

Appendix A. Links between traits and habitats according to Fourth-corner analysis. Cor = trait-habitat ‘correlation’; Pr.FF = Significance of the correlation tested by fixed-fixed null (permutation) model; Pr.Cmb = Significance of the correlation using a combination of permutations (Model 2 and 4) as described by Dray & Legendre (2008). Significant results ($P < 0.05$) are shown in bold letters and shaded orange. Italic script and yellow shading are marginal significant ($P < 0.10$) results.

Habitat Variables: Scale 100 m														
Traits	Stat	DEC.Y	DEC.M	BSP.Y	BSP.M	JPL.Y	JPL.M	BFI.Y	BFI.M	Brn.Sev	Brn.Het	SalEdge	AquEdge	
Ground Nest	Cor	-0.006	-0.033	-0.053	-0.072	-0.03	-0.048	0.011	-0.003	0.056	-0.005	0.056	0.067	
	Pr.FF	0.327	0.086	0.012	0.004	0.057	0.018	0.398	0.43	0.025	0.413	0.026	0.002	
	Pr.Cmb	0.406	0.162	0.069	0.02	0.2	0.096	0.361	0.454	0.076	0.435	0.072	0.03	
Shrub Nest	Cor	-0.051	-0.041	-0.047	-0.023	-0.024	-0.062	-0.001	-0.006	0.051	-0.003	0.081	0.027	
	Pr.FF	0.089	0.155	0.109	0.239	0.375	0.065	0.481	0.414	0.041	0.482	0.006	0.284	
	Pr.Cmb	0.062	0.119	0.118	0.26	0.265	0.071	0.488	0.417	0.08	0.467	0.031	0.245	
Canopy Nest	Cor	0.034	0.055	0.078	0.083	0.042	0.081	-0.01	0.007	-0.083	0.007	-0.1	-0.08	
	Pr.FF	0.106	0.021	0.002	0.001	0.033	0.001	0.388	0.395	0.002	0.414	0.001	0.004	
	Pr.Cmb	0.12	0.047	0.012	0.008	0.098	0.006	0.388	0.421	0.02	0.42	0.005	0.007	
Cavity Nesting	Cor	0.006	0.002	-0.002	0.036	-0.023	-0.012	-0.015	-0.014	0.063	-0.054	-0.011	-0.014	
	Pr.FF	0.413	0.443	0.496	0.088	0.239	0.382	0.285	0.303	0.018	0.026	0.328	0.293	
	Pr.Cmb	0.411	0.48	0.475	0.155	0.287	0.381	0.308	0.337	0.063	0.037	0.401	0.342	
Open-cup nest type	Cor	-0.001	-0.007	0.001	-0.037	0.016	0.005	0.014	0.01	-0.05	0.042	0.033	0.021	
	Pr.FF	0.477	0.379	0.499	0.086	0.321	0.497	0.307	0.35	0.039	0.081	0.12	0.197	
	Pr.Cmb	0.482	0.421	0.493	0.146	0.36	0.452	0.328	0.375	0.109	0.073	0.194	0.267	
Ground Insectivore	Cor	0.007	-0.009	0.024	0.034	0.014	-0.022	0.003	0	0.058	-0.044	0.017	0.038	
	Pr.FF	0.367	0.468	0.204	0.144	0.25	0.314	0.417	0.463	0.032	0.1	0.299	0.172	
	Pr.Cmb	0.424	0.41	0.24	0.186	0.339	0.288	0.497	0.525	0.058	0.129	0.349	0.154	
Foliage Insectivore	Cor	0.049	0.055	0.061	0.041	0.053	0.032	0.074	0.077	-0.095	0.036	-0.015	0.039	
	Pr.FF	0.055	0.041	0.025	0.109	0.023	0.095	0.006	0.007	0.008	0.148	0.361	0.149	
	Pr.Cmb	0.105	0.077	0.054	0.141	0.103	0.204	0.019	0.015	0.031	0.175	0.379	0.15	
Bark Insectivore	Cor	0.012	0.047	0.018	0.035	-0.014	0.046	0.012	0.018	-0.039	0.009	-0.078	-0.072	
	Pr.FF	0.33	0.033	0.246	0.085	0.24	0.042	0.373	0.268	0.044	0.349	0.001	0.004	
	Pr.Cmb	0.342	0.073	0.306	0.161	0.365	0.092	0.352	0.283	0.201	0.398	0.033	0.023	

