant species					
Allomengea dentisetis	0.37 (0.30)**	0.05 (0.23)	-0.19 (0.21)	-0.27 (0.23)*	-0.09 (0.30)
Ozyptila sincera c.	0.01 (0.27)	-0.04 (0.21)	-0.08 (0.19)	-0.18 (0.21)	-0.14 (0.27)
Dismodicus alticeps	0.52 (0.30)***	0.29 (0.23)**	0.06 (0.22)	-0.21 (0.23)	-0.48 (0.3)**
Helophora insignis	0.43 (0.30)**	0.16 (0.23)	-0.12 (0.21)	-0.09 (0.23)	-0.21 (0.3)
Pterostichus adstrictus	0.21 (0.29)*	-0.12 (0.22)	-0.18 (0.21)	-0.12 (0.22)	-0.02 (0.29)
Platynus decentis	0.30 (0.29)*	-0.09 (0.23)	-0.20 (0.21)	-0.18 (0.23)	0.05 (0.29)
Cornus canadensis	0.04 (0.30)	-0.05 (0.23)	-0.02 (0.22)	-0.09 (0.23)	-0.02 (0.30)
Rubus idaeus	0.25 (0.30)	-0.12 (0.23)	-0.28 (0.22)*	0.07 (0.23)	0.10 (0.30)

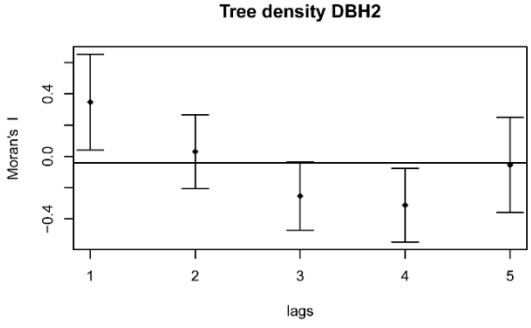
p-values: *** < 0.001; ** < 0.01; * < 0.05

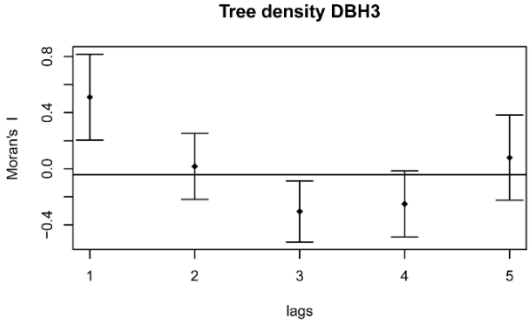
Figure A1. Moran's I correlograms to assess autocorrelation for forest structure variables

