Supplementary information for the article: "Saproxylic beetle communities above, within and below tree canopies: a methodological breakthrough highlights the habitat specificity of the canopy-aerosphere interface", *Biodiversity and Conservation*

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SI 1: Description of the forest islands

Forest area	Forest plot	Size of the forest island (ha)	Maximum stand height in neighbouring plots undergoing regeneration (m)	Position of the sampled oak within the forest island	Coordinates of the sampled oak (WSG84) X	Y	Elevation (m.a.s.l.)
Orleans	768	0.58	2	Edge	2.293721	47.999488	148
				Centre	2.293562	47.999664	149
	951	1.39	2	Edge	2.208382	48.037861	142
				Centre	2.209019	48.038360	141
	657	2.76	5	Edge	2.322664	47.972656	137
				Centre	2.323443	47.973512	138
	62	4.75	7	Edge	2.547336	47.797089	149
				Centre	2.547401	47.798162	148
	979	6.70	3	Edge	2.197053	48.046251	134
				Centre	2.198663	48.047170	133
Saint Palais	49	0.85	10	Edge	2.428910	47.263404	270
				Centre	2.428440	47.263848	276
	84	3.51	10	Edge	2.407466	47.294967	231
				Centre	2.406566	47.296182	234
Vierzon	29	0.45	1	Edge	2.177372	47.257068	173
				Centre	2.177643	47.257224	175
	181	2.77	2	Edge	2.113689	47.261581	171
				Centre	2.115511	47.261074	171
	31	7.20	1	Edge	2.173426	47.248441	164
				Centre	2.173484	47.249617	164

***Table S1**: Characteristics of the ten forest islands studied in 2025 and spatial coordinates of the twenty oaks situated at the centre of the plots*

SI 2: Photographs of the installed Canopix®

Fig. S2.1: *Photograph of Canopix® installed on a tree situated on the edge of a forest island. The gallows bracket extends 3.5m above the canopy. Credit: C. Couteau.*

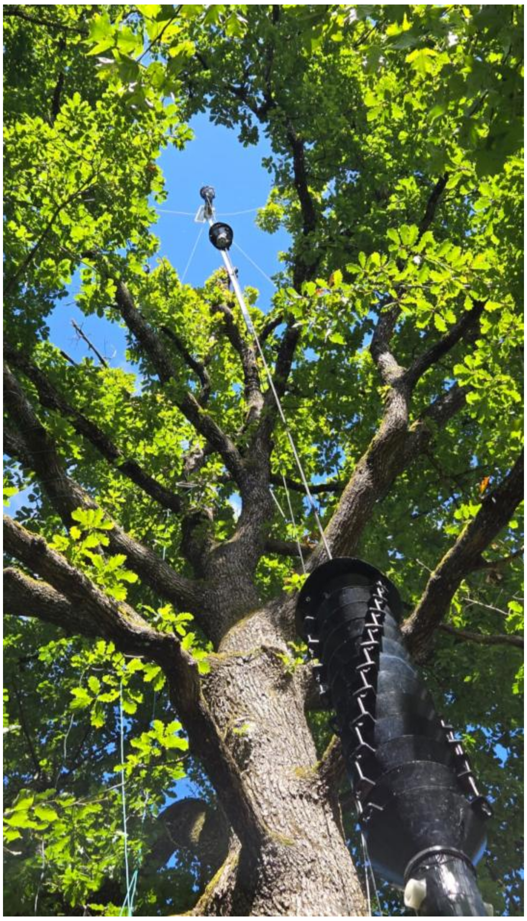


Fig. S2.2: *Photograph of the pruned corridor where the traps slide. Credit: C. Couteau.*

Fig. S2.3: *Photograph of upper part of the Canopix® taken from the upper canopy by a tree climber. Credit: C. Couteau.*

SI 3: Sampling period dates and durations

Year	Sampling period	Start	End	Number of days	Temporal offset
2024	April	05 April	07 May	32	0.1839
	May	07 May	07 June	31	0.1782
	June	07 June	03 July	26	0.1494
	July	03 July	06 August	34	-
	August	06 August	26 September	51	-
	July-August	03 July	06 August	85	0.4885
2025	March	12 March	08 April		
	April-May	08 April	14 May		
	May-June	14 May	17 June		
	June-July	17 June	22 July		
	July-August	22 July	03 September		

***Table S3**: Dates for trap sampling. In 2024, to assess the seasonality of CAI distinctiveness, we calculated the duration of each sampling period and a temporal offset.*