Appendix A. continued

Traits	Stat.	DEC.Y	DEC.M	BSP.Y	BSP.M	JPL.Y	JPL.M	BFL.Y	BFL.M	Brn.Sev	Brn.Het	SalEdge	AquEdge			
Aerial	Cor	-0.02	-0.017	-0.019	0.001	-0.02	0.002	-0.03	-0.025	0.039	-0.031	0.043	-0.009			
Insectivore	Pr.FF	0.275	0.313	0.261	0.474	0.313	0.428	0.168	0.208	0.076	0.157	0.073	0.381			
	Pr.Cmb	0.23	0.316	0.284	0.502	0.28	0.465	0.152	0.209	0.18	0.139	0.14	0.372			
Omnivore	Cor	-0.042	-0.059	-0.036	-0.065	0.008	-0.004	-0.054	-0.061	0.031	-0.002	0.03	-0.003			
	Pr.FF	0.025	0.007	0.061	0.008	0.389	0.242	0.006	0.004	0.262	0.489	0.144	0.416			
	Pr.Cmb	0.11	0.053	0.156	0.033	0.402	0.474	0.064	0.034	0.257	0.481	0.225	0.473			
Other vertebrates	Cor	0.006	-0.016	-0.072	-0.027	-0.054	-0.079	-0.021	-0.023	0.072	-0.037	-0.01	0.075			
	Pr.FF	0.453	0.355	0.043	0.238	0.112	0.035	0.293	0.268	0.026	0.17	0.409	0.036			
	Pr.Cmb	0.461	0.373	0.072	0.282	0.141	0.059	0.333	0.329	0.072	0.24	0.443	0.065			
Resident	Cor	0.016	0.037	0.004	0.031	-0.026	0.027	-0.001	0.005	-0.01	-0.02	-0.06	-0.055			
	Pr.FF	0.291	0.084	0.431	0.108	0.094	0.16	0.456	0.449	0.267	0.22	0.008	0.009			
	Pr.Cmb	0.3	0.136	0.469	0.183	0.252	0.213	0.482	0.441	0.38	0.258	0.08	0.06			
Short distance migrant	Cor	-0.01	-0.012	0.03	0.011	0.061	0.035	-0.04	-0.04	0.051	-0.026	0.026	-0.035			
	Pr.FF	0.32	0.267	0.16	0.314	0.032	0.186	0.068	0.079	0.082	0.205	0.19	0.178			
	Pr.Cmb	0.385	0.358	0.215	0.387	0.035	0.162	0.107	0.11	0.119	0.205	0.258	0.162			
Neotropical	Cor	-0.002	-0.017	-0.038	-0.039	-0.049	-0.064	0.047	0.042	-0.052	0.047	0.021	0.087			
	Pr.FF	0.451	0.368	0.132	0.099	0.141	0.062	0.058	0.09	0.157	0.104	0.24	0.01			
	Pr.Cmb	0.483	0.335	0.17	0.161	0.121	0.049	0.114	0.14	0.128	0.121	0.311	0.011			
Habitat variables scale 500 m and Landscape																
Traits	Stat	DEC.Y	DEC.M	BSP.Y	BSP.M	JPL.Y	JPL.M	BFL.Y	BFL.M	Brn.Sev	Brn.Het	SalEdge	AquEdge	Dis.GF	Dis.BF	Age.BF
Ground Nest	Cor	0.019	0.006	-0.055	-0.067	-0.033	-0.037	0.038	0.037	0.04	0.002	0.01	0.042	-0.053	0.001	0.072
	Pr.FF	0.269	0.358	0.004	0.002	0.04	0.032	0.128	0.114	0.092	0.472	0.35	0.048	0.021	0.419	0.008
	Pr.Cmb	0.294	0.434	0.052	0.03	0.163	0.164	0.116	0.127	0.085	0.482	0.367	0.116	0.064	0.484	0.015
Shrub Nest	Cor	-0.051	-0.047	-0.072	-0.05	-0.06	-0.095	-0.023	-0.029	0.015	0.037	0.103	0.038	0.05	0.009	0.011
	Pr.FF	0.095	0.091	0.035	0.118	0.089	0.002	0.33	0.258	0.277	0.155	0.002	0.141	0.069	0.321	0.267
	Pr.Cmb	0.074	0.088	0.022	0.099	0.047	0.016	0.246	0.201	0.33	0.159	0.006	0.125	0.084	0.417	0.388
Canopy Nest	Cor	0.01	0.02	0.094	0.093	0.065	0.089	-0.024	-0.02	-0.047	-0.022	-0.067	-0.063	0.024	-0.006	-0.077
	Pr.FF	0.329	0.261	0.001	0.001	0.003	0.001	0.237	0.264	0.057	0.213	0.011	0.015	0.205	0.466	0.007
	Pr.Cmb	0.382	0.29	0.002	0.003	0.015	0.006	0.214	0.253	0.057	0.244	0.028	0.025	0.245	0.454	0.009