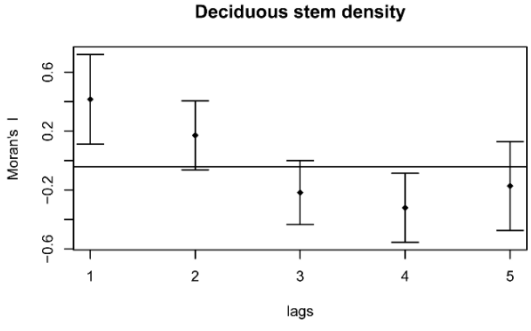


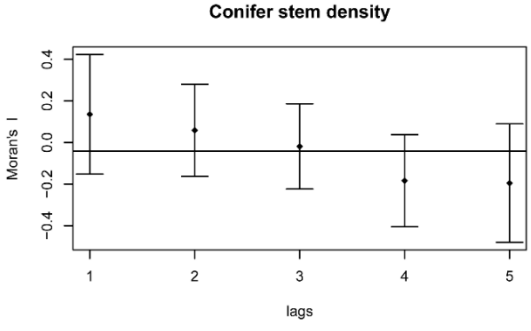

Live stem density
Moran's I
lags

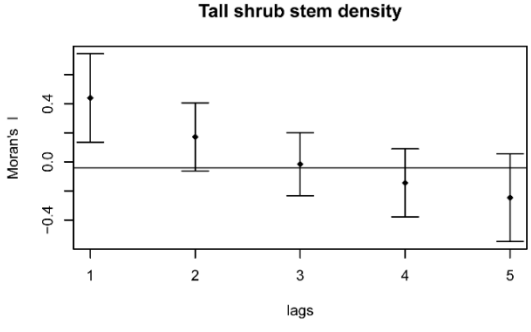

Tree density DBH1
Moran's I
lags

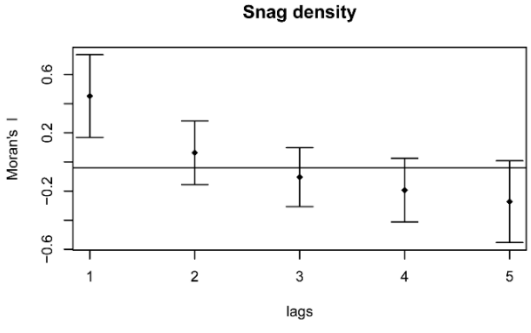

Tree density DBH2
Moran's I
lags

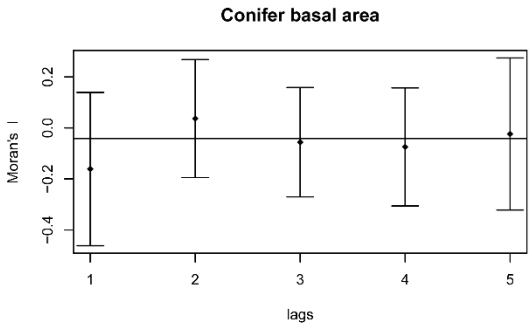

Tree density DBH3
Moran's I
lags

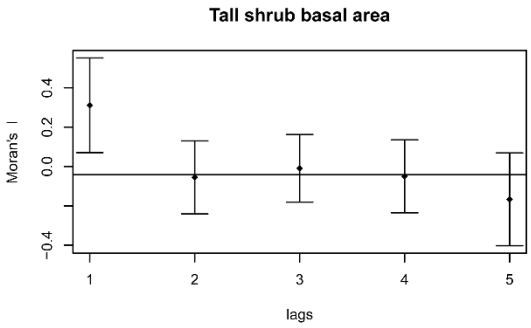

Deciduous stem density
Moran's I
lags

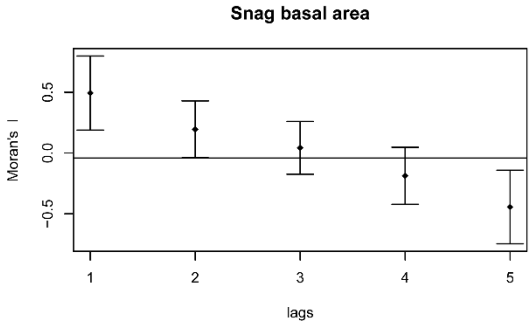

Conifer stem density
Moran's I
lags

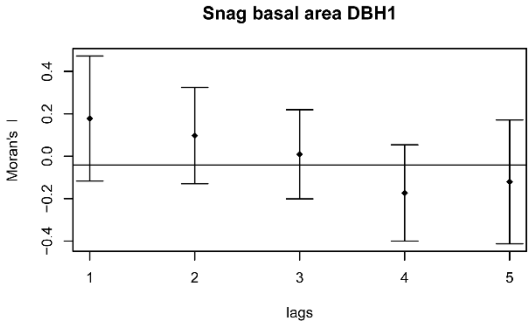

Tall shrub stem density
Moran's I
lags

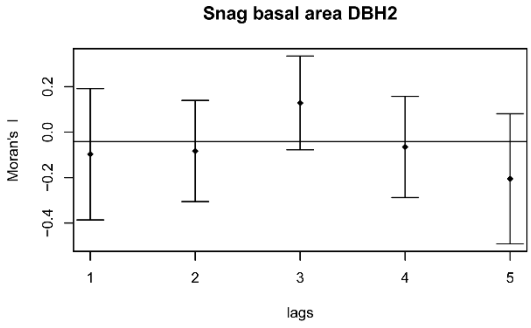

Snag density
Moran's I
lags


Conifer basal area
Moran's I
0.2
0.0
−0.2
−0.4
1
2
3
4
5
lags


Tall shrub basal area
Moran's I
0.4
0.2
0.0
−0.4
1
2
3
4
5
lags


Snag basal area
Moran's I
0.5
0.0
−0.5
1
2
3
4
5
lags


Snag basal area DBH1
Moran's I
0.4
0.2
0.0
−0.2
−0.4
1
2
3
4
5
lags


Snag basal area DBH2
Moran's I
0.2
0.0
−0.2
−0.4
1
2
3
4
5
lags

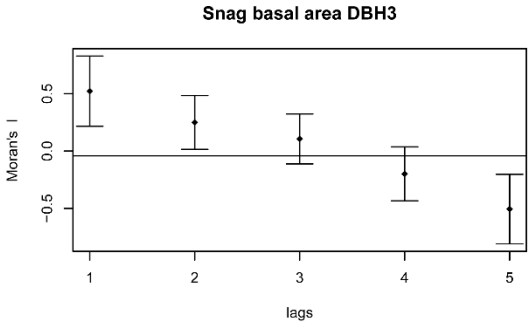

Snag basal area DBH3
Moran's I
0.5
0.0
−0.5
1
2
3
4
5
lags

Figure A2. Moran's I correlograms to assess autocorrelation for richness and abundance