SI 4: Sampled oak characteristics and height of the Lindgren traps

Year	Forest area	Plot	Tree DBH (cm)	Tree height	Lower limit of the crown	Canopy-aerosphere interface	Within canopy Middle (MC)		Below canopy
						Above (AC)	Upper (UC)	Lower (LC)	Below (BC)
2024	Tronçais	TR_19	102	38	19	40	35	25	13
		TR_43	82	34	15	36	31	22	9
		TR_118	68	31	15	33	29	20	9
		TR_207	87	35	14	36	31	18	8
		TR_315	77	38	20	41	36	27	16
		TR_327	88	33	13	36	30	21	9
		TR_337	103	36	16	37	33	24	13
		TR_350	68	29	13	32	28	21	10
		TR_368	75	32	11	34	29	18	5
		TR_413	94	36	15	38	31	22	10
	Vierzon	VZ_81	65	26	13	28	25	18	10
		VZ_22	81	30	7	31	26	12	6
		VZ_63	46	30	20	32	29	24	16
		VZ_71	94	27	12	29	25	14	6
		VZ_170	55	30	16	31	27	20	11
		VZ_179	63	31	19	34	29	23	15
		VZ_236	104	25	9	28	22	15	6
		VZ_249	51	26	15	28	24	19	13
		VZ_270	65	26	12	27	24	17	7
		VZ_290	55	25	15	26	22	17	9
2025	Saint Palais	SP_49_ED	75	24	9	28	17		7
		SP_49_CE	48	25	11	28	17		7
		SP_84_ED	61	31	20	34	25		14
		SP_84_CE	105	30	14	33	22		11
	Vierzon	VZ_29_ED	150	28	10	31	16		8
		VZ_29_CE	77	27	13	29	22		10
		VZ_31_ED	61	25	12	28	17		8
		VZ_31_CE	88	32	16	35	26		13
		VZ_181_ED	75	29	17	31	22		13
		VZ_181_CE	77	34	16	36	23		13
	Orléans	OR_62_ED	85	27	10	29	19		7
		OR_62_CE	96	32	9	33	19		6
		OR_657_ED	45	20	8	23	13		8
		OR_657_CE	44	23	15	27	18		12
		OR_768_ED	87	24	7	27	14		5
		OR_768_CE	80	23	15	27	18		8
		OR_951_ED	89	27	10	29	17		7
		OR_951_CE	96	27	12	30	20		11
		OR_979_ED	76	32	15	34	24		12
		OR_979_CE	74	27	8	29	17		6

***Table S4**: Sample tree measurements and height of all installed Lindgren traps. The names of the plots are composed of the first two letters of the forest area, the number of the forest plot and the position within the forest island in 2025 (ED: edge and CE: centre)*

SI 5: R package references

Name of the package	Reference
betapart	Baselga, A., Orme, D., Villeger, S., De Bortoli, J., Leprieur, F., 2015. betapart: Partitioning beta diversity into turnover and nestedness components.
DHARMa	Hartig, F., Lohse, L., leite, M. de S., 2024. DHARMa: Residual Diagnostics for Hierarchical (Multi-Level / Mixed) Regression Models.
FD	Laliberté, E., Legendre, P., Shipley, B., 2014. FD: measuring functional diversity (FD) from multiple traits, and other tools for functional ecology. https://doi.org/10.32614/CRAN.package.FD
ggalluvial	Brunson, J.C., Read, Q.D., 2026. ggalluvial: Alluvial Plots in "ggplot2."
glmmTMB	Brooks, M., Bolker, B., Kristensen, K., Maechler, M., Magnusson, A., Skaug, H., Nielsen, A., Berg, C., Van Bentham, K., 2017. glmmTMB: Generalized Linear Mixed Models using Template Model Builder. https://doi.org/10.32614/CRAN.package.glmmTMB
iNEXT	Hsieh, T.C., Ma, K.H., Chao, A., 2016. iNEXT: an R package for rarefaction and extrapolation of species diversity (Hill numbers). Methods Ecol. Evol. 7, 1451–1456. https://doi.org/10.1111/2041-210X.12613
multcomp	Hothorn, T., Bretz, F., Westfall, P., 2025. multcomp: Simultaneous inference in general parametric models. https://doi.org/10.32614/CRAN.package.multcomp
MuMIn	Bartoń, K., 2025. MuMIn: Multi-Model Inference. https://doi.org/10.32614/CRAN.package.MuMIn
pairwiseAdonis	Arbizu, P.M., 2025. pmartinezarbizu/pairwiseAdonis.
permute	Simpson, G.L., 2011. permute: Functions for Generating Restricted Permutations of Data. https://doi.org/10.32614/CRAN.package.permute
vegan	Oksanen, J., Simpson, G.L., Blanchet, F.G., Kindt, R., Legendre, P., Minchin, P.R., O'Hara, R.B., Solymos, P., Stevens, M.H.H., Szoecs, E., Wagner, H., Barbour, M., Bedward, M., Bolker, B., Borcard, D., Borman, T., Carvalho, G., Chirico, M., De Caceres, M., Durand, S., Evangelista, H.B.A., FitzJohn, R., Friendly, M., Furneaux, B., Hannigan, G., Hill, M.O., Lahti, L., Martino, C., McGlinn, D., Ouellette, M.-H., Ribeiro Cunha, E., Smith, T., Stier, A., Ter Braak, C.J.F., Weedon, J., 2025. vegan: community ecology package. https://doi.org/10.32614/CRAN.package.vegan