Appendix A. Continued

Stat		DEC.Y	DEC.M	BSP.Y	BSP.M	JPL.Y	JPL.M	BFL.Y	BFL.M	Brn.Sev	Brn.Het	SalEdge	AquEdge	Dis.GF	Dis.BF	Age.BF
Cavity Nesting	Cor	-0.044	-0.024	-0.017	0.02	0.014	-0.003	-0.047	-0.042	0.065	-0.024	0.013	-0.02	0.051	-0.023	-0.049
	Pr.FF	0.07	0.207	0.306	0.208	0.283	0.483	0.063	0.071	0.011	0.189	0.34	0.246	0.038	0.212	0.044
	Pr.Cmb	0.091	0.25	0.319	0.28	0.323	0.494	0.079	0.101	0.012	0.209	0.354	0.268	0.068	0.295	0.085
Open-cup nest type	Cor	0.021	-0.001	0.004	-0.038	-0.022	-0.012	0.03	0.026	-0.038	0.019	0.008	0.018	-0.035	0.045	0.054
	Pr.FF	0.248	0.48	0.485	0.076	0.181	0.297	0.151	0.197	0.083	0.241	0.375	0.263	0.097	0.075	0.032
	Pr.Cmb	0.243	0.498	0.485	0.137	0.225	0.364	0.173	0.21	0.094	0.242	0.427	0.296	0.145	0.134	0.065
Ground Insectivore	Cor	-0.01	-0.016	-0.043	-0.028	0.005	-0.049	-0.014	-0.014	0.051	-0.007	0.042	0.035	0.007	-0.052	0.006
	Pr.FF	0.404	0.316	0.142	0.269	0.331	0.098	0.418	0.413	0.047	0.396	0.099	0.148	0.386	0.07	0.346
	Pr.Cmb	0.39	0.326	0.127	0.238	0.428	0.138	0.337	0.344	0.082	0.416	0.137	0.167	0.453	0.138	0.465
Foliage Insectivore	Cor	0.082	0.066	0.024	-0.007	0.024	0.026	0.059	0.064	-0.062	0.007	-0.048	0.005	-0.059	-0.01	0.013
	Pr.FF	0.002	0.032	0.154	0.474	0.129	0.138	0.015	0.017	0.041	0.429	0.067	0.403	0.052	0.469	0.217
	Pr.Cmb	0.021	0.036	0.269	0.443	0.283	0.252	0.061	0.05	0.042	0.423	0.099	0.442	0.063	0.42	0.366
Bark Insectivore	Cor	0.024	0.047	0.06	0.084	0.03	0.059	0.017	0.023	-0.028	-0.035	-0.058	-0.056	-0.006	-0.05	-0.043
	Pr.FF	0.191	0.033	0.007	0.001	0.178	0.01	0.309	0.213	0.118	0.101	0.009	0.012	0.418	0.028	0.029
	Pr.Cmb	0.241	0.113	0.036	0.006	0.169	0.038	0.316	0.263	0.191	0.131	0.033	0.037	0.428	0.113	0.107
Aerial Insectivore	Cor	-0.05	-0.037	-0.033	-0.002	-0.042	-0.021	-0.031	-0.028	0.011	0.002	0.04	-0.008	0.025	0.063	-0.034
	Pr.FF	0.058	0.102	0.162	0.474	0.118	0.259	0.177	0.201	0.297	0.465	0.1	0.426	0.189	0.009	0.175
	Pr.Cmb	0.069	0.147	0.203	0.489	0.106	0.319	0.167	0.209	0.39	0.502	0.155	0.397	0.233	0.038	0.173
Omnivore	Cor	-0.057	-0.072	-0.006	-0.035	0.001	-0.008	-0.035	-0.045	0.016	0.013	0.024	0.019	0.016	0.053	0.037
	Pr.FF	0.007	0.003	0.224	0.053	0.272	0.236	0.023	0.014	0.383	0.3	0.152	0.251	0.374	0.06	0.188
	Pr.Cmb	0.038	0.025	0.429	0.168	0.484	0.417	0.162	0.102	0.309	0.343	0.238	0.302	0.331	0.095	0.156
Other vertebrates	Cor	0.006	0.033	-0.042	-0.009	-0.003	-0.023	-0.027	-0.023	0.082	0.014	0.015	0.005	0.094	-0.028	-0.049
	Pr.FF	0.443	0.244	0.162	0.43	0.467	0.331	0.263	0.284	0.026	0.348	0.369	0.447	0.008	0.283	0.166
	Pr.Cmb	0.445	0.27	0.199	0.413	0.522	0.344	0.283	0.313	0.049	0.395	0.368	0.458	0.024	0.294	0.145
Resident	Cor	-0.013	0.016	0.036	0.063	0.018	0.035	-0.016	-0.005	0.017	-0.035	-0.033	-0.066	0.039	-0.023	-0.057
	Pr.FF	0.29	0.243	0.1	0.006	0.309	0.1	0.203	0.37	0.284	0.08	0.081	0.004	0.081	0.156	0.006
	Pr.Cmb	0.357	0.337	0.152	0.024	0.286	0.156	0.313	0.453	0.294	0.126	0.171	0.025	0.118	0.3	0.059
Short distance migrant	Cor	-0.042	-0.048	0.028	0.02	0.043	0.033	-0.042	-0.048	0.031	-0.004	0.026	-0.013	0.024	0.039	0.014
	Pr.FF	0.08	0.077	0.246	0.261	0.124	0.167	0.05	0.04	0.214	0.466	0.171	0.302	0.268	0.167	0.482
	Pr.Cmb	0.096	0.087	0.185	0.29	0.084	0.185	0.095	0.069	0.178	0.468	0.238	0.367	0.229	0.15	0.346
Neotropical	Cor	0.06	0.043	-0.063	-0.076	-0.064	-0.068	0.062	0.06	-0.05	0.034	-0.003	0.071	-0.061	-0.026	0.033
	Pr.FF	0.043	0.151	0.058	0.014	0.08	0.034	0.011	0.016	0.125	0.166	0.44	0.019	0.065	0.362	0.065
	Pr.Cmb	0.077	0.152	0.06	0.017	0.057	0.043	0.07	0.071	0.112	0.207	0.479	0.036	0.063	0.249	0.214

