

Supplementary information

Biodiversity and conservation

Composition and diversity of birds and hoverflies communities are impacted by vegetation heterogeneity in wood-pastures in the Swiss Jura.

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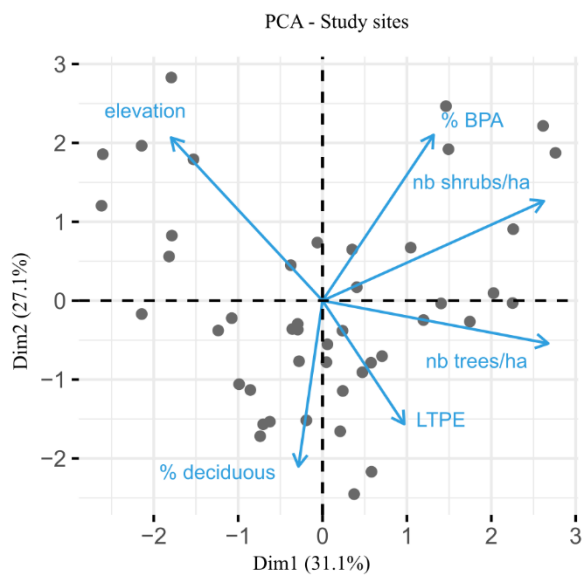


Fig. S1. Principal Component Analysis (PCA) of environmental variables within the 45 study sites of 20 ha



Figure S2. Example of a sampling site of hoverflies with two replicates pantraps separated with a distance of 1 meter

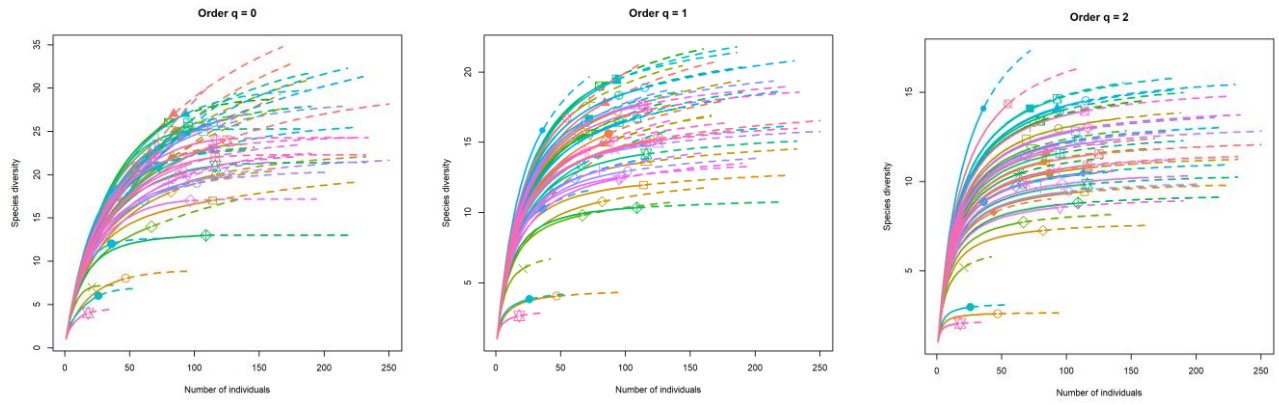


Fig. S3. Bird 'species accumulation curves for the three hill numbers $q=1$ (Richness), $q=2$ (Hill-Shannon), $q=3$ (Hill-Simpson)