***Table S5**: Names and references for all the R packages used for data analysis.*

SI 6: Encoding of species functional traits

Category	Functional traits	Scale	Meaning of the scale
Potential use of non-saproxylic substrates	Facultative	0	No possible use of a non-saproxylic substrate
		1	Possible use of a non-saproxylic substrate
Host species group	Coniferous, Deciduous	0	Not associated with this group
		1	Possible association with this group
		2	Strong association with this group
Larval trophic regime	Mycetophagous, Xylophagous-Rhizophagous, Saprophagous, Saproxylophagous, Predators and parasitoids	0	Does not have this trophic regime
		1	Secondary trophic regime
		2	Dominant trophic regime
Larval microhabitat	Fungicolous, Fungicolous specialized in lignicolous fungi, Living in sap runs, Lignicolous, Cavicolous, Obligate cavicolous	0	Does not live in this microhabitat
		1	Weak association with this microhabitat
		2	Strong association with this microhabitat
		3	Only associated with this microhabitat
	Nest-dwelling	0	Yes
		1	No
Characteristics of preferred substrate	Decay, after Bütler et al. (2020)	1	Alive
		2	Freshly dead
		3	Initiated decomposition
		4	Advanced decomposition
		5	Extremely decomposed
Characteristics of preferred substrate	Diameter	1	< 15cm
		2	15 - 35cm
		3	35 - 70cm
		4	> 70cm
Characteristics of preferred environment	Canopy	1	Open
		2	Semi-open
		3	Closed
Size	Size	In millimetres	

***Table S6**: Meaning of the fuzzy encoding of all functional traits used for the calculation of functional richness (FRic)*

SI 7: Weather conditions to which the Canopix® were exposed

We obtained daily rainfall and maximum wind speed data from the national weather stations equipped with an anemometer and closest to the three studied forest areas. Data from "République Française, 2026. Données climatologiques de base – quotidiennes", URL: https://www.data.gouv.fr/datasets/donnees-climatologiques-de-base-quotidiennes.

Lurcy-Levis SA weather station (46.71833, 2.947667):

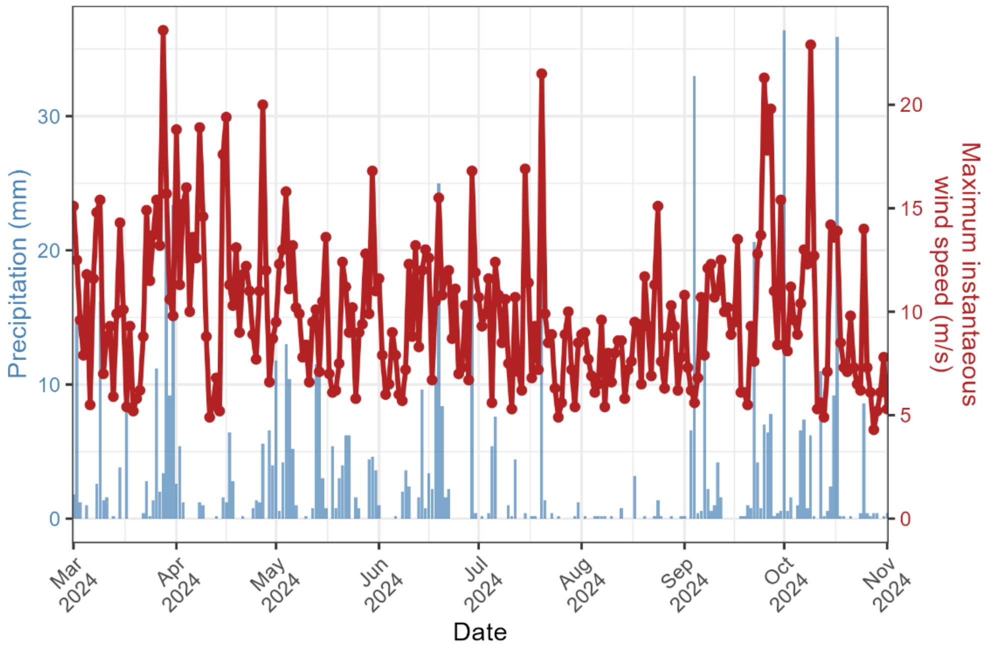


***Fig. S7.1**: Weather conditions near the Tronçais State forest during the period of use of the Canopix®.*

Bourges weather station (47.05917, 2.359833):