Appendix B. Logistic regression models for bird species in post-fire salvage logging and using habitat variables measured at two scales (100 m and 500 m). Model fit is shown only for variables selected using AIC criteria, and exhaustive model selection. AUC is area under the receiver operating characteristic curve (ROC) indicating model ability to discriminate species occupancy (present vs. absent). For certain species (§), multiple regression models relating “abundance” with habitat variables were fitted.

Species	Scale	Const.	DEC.Y	BSP.M	JPLY	BFL.M	Brn.Sev	Brn.Het	SalEdge	AquEdge	Dis.GF	Dis.BF	Age.BF	AUC
Dark-eyed Junco §	Sc.100	2.246	.	.	.	.	.	.	3.978	.	.	1.119	.	0.15
<i>Junco hyemalis</i>	Sc.500	-1.856	.	.	0.948	.	8.432	.	.	0.927	.	.	.	0.231
White-throated Sparrow §	Sc.100	1.791	2.002	.	-2.4	-2.583	.	.	.	8.186	.	.	0.982	0.373
<i>Zonotrichia albicollis</i>	Sc.500	1.905	.	.	.	-1.607	.	.	.	1.045	.	-0.029	1.232	0.379
Black-backed Woodpecker	Sc.100	-0.25	.	.	.	0.471	1.86	8.122	-0.971	.	.	0.013	-0.205	0.276
§ <i>Picoides arcticus</i>	Sc.500	1.959	.	.	.	0.257	.	.	.	.	.	.	-0.221	0.106
Hermit Thrush	Sc.100	9.722	.	.	.	.	7.646	.	.	.	-2.44	-0.041	-1.539	0.798
<i>Catharus guttatus</i>	Sc.500	5.754	.	.	.	.	.	.	.	.	.	-0.033	.	0.748
American Robin	Sc.100	1.382	2.312	.	.	-1.771	.	.	.	.	.	.	.	0.697
<i>Turdus migratorius</i>	Sc.500	0.848	.	.	.	-1.557	.	.	.	.	.	.	0.78	0.746
Tree Swallow	Sc.100	0.309	.	.	.	.	8.7327	.	.	.	-1.144	0.046	-1.071	0.757
<i>Tachycineta bicolor</i>	Sc.500	0.746	-1.471	.	.	.	.	.	.	.	.	0.035	.	0.764
Winter Wren	Sc.100	-1.97	.	0.273	.	.	.	.	.	6.698	.	.	.	0.643
<i>Troglodytes troglodytes</i>	Sc.500	-0.182	.	.	.	.	.	.	.	.	.	.	.	nf
Ruby-crowned Kinglet	Sc.100	6.278	.	.	.	.	-14.501	.	-3.822	7.407	.	.	.	0.808
<i>Regulus calendula</i>	Sc.500	4.747	.	.	.	0.792	.	.	.	.	.	.	-0.948	0.757
Yellow-rumped Warbler	Sc.100	5.262	.	.	2.424	.	-13.726	.	.	.	.	.	.	0.767
<i>Dendroica coronata</i>	Sc.500	-1.903	.	0.089	.	.	.	.	.	.	.	.	.	0.615
Eastern Bluebird	Sc.100	-7.511	-2.87	0.53	.	.	8.708	.	5.363	.	1.101	.	.	0.8
<i>Sialia sialis</i>	Sc.500	-3.306	.	.	.	.	.	.	0.564	.	0.903	.	.	0.74
Lincoln's Sparrow	Sc.100	3.93	.	-0.41	.	.	-7.357	.	.	6.497	.	.	.	0.791