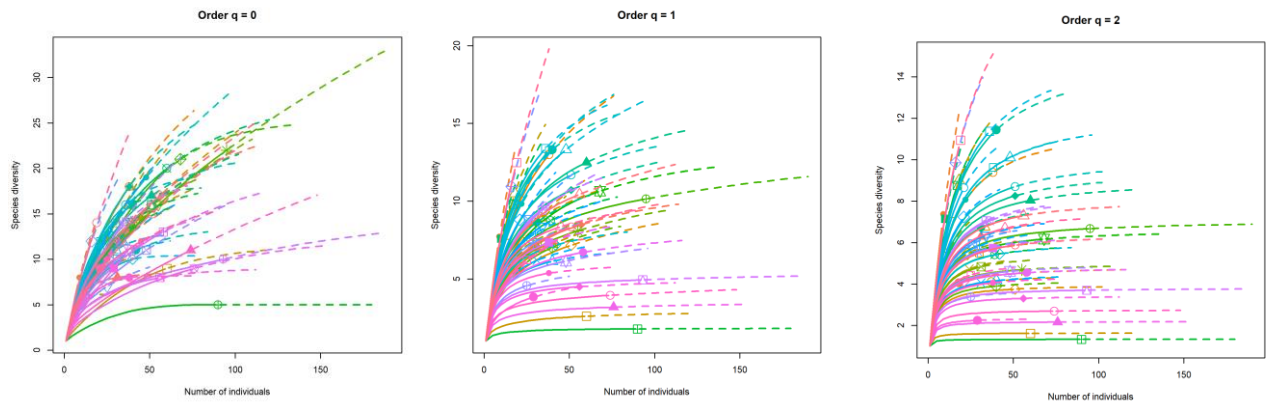


Fig. S4. Hoverflies' species accumulation curves for the three hill numbers $q=1$ (Richness), $q=2$ (Hill-Shannon), $q=3$ (Hill-Simpson)

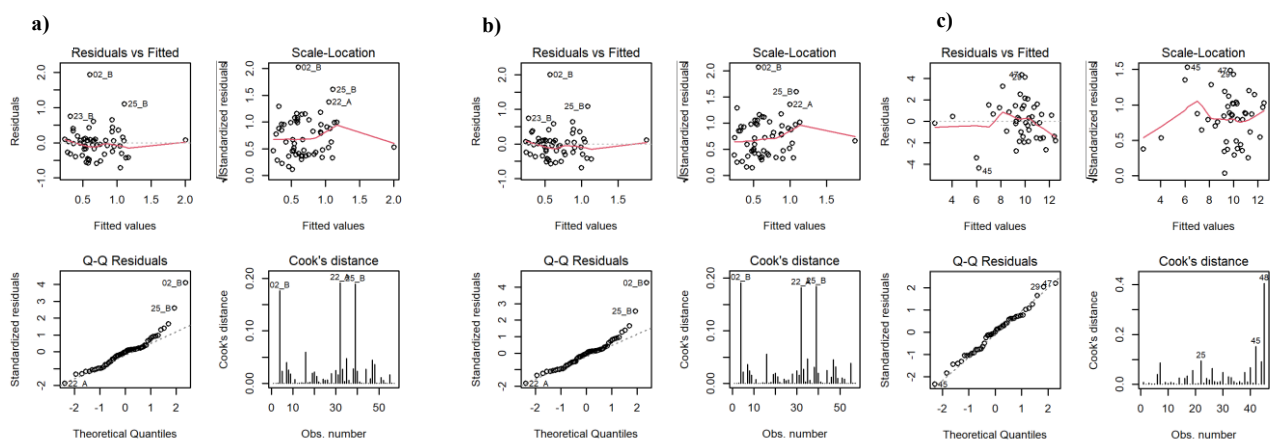
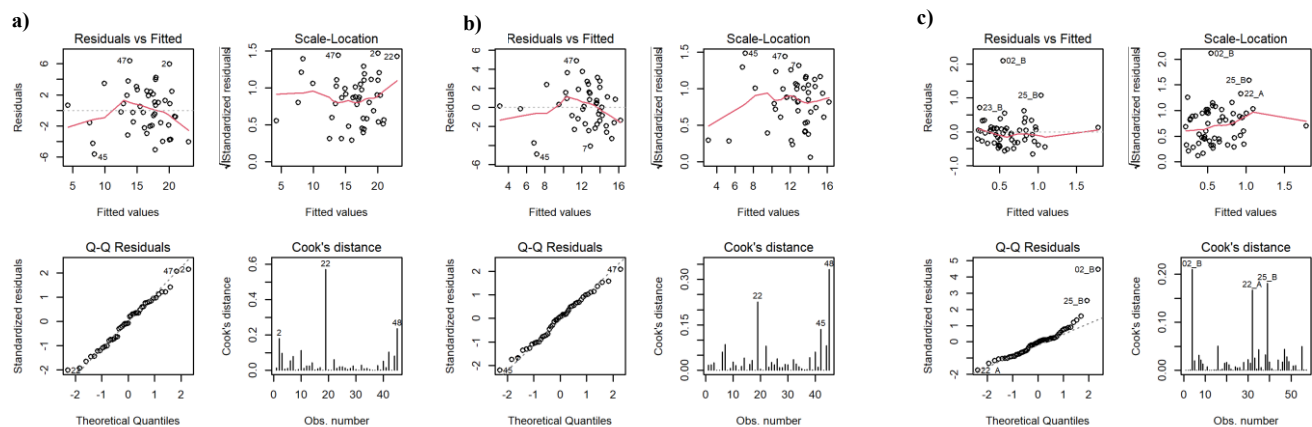


Table S1. 45 study sites with their ID, area, values for each environmental variables year of sampling for hoverflies and year of censusing for birds, as well as site center coordinates.