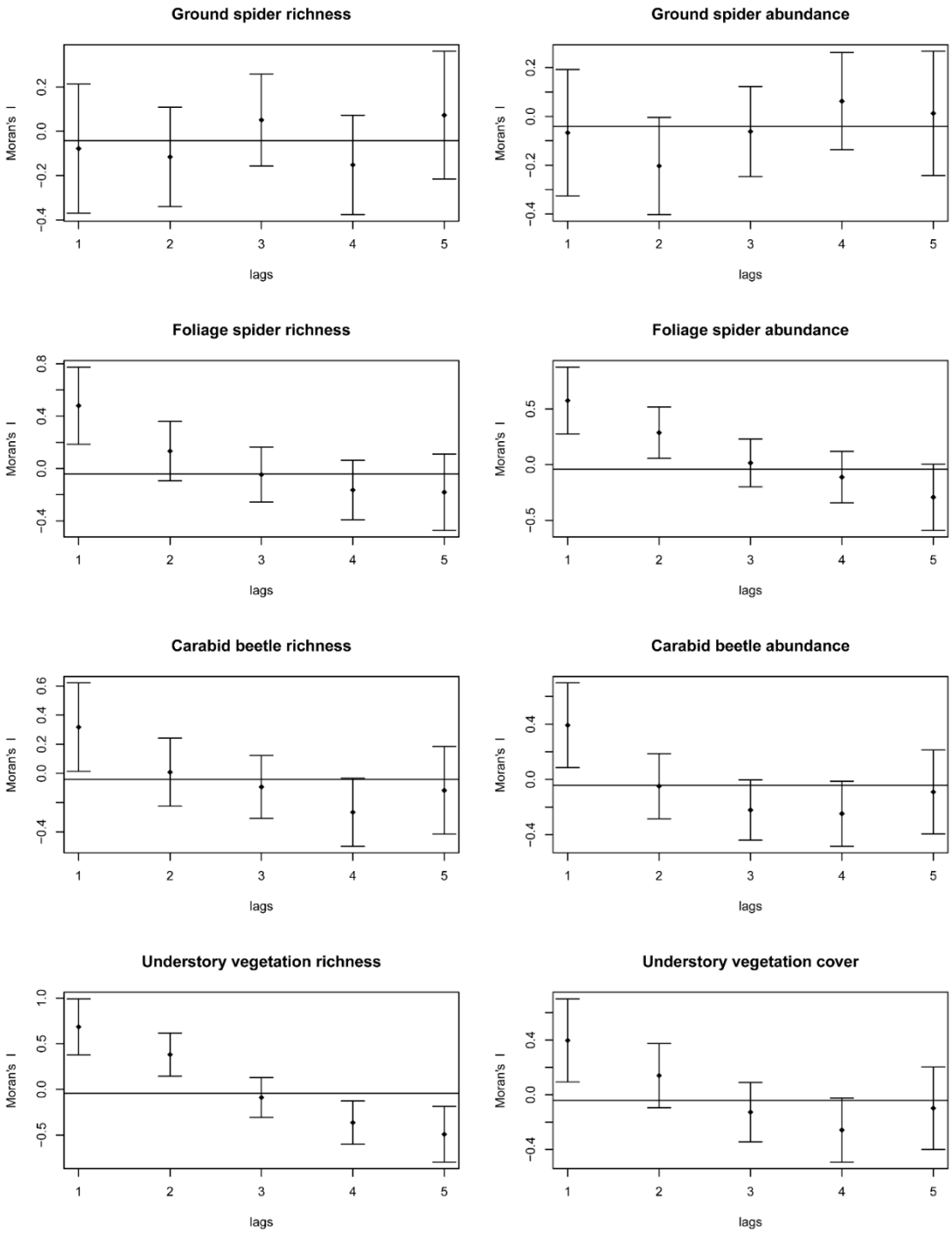