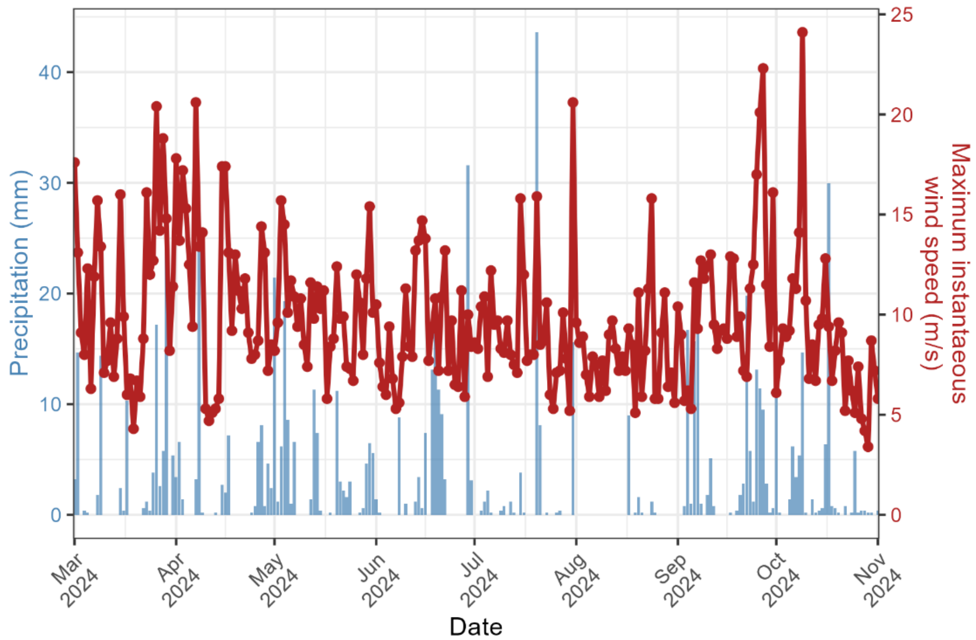


***Fig. S7.2**: Weather conditions near the Vierzon State forest during the first period of use of the Canopix®.*

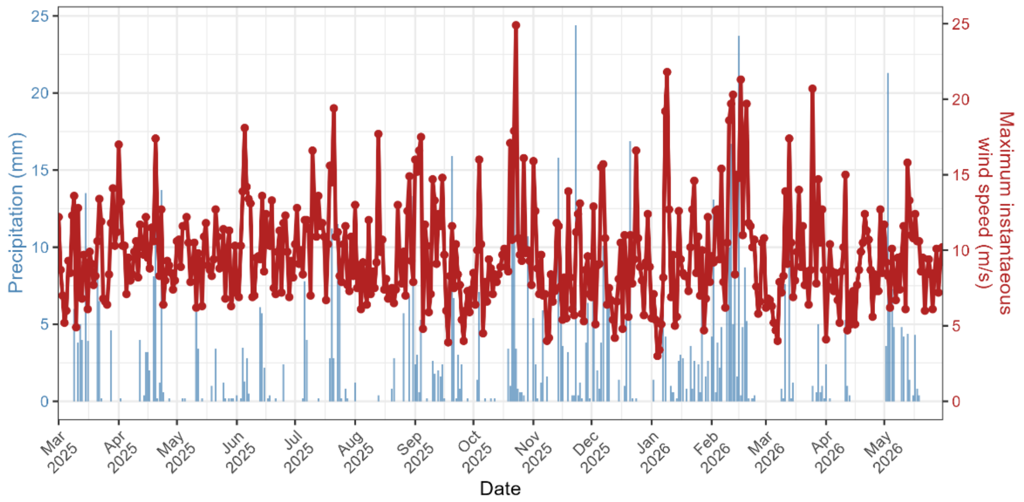


***Fig. S7.3**: Weather conditions near the Vierzon and Saint Palais State forests during the second period of use of the Canopix®.*

Orléans weather station (48.02517, 2.260333):