ID_2	area	Nb tree.ha	% BPA	Exposure	Elevation	Nb Shrub/ha	Year sampling hoverflies	Year sampling birds	% deciduous trees	X	Y
01_Mettairie_Perrin	22.609	25.211	4.271	S-E	1203.000	3.494	23	22	44,62	2567367	1215811
02_La_Dame	19.179	31.232	8.804	N-W	1262.000	6.465	23	22	67,06	2566740	1214991
03_Tete_de_Rang_A	19.937	34.459	86.219	E	1281.000	7.825	22	22	37,66	2556344	1212190
04_Pradiere_A_bis	22.194	16.446	78.673	E	1362.000	29.377	22	22	4,3	2554364	1209976
05_Pradiere_Paturage_bis	22.470	0.080	79.755	S-E	1373.000	1.691	22	22	0	2553034	1208171
07_Sagne_B	20.474	28.866	28.033	Flat	1247.000	6.496	NA	22	23,31	2552304	1212084
08_Sagne_C	20.581	92.998	99.306	S-E	1181.000	22.205	NA	22	17,92	2551342	1210961
09_Sommartel_C	17.748	15.269	35.644	S-E	1298.000	4.846	23	23	52,13	2548065	1208621
10_Sommartel_D	20.713	46.444	36.819	S-E	1259.000	10.670	23	23	18,95	2547324	1207626
11_Cret_aux_Moines_A	20.325	36.212	39.823	S-E	1422.000	12.349	22	22	52,13	2547720	1198120
12_Cret_aux_Moines_C	20.354	46.625	66.351	S-E	1409.000	27.120	22	22	22,07	2546560	1198255
13_Cret_aux_Moines_Paturage	20.122	2.137	31.180	W	1413.000	3.330	22	22	0	2545920	1197258
15_Combe_de_la_Racine	18.753	93.212	1.745	N-W	1137.000	5.386	22	22	10,63	2538442	1203024
16_Le_Baillot_A	21.254	50.155	59.449	Valley	1116.000	12.703	22	22	19,97	2536738	1201361
17_Le_Baillot_C	20.658	63.801	0.370	Valley	1121.000	7.697	22	22	14,98	2536334	1202201
19_Maison_Blanche_E	18.540	67.799	47.742	S-E	1087.000	10.194	22	22	30,87	2532747	1203037
20_Maison_Blanche_A	18.522	65.868	53.454	Vally	1050.000	15.603	22	22	7,97	2531206	1202215
21_Petits_Pres	20.522	49.362		N-W	1120.000	8.576	22	22	49,7	2531901	1198024
22_Haut-Champs_A	20.406	17.642	42.858	S-W	1046.000	7.939	22	22	92,5	2530109	1197336
23_Montagne_de_Butte_A	22.567	49.408	59.608	S-E	1213.000	3.456	23	23	58,5	2529241	1194081
24_Montagne_de_Butte_B	20.352	20.145	15.653	N	1189.000	1.523	23	23	41,6	2528127	1194331
25_Chaux_sur_le_Cret	22.215	0.405	0	N-W	1348.000	0.360	23	23	0	2558697	1215113
26_Mont_Amin	23.390	16.888	30.475	N-E	1297.000	2.266	23	23	46,07	2559900	1215763
27_La_Grognerie	21.165	36.570	8.409	S-E	1227.000	2.929	23	23	51,33	2556926	1212998
28_Tremont	17.430	3.500	38.228	S-E	1294.000	2.524	23	23	46	2556119	1213242
29_Les_Manevets	20.358	6.779	15.341	Vally	1316.000	0.884	NA	23	54,83	2555153	1212020
30_La_Serment	22.619	38.861	12.685	S-E	1271.000	9.328	23	23	33,73	2555209	1210610
31_Grandes_Pradieres	22.091	36.621	36.570	E	1316.000	11.226	NA	23	16,42	2553971	1208649
32_Mont_Racine	22.802	2.938	36.934	S-E	1347.000	6.359	NA	23	0	2552645	1207247
33_Combe-des-Fies	21.210	66.195	29.331	N-W	1208.000	1.132	23	23	73,86	2549595	1205091
34_Pres_devant	22.754	52.474	7.654	S-E	1179.000	8.702	NA	23	39,02	2552550	1205591
35_Sagne_D	22.295	52.927	69.426	Flat	1196.000	10.540	23	23	13,45	2553546	1213417
36_Sagne_E	20.757	84.213	95.729	S-E	1124.000	22.450	23	23	11,97	2550697	1210268