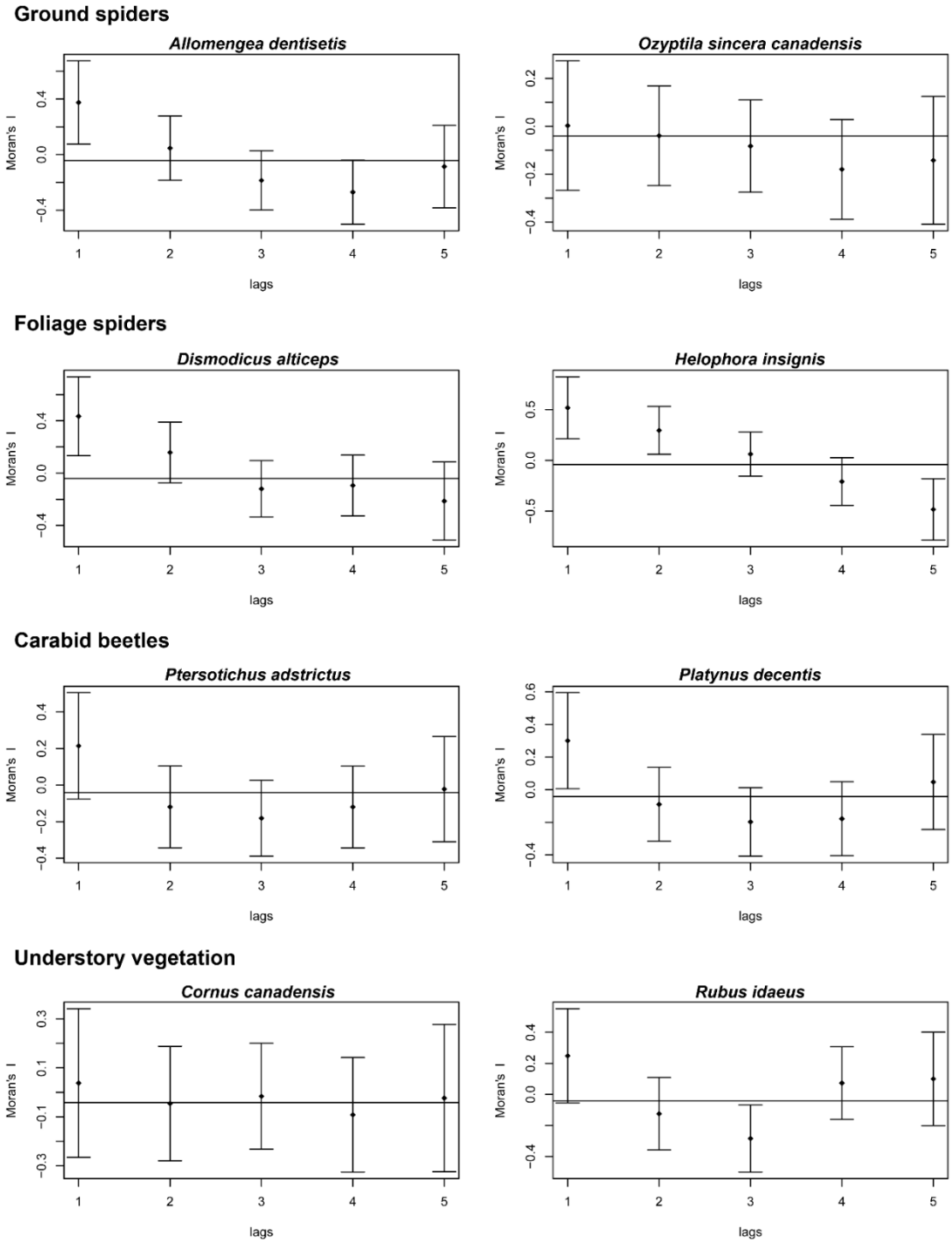