<i>Melospiza lincolnii</i>	Sc.500	0.799	.	-0.181	.	.	.	.	.	0.758	.	.	.	0.787

Appendix B. Continued

Species	Scale	Const.	DEC.Y	BSP.M	JPL.Y	BFL.M	Brn.Sev	Brn.Het	SalEdge	AquEdge	Dis.GF	Dis.BF	Age.BF	AUC
Northern Flicker	Sc.100	0.764	.	.	.	-1.607	.	.	.	-7.002	.	-0.078	0.997	0.813
<i>Colaptes auratus</i>	Sc.500	4.521	.	-0.103	.	.	.	.	.	.	-1.203	-0.045	.	0.748
Three-toed Woodpecker	Sc.100	3.083	.	.	-1.733	.	.	.	.	-7.254	.	.	-0.744	0.784
<i>Picoides tridactylus</i>	Sc.500	3.017	.	.	.	.	.	.	.	-0.692	.	.	-0.598	0.768
Brown Creeper	Sc.100	1.219	.	.	.	.	.	.	-4.127	.	.	-0.036	.	0.721
<i>Certhia americana</i>	Sc.500	5.643	1.686	.	.	.	.	.	.	.	.	-0.04	-0.774	0.816
Mourning Warbler	Sc.100	2.052	.	.	-4.644	.	.	.	.	.	-2.497	.	.	0.872
<i>Oporornis philadelphia</i>	Sc.500	2.825	2.358	.	-2.591	-1.082	.	.	.	.	-2.859	.	.	0.895
White-winged Crossbill	Sc.100	1.114	-2.583	.	-2.173	.	.	.	.	-11.26	.	.	.	0.781
<i>Loxia leucoptera</i>	Sc.500	-1.386	.	.	.	.	.	.	.	.	.	.	.	nf
Alder Flycatcher	Sc.100	-1.204	.	-0.323	.	.	.	.	3.273	.	.	.	.	0.748
<i>Empidonax alnorum</i>	Sc.500	-0.78	.	-0.142	.	.	.	.	0.4	.	.	.	.	0.749
Northern Waterthrush	Sc.100	-2.918	.	0.402	.	.	.	.	.	10.33	.	-0.037	.	0.766
<i>Seiurus noveboracensis</i>	Sc.500	2.96	.	.	.	-1.158	.	.	.	0.672	.	-0.082	.	0.742
Red-breasted Nuthatch	Sc.100	2.276	.	.	.	-1.999	.	.	-14.59	-11.42	.	.	.	0.862
<i>Sitta canadensis</i>	Sc.500	3.215	.	.	-1.434	-0.737	.	.	-0.738	.	.	.	.	0.758
Nashville Warbler	Sc.100	1.644	.	.	.	.	-9.374	.	4.165	.	.	.	.	0.761
<i>Vermivora ruficapilla</i>	Sc.500	-1.131	1.089	-0.124	.	.	.	.	.	.	.	.	.	0.691
Swainson's Thrush	Sc.100	-0.746	-2.85	.	.	1.6	.	.	-3.878	.	.	.	.	0.743
<i>Catharus ustulatus</i>	Sc.500	-4.857	.	.	.	0.722	.	.	.	.	.	.	.	0.703
Olive-sided Flycatcher	Sc.100	0.681	.	0.689	.	.	.	.	.	7.624	.	.	-1.812	0.905
<i>Contopus borealis</i>	Sc.500	-9.11	.	0.231	.	.	.	.	.	0.776	.	.	-1.940	0.908
Northern Hawk Owl	Sc.100	4.266	.	.	.	.	.	.	.	.	.	.	-1.514	0.814
<i>Surnia ulula</i>	Sc.500	4.266	.	.	.	.	.	.	.	.	.	.	-1.514	0.814
Rusty Blackbird	Sc.100	-6.142	.	.	.	.	.	.	.	.	.	0.086	.	0.746
<i>Euphagus carolinus</i>	Sc.500	-7.243	-1.42	.	.	.	.	.	.	.	.	0.086	.	0.791