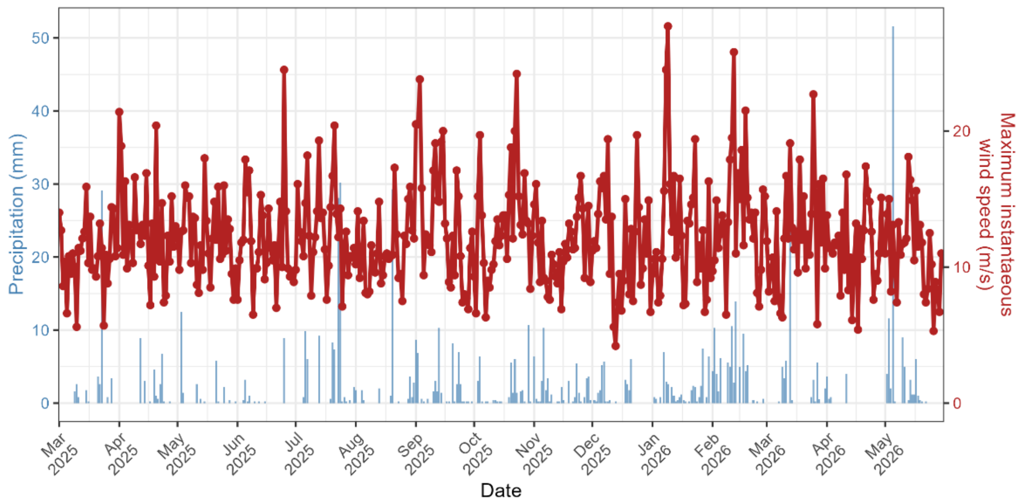


***Fig. S7.4**: Weather conditions near the Orléans State forest during the period of use of the Canopix®.*

SI 8: List of all sampled species and their abundance per stratum

Taxon name (family, subfamily, species)	Abundance							
	2024				2025			Total
	AC	UC	LC	BC	AC	MC	BC	
Aderidae								
Euglenes oculatus				2				**2**
Euglenes pygmaeus							3	**3**
Vanonus brevicornis						1	1	**2**
Anthribidae								
Anthribinae								
Allandrus therondi	6	3						**9**
Allandrus undulatus					1	2	1	**4**
Anthribus nebulosus	1	2	1	3	1	5	3	**16**
Dissoleucas niveirostris			7	3				**10**
Phaeochrotes pudens	1	41	7	1				**50**
Platyrhinus resinosus					5	20	9	**34**
Platystomos albinus	7	10	7	9		2		**35**
Pseudeuparius sepicola	2		3		1	2	2	**10**
Rhaphitropis oxyacanthae	4	28	8	1	2	18	8	**69**
Tropideres albirostris	20	147	18	6	34	106	70	**401**
Choraginae								
Choragus sheppardi		1	1	3	1		1	**7**
Melanopsacus grenieri		1		1				**2**
Biphyllidae								
Diplocoelus fagi	6	6	15	10		3	3	**43**
Bostrichidae								
Bostrichinae								
Lichenophanes varius	1	2	2		1	6	2	**14**
Xylopertha retusa	5	1		1				**7**
Dinoderinae								
Rhyzopertha dominica					5		1	**6**
Bothrideridae								
Bothriderinae								
Bothrideres bipunctatus						1		**1**
Teredinae								
Oxylaemus cylindricus				1			3	**4**
Oxylaemus variolosus	1							**1**
Teredus cylindricus	2	1			1			**4**
Buprestidae								
Agrilinae								
Agrilus angustulus	2	1			6	1	2	**12**
Agrilus cinctus	1							**1**
Agrilus graminis	6	2	1	1				**10**
Agrilus hastulifer	3	5			1			**9**
Agrilus laticornis	11	5	4		1	7	5	**33**
Agrilus obscuricollis	4		2					**6**
Agrilus olivicolor			2	6	3		1	**12**
Agrilus ribesi					1			**1**
Agrilus sulcicollis		2						**2**
Agrilus suvorovi						1		**1**
Agrilus viridis			1	1				**2**
Coraebus undatus		8	3	4		1		**16**
Meliboeus fulgidicollis	3	7	2					**12**
Buprestinae								
Anthaxia ignipennis	1							**1**
Chrysobothris affinis	23	54			2		3	**82**
Chrysobothris solieri		1			1			**2**
Dicerca alni	1		1					**2**
Phaenops cyanea	1							**1**
Cantharidae								
Malthininae								
Malthininae		2	1	2				**5**