Figure A3. Moran's I correlograms to assess autocorrelation for abundance of dominant species



Appendix 5

Table A1. Effects of forest structure on the two dominant species of ground and foliage spiders, carabid beetles and understory vegetation within four spatial scales from the center of each sub-plot (den.: density; BA: basal area; DBH: diameter at breast height; DBH1 and DBH2: class 1 (< 5cm DBH) and 2 (5-20 cm DBH), respectively).

	2.5 m radius			**5 m radius**			**7.5 m radius**			**10 m radius**		
	Estimate	**z-value**	**R^2**	**Estimate**	**z-value**	**R^2**	**Estimate**	**z-value**	**R^2**	**Estimate**	**z-value**	**R^2**
(A) Ground spiders												
Allomengea dentisetis			0.48			0.37			0.16			0.12
Intercept	3.02	14.43***		3.23	13.84***		3.43	14.66***		3.41	12.36***	
Tree den. DBH1	1.02E-01	3.55***		3.80E-02	3.42***		1.29E-02	2.22*		7.80E-03	1.93.	
Tree den. DBH2	-	-		4.98E-02	2.27*		-	-		-	-	
Deciduous den.	-	-		-4.26E-02	-3.05**		-	-		-	-	
Live stem BA	2.48E-02	3.44***		-	-		-	-		-	-	
Deciduous BA	-2.44E-02	-3.39***		1.37E-04	2.06*		-	-		-	-	
Conifer BA	-2.44E-02	-3.43***		-	-		-	-		-	-	
Ozyptila sincera canadensis			0.15			0.63			0.63			0.68
Intercept	3.86	20.13***		3.91	15.05***		3.94	11.11***		4.05	9.81***	

Live stem den.	-2.18E-01	-1.75$^{\cdot}$	-5.26E-01	-3.41***	-9.89E-02	-3.18**	-	-
Tree den. DBH1	2.68E-01	1.78$^{\cdot}$	5.41E-01	3.52***	1.08E-01	3.35***	-	-
Tree den. DBH2	-	-	3.76E-01	2.38*	-	-	-2.84E-02	-3.31***
Deciduous den.	-	-	5.45E-02	2.94**	4.18E-02	4.74***	3.07E-02	5.68***
Conifer den.	-	-	-	-	4.72E-02	2.58**	4.02E-02	4.01***
Snag den.	-	-	-1.31E-01	-2.74**	-	-	-	-
Live stem BA	-	-	2.26E-03	3.67***	1.69E-03	5.09***	1.01E-03	6.07***
Tree BA DBH1	-	-	-9.86E-03	-3.61***	-6.31E-03	-3.09**	-5.20E-03	-6.25***
Tree BA DBH2	2.86E-03	1.97*	1.24E-03	2.64**	6.40E-04	2.33*	-	-
Deciduous BA	-	-	-1.82E-03	-2.80**	-1.60E-03	-5.04***	-9.36E-04	-5.86***
Conifer BA	-	-	-1.71E-03	-2.55*	-1.77E-03	-5.34***	-1.16E-03	-6.25***
(B) Foliage spiders								
Dismodicus alticeps		0.17		0.60		0.72		0.67
Intercept	3.52	29.07***	3.51	15.53***	3.08	10.91***	3.29	9.37***
Live stem den.	-	-	1.60E-01	3.35***	-	-	-	-
Tree den. DBH1	-	-	-1.72E-01	-3.41***	-	-	-	-
Tree den. DBH2	-	-	-	-	5.12E-02	2.32*	-	-