37_La_Grande_Joux	20.175	50.607	3.897	N-E	1168.000	13.978	NA	23	32,5	2544484	1205916
38_Grande_Coeudre	18.668	75.530	0.096	N-E	1177.000	6.214	NA	23	9,55	2542824	1205363
39_Charope	20.502	127.695	0	S-E	1133.000	13.169	23	23	15,19	2529720	1202296
40_Les_Michel	22.672	100.697	35.751	Flat	1067.000	14.776	23	23	6,62	2530161	1201292
41_Les_Prises	20.257	58.202	0	S-E	1097.000	4.245	NA	23	9,71	2529062	1200121
42_Montagne_de_Butte_C	18.396	33.051	0	S-E	1131.000	2.555	NA	23	54,47	2529454	1193085
43_Monpy	19.911	35.608	18.243	S-E	1003.000	9.392		23	67,77	2568621	1215803
44_Metairie_Aarberg	17.794	31.977	43.900	N-E	1263.000	5.395		23	46,64	2567176	1216755
45_Chasseral_A	22.017	0.363	22.245	N-E	1406.000	0.273	NA	23	0	2569144	1219362
46_Chasseral_ouest_B	19.775	67.155	0	N-E	1236.000	3.641	NA	23	26,96	2567853	1219065
47_Chasseral_C	19.681	3.500	40.366	Vally	1352.000	5.183	NA	23	50,6	2568516	1218515
48_Tete_de_Rang_B	20.510	84.398	56.963	S-E	1323.000	29.985	NA	23	65,59	2555579	1211362

Table S2. Technical details of Lidar data used to compute environmental variables

Lidar data sets provided by SITN, Service de la Géomatique et du Registre Foncier			
Year	Point density	Resolution	Corresponding variable
2016	30 pts/m2	1 m	Nb tree/ha
2018	15 pts/m2	1 m	LTPE
2022	100 pts/m2	1m	Nb shrub/ha

Table S3. Corresponding species names of numbers in the CCA plot for bird species

number in the graph	species name
1	<i>Alauda arvensis</i>
2	<i>Lullula arborea</i>
3	<i>Prunella modularis</i>
4	<i>Loxia curvirostra</i>
5	<i>Motacilla alba</i>
6	<i>Emberiza citrinella</i>
7	<i>Pyrrhula pyrrhula</i>
8	<i>Coturnix coturnix</i>
9	<i>Carduelis carduelis</i>
10	<i>Sturnus vulgaris</i>
11	<i>Sylvia atricapilla</i>
12	<i>Certhia familiaris</i>
13	<i>Turdus viscivorus</i>
14	<i>Muscicapa striata</i>
15	<i>Certhia brachydactyla</i>
16	<i>Turdus pilaris</i>
17	<i>Turdus philomelos</i>
18	<i>Ficedula hypoleuca</i>
19	<i>Linaria cannabina</i>
20	<i>Cyanistes caeruleus</i>
21	<i>Parus major</i>
22	<i>Turdus merula</i>
23	<i>Lophophanes cristatus</i>
24	<i>Periparus ater</i>
25	<i>Poecile palustris</i>
26	<i>Turdus torquatus</i>
27	<i>Phylloscopus bonelli</i>
28	<i>Anthus pratensis</i>
29	<i>Lanius collurio</i>
30	<i>Columba palumbus</i>
31	<i>Fringilla coelebs</i>
32	<i>Phylloscopus trochilus</i>
33	<i>Phylloscopus collybita</i>
34	<i>Anthus spinoletta</i>
35	<i>Anthus trivialis</i>
36	<i>Erithacus rubecula</i>
37	<i>Regulus regulus</i>
38	<i>Phoenicurus phoenicurus</i>
39	<i>Phoenicurus ochruros</i>
40	<i>Regulus ignicapilla</i>
41	<i>Serinus serinus</i>
42	<i>Sitta europaea</i>
43	<i>Oenanthe oenanthe</i>
44	<i>Saxicola torquatus</i>
45	<i>Troglodytes troglodytes</i>
46	<i>Chloris chloris</i>