Malthinus seriepunctatus						3	2	**5**
Malthodes sp						1		**1**
Carabidae								
Harpalinae								
Calodromius bifasciatus					3	3	5	**11**
Dromius agilis					2			**2**
Dromius meridionalis					4			**4**
Cerambycidae								
Cerambycinae								
Anaglyptus mysticus			3	1			2	**6**
Callimus angulatus	4				5			**9**
Cerambyx cerdo				1				**1**
Cerambyx scopolii	60	14	3	2	62	13	29	**183**
Chlorophorus figuratus					1			**1**
Chlorophorus glabromaculatus	18	7	3	1	5	35	29	**98**
Clytus arietis	13	25	3	6	1	1	8	**57**
Clytus tropicus	15	115	9	4	2	32	5	**182**
Hylotrupes bajulus	12	1			11			**24**
Obrium cantharinum	1	3						**4**
Phymatodes testaceus	11	22	20	14	4	61	47	**179**
Plagionotus arcuatus	1	1			8		1	**11**
Plagionotus detritus	7	2		1	1	1	1	**13**
Poecilium alni	88	41	12	4	48	7	6	**206**
Poecilium pusillum	14	12	5	2	17	10	10	**70**
Poecilium rufipes	1	1		1				**3**
Pseudosphegesthes cinerea	45	57	18	3	27	24	11	**185**
Pyrrhidium sanguineum	14	40	4	4	4	3	1	**70**
Ropalopus femoratus	4	5		1			1	**11**
Rusticoclytus rusticus						1		**1**
Trichoferus pallidus	29	180	14	9	31	86	16	**365**
Xylotrechus antilope	48	115	15	10	13	26	7	**234**
Xylotrechus arvicola			1	3	1	1	5	**11**
Lamiinae								
Acanthocinus griseus					1	1		**2**
Aegomorphus clavipes					1			**1**
Aegomorphus francottei	1	1			1			**3**
Deroplia genei	13	3		4				**20**
Exocentrus adspersus	3	5	1	1	3	8	3	**24**
Exocentrus punctipennis							1	**1**
Leiopus femoratus	5	2			2	4	1	**14**
Leiopus linnei		4	2	2	2	6	3	**19**
Mesosa curculionoides		1	2	2		1		**6**
Mesosa nebulosa	47	97	18	14	85	48	32	**341**
Pogonocherus hispidulus							1	**1**
Pogonocherus hispidus				1		2	2	**5**
Pogonocherus ovatus						1	1	**2**
Saperda perforata					1			**1**
Lepturinae								
Akimerus schaefferi					1			**1**
Anastrangalia dubia	1				1	1	1	**4**
Anoplodera rufipes			1					**1**
Cortodera humeralis	7	10	6	13	1	1	12	**50**
Dinoptera collaris							2	**2**
Grammoptera abdominalis		4	2		2			**8**
Grammoptera ruficornis			1			2	4	**7**
Leptura aurulenta		2			1	3	2	**8**
Pedostrangalia revestita		6	1	3		4	2	**16**
Rhagium bifasciatum	14				16			**30**
Rhagium mordax				2	1		1	**4**
Rhagium sycophanta	1	5	6	2	15	46	46	**121**
Rutpela maculata				4	1	2	4	**11**
Stenocorus meridianus		1					2	**3**
Stictoleptura fulva					1			**1**

Stictoleptura scutellata	5	4	3	2	2	2	3	**21**
Necydalinae								
Necydalis ulmi			1					**1**
Spondylidinae								
Arhopalus rusticus			1		2		1	**4**
Cerylonidae								
Ceryloninae								
Cerylon deplanatum	1	1	1					**3**
Cerylon fagi				1				**1**
Cerylon ferrugineum	2	9	9	4	6	20	13	**63**
Cerylon histeroides	6	8	5	7	8	16	6	**56**
Philothermus evanescens						1		**1**
Ciidae								
Ciinae								
Cis boleti	3	3	2	3		2	1	**14**
Cis comptus	1			1	76	22	11	**111**
Cis festivus	1			1				**2**
Cis fusciclavis				7		1		**8**
Cis micans		7	17	34	12	19	18	**107**
Cis pygmaeus	100	77	21	15	449	60	36	**758**
Cis rugulosus			1			1		**2**
Cis striatulus	133	98	15	4	3		1	**254**
Cis vestitus	1							**1**
Cis villosulus	2	2	2			3		**9**
Ennearthron cornutum		4	4		2	1	8	**19**
Ennearthron pruinosulum						1		**1**
Orthocis alni	2	2	7	6	8	9	9	**43**
Orthocis coluber	14	5	3	3	4	1	3	**33**
Orthocis lucasi		1	1		2	3	2	**9**
Strigocis bicornis						1	1	**2**
Sulcacis bidentulus			1					**1**
Sulcacis fronticornis	3	1	1		1	1		**7**
Sulcacis nitidus	2				1			**3**
Orophinae								
Octotemnus glabriculus					1		1	**2**
Rhopalodontus perforatus				2				**2**
Clambidae								
CLAMBIDAE	1							**1**
Calyptomerus alpestris	1							**1**
Clambus armadillo							1	**1**
Clambus simsoni	1				1			**2**
Clambus sp	3	1	1	2	5	2	1	**15**
Cleridae								
Clerinae								
Allonyx quadrimaculatus	2			1	5	6	23	**37**
Clerus mutillarius	101	191	51	74	68	119	173	**777**
Opilo domesticus						1	4	**5**
Opilo mollis	3	43	32	14	3	24	27	**146**
Opilo pallidus	3	9	1			1		**14**
Thanasimus formicarius				1	5			**6**
Thanasimus sp		1						**1**
Enopliinae								
Dermestoides sanguinicollis							1	**1**
Tarsosteninae								
Paratillus carus		1						**1**
Tillinae								
Tilloidea unifasciata	25	16	2	2	14	8	12	**79**
Tillus elongatus	1	2	1	2		2	4	**12**
Corylophidae								
Corylophinae								
Arthrolips fasciata					3	2	3	**8**
Arthrolips nana					1	2	2	**5**
Arthrolips obscura							6	**6**