Deciduous den.	-	-	-7.34E-02	-3.56***	-2.34E-02	-3.17**	-1.42E-02	-3.80***
Conifer den.	-	-	-1.05E-01	-3.02**	-5.70E-02	-3.73***	-2.74E-02	-3.53***
Snag den.	-	-	-	-	-9.56E-02	-3.86***	-6.53E-02	-3.49***
Snag den. DBH1	-	-	-1.38E-01	-2.12*	-	-	-	-
Snag den. DBH2	-	-	-	-	3.75E-01	3.40***	1.30E-01	2.89**
Live stem BA	-	-	-1.41E-03	-2.22*	-7.61E-04	-2.35*	-	-
Tree BA DBH1	-	-	7.84E-03	2.69**	3.08E-03	3.08**	1.84E-03	3.44***
Tree BA DBH2	-1.42E-03	-2.57*	-1.26E-03	-2.87**	-6.08E-04	-2.64**	-	-
Deciduous BA	-	-	1.49E-03	2.40*	8.63E-04	2.68**	7.47E-05	3.18**
Conifer BA	-	-	1.37E-03	2.16*	9.27E-04	2.62**	5.82E-05	2.27*
Helophora insignis		0.67		0.36		0.28		0.29
Intercept	2.07	14.15***	2.02	5.42***	2.19	6.64***	3.03	6.66***
Live stem den.	2.33E-01	6.00***	6.35E-02	2.81**	-	-	-6.20E-02	-2.81**
Tree den. DBH1	-2.52E-01	-5.48***	-6.86E-02	-2.50*	-	-	4.14E-02	2.36*
Tree den. DBH2	-	-	-	-	2.57E-02	2.13*	-	-
Conifer den.	-2.29E-01	-3.08**	-	-	-4.65E-02	-2.05*	-	-
Snag den.	7.18E-01	2.31*	6.90E-01	2.43*	-	-	-	-

Snag den. DBH1	-2.56	-2.99**	-6.21E-01	-2.05*	-	-	-	-
Snag den. DBH2	-	-	-9.53E-01	-2.68**	-	-	-	-
Live stem BA	-	-	-1.38E-03	-2.35*	-9.61E-04	-2.87**	-	-
Tree BA DBH1	-	-	-	-	-	-	4.80E-03	1.92.
Tree BA DBH2	-	-	-	-	-	-	4.62E-04	2.76**
Deciduous BA	-	-	1.40E-03	2.46*	1.00E-03	3.04**	1.02E-04	2.3*
Conifer BA	3.96E-04	2.10*	1.23E-03	2.03*	1.08E-03	2.96**	-	-
(C) Carabid beetles								
Platynus decentis		0.12		0.45		0.38		0.53
Intercept	4.14	30.57***	3.65	23.04***	3.66	20.81***	3.99	24.11***
Live stem den.	3.81E-02	2.05*	-	-	-	-	-	-
Tree den. DBH1	-	-	2.67E-02	3.32***	9.11E-03	2.57*	-	-
Deciduous den.	-	-	-1.84E-02	-2.25*	-	-	-	-
Snag den. DBH1	-	-	-1.00E-01	-2.05*	-	-	-	-
Snag den. DBH2	-	-	-	-	-	-	6.01E-02	2.32*
Live stem BA	-	-	-	-	-	-	1.02E-04	4.10***
Tree BA DBH2	-	-	7.40E-04	4.00***	2.33E-04	3.08**	-	-