Table S4. Corresponding species names of numbers in the CCA plot for bird species

number in the graph	Species name
1	<i>Annasmya lineata</i>
2	<i>Baccha elongata</i>
3	<i>Brachyopa pilosa</i>
4	<i>Brachyopa testatea</i>
5	<i>Brachypalpoides lentus</i>
6	<i>Chalcosyrphus piger</i>
7	<i>Cheilosia ahenea</i>
8	<i>Cheilosia albipila</i>
9	<i>Cheilosia albitarsis</i>
10	<i>Cheilosia antiqua</i>
11	<i>Cheilosia canicularis</i>
12	<i>Cheilosia derasa</i>
13	<i>Cheilosia faucis</i>
14	<i>Cheilosia flavipes</i>
15	<i>Cheilosia fraterna</i>
16	<i>Cheilosia frontalis</i>
17	<i>Cheilosia hericyniae</i>
18	<i>Cheilosia impudens</i>
19	<i>Cheilosia lasiopa</i>
20	<i>Cheilosia lenis</i>
21	<i>Cheilosia marginata</i>
22	<i>Cheilosia melanura</i>
23	<i>Cheilosia mutabilis</i>
24	<i>Cheilosia nivalis</i>
25	<i>Cheilosia pagana</i>
26	<i>Cheilosia pubera</i>
27	<i>Cheilosia ranunculi</i>
28	<i>Cheilosia urbana</i>
29	<i>Cheilosia vernalis</i>
30	<i>Cheilosia vicina</i>
31	<i>Dasysyrphus albostratus</i>
32	<i>Dasysyrphus pinasteri</i>
33	<i>Dasysyrphus trinsictus</i>
34	<i>Episyrphus balteatus</i>
35	<i>Eristalinus sepulchralis</i>
36	<i>Eristalis arbustorum</i>
37	<i>Eristalis nemorum</i>
38	<i>Eristalis pertinax scop</i>
39	<i>Eristalis similis</i>
40	<i>Eristalis tenax</i>
41	<i>Eumerus flavitarsis</i>
42	<i>Eumerus funeralis</i>
43	<i>Eumerus tarsalis</i>
44	<i>Eupeodes corollae</i>
45	<i>Eupeodes latifasciatus</i>
46	<i>Eupeodes luniger</i>
47	<i>Helophilus pendulus</i>
48	<i>Helophilus trivittatus</i>
49	<i>Lapposyrphus lapponicus</i>
50	<i>Melanostoma mellinum</i>
51	<i>Melanostoma scalare</i>
52	<i>Meligramma cincta</i>
53	<i>Meligramma cingulata</i>
54	<i>Meliscaeva auricollis</i>
55	<i>Meliscaeva cinctella</i>
56	<i>Merodon aureus</i>
57	<i>Merodon cinereus</i>
58	<i>Merodon equestris</i>
59	<i>Myatropa florea</i>
60	<i>Neoascia podagrica</i>
61	<i>Neoascia tenur</i>

62	Neocnemodon sp
63	Orthonevra nabilis
64	Paragus haemorrhous
65	Parasyrphus annulatus
66	Parasyrphus macularis
67	Pipizella viduata
68	Pipza noctiluca
69	Platycheirus albimanus
70	Platycheirus brunnifrons
71	Platycheirus clypeatus
72	Platycheirus occultus
73	Playcheirus manicatus
74	Rhingia campestris
75	Scaeva dignota
76	Scaeva pyrastris
77	Scaeva selenetica
78	Sphaerophoria interrupta
79	Sphaerophoria scripta
80	Sphegina clunipes
81	Syrpita pipiens
82	Syrphus ribesii
83	Syrphus torvus
84	Syrphus vitripennis
85	Volucella bombylons
86	Xanthogramma citrofasciatum
87	Xylota jakutorum
88	Xylota segnis
89	Xylota sylvarum
90	Xylota xanthocnema