Arthrolips picea					4			**4**
Sericoderus lateralis					39	2	1	**42**
CORYLOPHIDAE	32	13	28	42				**115**
Cryptophagidae								
Atomariinae								
Atomaria analis		1						**1**
Ephistemus globulus					164	7	15	**186**
Cucujidae								
Cucujinae								
Pediacus dermestoides		4	1	2	1	1	4	**13**
Curculionidae								
Cossoninae								
Brachytemnus porcatus					5	1		**6**
Melicius cylindrus					1			**1**
Rhyncolus elongatus					40	2	10	**52**
Rhyncolus punctatulus						3	4	**7**
Stenoscelis submuricata					1			**1**
Stereocorynes truncorum					1			**1**
Cryptorhynchinae								
Gasterocercus depressirostris	3	20	60	34	2	18	5	**142**
Mesoptiliinae								
Magdalis flavicornis						8		**8**
Magdalis fuscicornis					1			**1**
Molytinae								
Hylobius abietis							1	**1**
Platypodinae								
Platypus cylindrus	4	2		1	1		2	**10**
Scolytinae								
Anisandrus dispar	8	14	31	54	7	77	211	**402**
Cryphalus asperatus					4	1	2	**7**
Crypturgus cinereus	4	1	1		22	1		**29**
Cyclorhipidion bodoanum	212	424	90	49	278	254	107	**1414**
Dryocoetes autographus	2							**2**
Dryocoetes villosus				2				**2**
Eidophelus caucasicus		2	2					**4**
Eidophelus fagi	3	3	6	6				**18**
Ernoporus tiliae	1		1					**2**
Gnathotrichus materiarius			1				1	**2**
Hylastes angustatus	4	3		3	14	4	6	**34**
Hylastes ater					5	1	1	**7**
Hylastes attenuatus	16	5	5	4	25	3	9	**67**
Hylastes opacus						1		**1**
Hylastinus obscurus	24	14	11	4	10	5	5	**73**
Hylesinus crenatus				1			2	**3**
Hylesinus toranio						2	1	**3**
Hylesinus wachtli	1						1	**2**
Hylurgops palliatus					1			**1**
Hylurgus ligniperda			1		2			**3**
Ips sexdentatus	5	1			2			**8**
Kissophagus vicinus			2	1		1	2	**6**
Orthotomicus erosus	10	1			17	3	1	**32**
Phloeotribus rhododactylus	1	1			1		1	**4**
Phloeotribus sharpi			1					**1**
Phloeotribus sp	1							**1**
Pityogenes bidentatus	14	2			6			**22**
Pityogenes chalcographus	4	1	1	1		1	1	**9**
Pityogenes trepanatus					1			**1**
Pityokteines curvidens	1		1					**2**
Pityokteines spinidens	1							**1**
Pityophthorus buyssoni	1				1			**2**
Pityophthorus pityographus		2			1			**3**
Pityophthorus pubescens	1				5	5	3	**14**