Conifer BA	-	-	-	-	-	-	-1.72E-04	-5.53***
Pterostichus adstrictus		0.73		0.48		0.62		0.68
Intercept	3.67	20.01***	5.10	18.04***	4.52	11.13***	6.24	16.94***
Live stem den.	-	-	3.64E-02	2.87**	2.41E-02	3.83***	-	-
Tree den. DBH1	2.64E-01	6.18***	-	-	-	-	-	-
Tree den. DBH2	-	-	-	-	-	-	5.03E-02	4.25***
Deciduous den.	-1.55E-01	-4.08***	-5.00E-02	-3.40***	-3.44E-02	-3.99***	-3.38E-02	-6.63***
Conifer den.	-	-	-	-	-6.46E-02	-3.46***	-4.37E-02	-4.11***
Snag den.	-	-	-	-	-9.77E-02	-2.57*	-	-
Snag den. DBH1	-	-	-2.41E-01	-2.36*	-	-	-6.47E-02	-2.35*
Snag den. DBH2	-	-	7.39E-01	3.59***	2.66E-01	2.56*	-	-
Live stem BA	4.41E-02	6.86***	-	-	1.21E-04	3.56***	-	-
Tree BA DBH2	-	-	-6.70E-04	-2.24*	-	-	-2.90E-04	-2.27*
Deciduous BA	-4.32E-02	-6.76***	-	-	-	-	1.08E-04	3.05**
Conifer BA	-4.32E-02	-6.81***	-	-	-	-	-	-
(D) Understory vegetation								
Cornus canadensis		0.34		0.67		0.65		0.75

Intercept	3.33	16.71***	3.37	15.44***	3.58	10.58***	3.6	9.79***
Tree den. DBH2	-1.06E-01	-2.02*	-	-	4.25E-02	3.52***	2.17E-02	4.01***
Deciduous den.	-	-	-5.39E-02	-3.90***	-2.58E-02	-2.83**	-1.85E-02	-4.19***
Conifer den.	-	-	-1.27E-01	-4.44***	-6.69E-02	-3.91***	-2.78E-02	-3.62***
Snag den.	-	-	-	-	-5.69E-02	-2.10*	-7.57E-02	-3.97***
Snag den. DBH1	-	-	-1.92E-01	-2.99**	-	-	-	-
Snag den. DBH2	-	-	-	-	-	-	2.29E-01	5.20***
Live stem BA	2.88E-02	3.32***	3.76E-04	5.16***	1.95E-04	4.65***	5.83E-05	3.21**
Tree BA DBH1	-	-	4.43E-03	2.22*	-	-	-	-
Tree BA DBH2	-	-	9.78E-04	3.83***	-	-	-	-
Deciduous BA	-2.87E-02	-3.31***	-3.35E-04	-4.01***	-1.51E-04	-2.60**	-	-
Conifer BA	-2.83E-02	-3.29***	-	-	-	-	-	-
Rubus idaeus		0.35		0.63		0.52		0.53
Intercept	3.88	14.70***	2.94	8.47***	3.89	7.00***	3.53	4.24***
Live stem den.	1.57	3.58***	2.95E-01	5.96***	1.21E-01	4.51***	7.20E-02	4.13***
Tree den. DBH1	-1.64	-3.85***	-2.84E-01	-5.51***	-1.11E-01	-4.41***	-6.23E-02	-3.88***
Tree den. DBH2	-1.46	-3.77***	-	-	-	-	-	-

Deciduous den.	-	-	-1.69E-01	-5.27***	-5.93E-02	-3.85***	-3.85E-02	-3.91***
Conifer den.	-4.98E-01	-2.43*	-1.88E-01	-3.75***	-1.12E-01	-3.70***	-4.68E-02	-2.64**
Snag den. DBH1	-	-	-3.25E-01	-3.53***	-1.30E-01	-2.20*	-1.22E-01	-2.31*
Snag den. DBH2	-	-	-	-	-	-	1.51E-01	2.04*
Live stem BA	-	-	-3.69E-03	-3.98***	-1.02E-03	-2.32*	-5.82E-04	-2.02*
Tree BA DBH1	2.50E-02	1.99*	1.25E-02	2.82**	-	-	-	-
Deciduous BA	-1.56E-03	-3.48***	3.53E-03	3.91***	9.27E-04	2.24*	5.21E-04	1.97*
Conifer BA	-	-	4.08E-03	4.31***	1.19E-03	2.61**	6.60E-04	2.17*

p-values: *** < 0.001; ** < 0.01; * < 0.05; ˙ < 0.1