Appendix B. Continued

Species	Scale	constant	DEC.Y	BSP.M	JPL.Y	BFL.M	Brn.Sev	Brn.Het	SalEdge	AquEdge.	Dis.GF	Dis.BF	Age.BF	AUC
Magnolia Warbler	Sc.100	0.587	.	.	.	.	.	.	-3.41	.	-1.066	.	.	0.683
<i>Dendroica magnolia</i>	Sc.500	13.17	.	-0.227	.	.	.	.	-0.435	-1.385	.	.	.	0.877
Belted Kingfisher	Sc.100	-4.777	2.92	.	.	.	.	.	.	9.815	.	.	.	0.729
<i>Megasceryle alcyon</i>	Sc.500	-3.606	2.152	.	.	-1.76	.	.	.	1.09	.	-0.069	.	0.86
Common Nighthawk	Sc.100	-9.694	.	.	.	.	15.106	.	.	.	.	.	.	0.76
<i>Chordeiles minor</i>	Sc.500	-13.31	-2.673	.	.	3.063	.	.	0.58	.	.	0.092	.	0.908
Wilson's Warbler	Sc.100	-3.273	.	.	3.922	.	.	.	.	18.02	.	-0.069	.	0.892
<i>Wilsonia pusilla</i>	Sc.500	-4.416	.	.	.	.	.	.	0.505	.	.	.	.	0.745
Hairy Woodpecker	Sc.100	-0.366	.	.	.	.	.	.	.	.	.	-0.045	.	0.701
<i>Picoides villosus</i>	Sc.500	-7.48	.	.	-1.078	0.549	11.286	.	.	.	.	.	.	0.789
Least Flycatcher	Sc.100	-1.838	.	.	.	.	.	.	-9.927	.	.	.	.	0.808
<i>Empidonax minimus</i>	Sc.500	-3.952	3.262	.	.	.	.	.	-2.259	.	.	.	.	0.971
Common Grackle	Sc.100	-2.853	.	.	.	.	.	.	.	.	.	.	.	nf
<i>Quiscalus quiscula</i>	Sc.500	-8.078	.	.	.	.	.	.	.	0.995	.	.	.	0.732

AUC = nf indicates only intercept was fitted as the best model, which was the case for the following species in both scales: CEDW, COYE. For some species only variables from the landscape scale, e.g., time-since-fire of the neighbouring burned forest (Age.BF) were important, e.g., NOHO.

Habitat codes in columns: Const = Constant; DEC.Y= Deciduous trees (dbh ≤ 9); BSP.M =Black spruce (dbh > 9 cm); JPL.Y = Jack pine (dbh ≤ 9); BFL.M = Balsam fir (dbh > 9 cm); Brn.Sev +Burn severity; Brn.Het =Burn heterogeneity; SalEdge= salvage edge length; AquEdge =Aquatic edge; Dis.GF = Distance to green (unburned) forest; Dis.BF = Distance to burned forest; Age.BF =Age of the neighbouring burned forest