Pteleobius vittatus					1			**1**
Scolytus carpini			4	22		1	6	**33**
Scolytus intricatus	27	69	94	78	17	81	66	**432**
Scolytus pygmaeus		1						**1**
Scolytus rugulosus		4	1	7			4	**16**
Scolytus scolytus		1						**1**
Taphrorychus bicolor	10		70	203	15	13	47	**358**
Taphrorychus villifrons	59	20	27	53	10	3	17	**189**
Tomicus minor	4				1	1		**6**
Tomicus piniperda	1				1		1	**3**
Trypodendron signatum				3	1	10	12	**26**
Trypophloeus binodulus	2				7	3		**12**
Trypophloeus granulatus	5							**5**
Xyleborinus saxesenii	546	569	599	588	914	1745	2064	**7025**
Xyleborus dryographus	17	3		7	7	1	6	**41**
Xyleborus monographus	328	143	85	77	415	142	187	**1377**
Xylosandrus germanus				1		1	1	**3**
Dasytidae								
Dasytinae								
Dasytes aeratus	62	78	47	17	10	20	12	**246**
Dasytes caeruleus	1	3	8	3	31	36	16	**98**
Dasytes nigrocyaneus	5	16	10	2	1	4		**38**
Dasytes pauperculus	157	248	164	50	10	20	11	**660**
Psilothrix viridicoerulea	1				1			**2**
Rhadalinae								
Aplocnemus impressus	1	1	3	3		5	9	**22**
Aplocnemus nigricornis						1		**1**
Aplocnemus sp		4	2	1				**7**
Dermestidae								
Attageninae								
Attagenus pellio		2	3	2				**7**
Attagenus punctatus	3		1	3				**7**
Attagenus sp		1						**1**
Attagenus unicolor	18				13		1	**32**
Dermestinae								
Dermestes bicolor	1	10	4	1		2		**18**
Dermestes lardarius		5	1				1	**7**
Dermestes murinus			1					**1**
Dermestes mustelinus		1						**1**
Dermestes undulatus		1	1				2	**4**
Megatominae								
Anthrenus fuscus				1		4	2	**7**
Anthrenus pimpinellae	7	5						**12**
Anthrenus scrophulariae		3	6	4				**13**
Anthrenus sp	1	2		1				**4**
Anthrenus verbasci					1			**1**
Ctesias serra		9	41	13	1	16	21	**101**
Globicornis fasciata	3							**3**
Globicornis nigripes	2	1	3	3		2	4	**15**
Megatoma undata	106	128	80	71	20	23	36	**464**
Dryophthoridae								
Dryophthorinae								
Dryophthorus corticalis							2	**2**
Elateridae								
Cardiophorinae								
Cardiophorus nigerrimus							1	**1**
Cardiophorus ruficollis						1	3	**4**
Cardiophorus vestigialis			1					**1**
Denticollinae								
Calambus bipustulatus	10	28	32	8	6	47	31	**162**
Hemicrepidius hirtus	1	1		3			1	**6**
Stenagostus rhombeus		17	10	11	7	18	19	**82**
Drapetinae								

Drapetes mordelloides							1	**1**
Elaterinae								
Ampedus balteatus	3	10	3		2	4	9	**31**
Ampedus cardinalis							1	**1**
Ampedus cinnabarinus					2			**2**
Ampedus elongatulus	8	45	14	6	10	50	35	**168**
Ampedus nigerrimus	9	25	19	24	2	24	51	**154**
Ampedus pomonae	3	1	1					**5**
Ampedus pomorum	5	14	6	3		1	10	**39**
Ampedus quercicola	10	14	7	12	8	12	14	**77**
Ampedus rufipennis	1	2						**3**
Ampedus sanguineus	3	4		1		1	1	**10**
Ampedus sanguinolentus	112	216	23	13	51	13	26	**454**
Ampedus scrofa			1					**1**
Brachygonus bouyoni		2	3					**5**
Brachygonus campadellii						1		**1**
Brachygonus megerlei	1	8	16	7		21	8	**61**
Brachygonus ruficeps			1	1		2	2	**6**
Ischnodes sanguinicollis						1		**1**
Procraerus tibialis		1	1					**2**
Melanotinae								
Melanotus villosus	3	14	22	12	3	17	24	**95**
Endomychidae								
Anomorphinae								
Symbiotes gibberosus	2	1	15	24		7	8	**57**
Symbiotes latus				1				**1**
Symbiotes sp	1		2	1				**4**
Erotylidae								
Cryptophilinae								
Cryptophilus integer	1	2						**3**
Dacninae								
Dacne bipustulata	1	36	22	26	10	83	63	**241**
Tritominae								
Triplax lepida	1	8		2				**11**
Triplax rufipes			1	6				**7**
Triplax russica		1	30	22		4	17	**74**
Tritoma bipustulata		3	4	5		1	2	**15**
Eucinetidae								
Eucinetus haemorrhoidalis	2							**2**
Eucnemidae								
Eucneminae								
Eucnemis capucina				1		1	2	**4**
Macraulacinae								
Dromaeolus barnabita	1	47	11	6	13	94	27	**199**
Nematodes filum	2	6	7	6	1	15	36	**73**
Melasinae								
Hylis olexai				1	1	2	6	**10**
Hylis simonae			2	2		5	1	**10**
Isorhipis marmottani				8	2	6	46	**62**
Isorhipis melasoides		1	12	53	5	4	34	**109**
Melasis buprestoides	11	46	10	3	14	25	20	**129**
Microrhagus pygmaeus					1		3	**4**
Microrhagus pyrenaeus			2	1				**3**
Histeridae								
Abraeinae								
Abraeus perpusillus					1		1	**2**
Abraeus roubali	1							**1**
Plegaderus dissectus			1	2		1	3	**7**
Dendrophilinae								
Carcinops pumilio	10	6	1		6	2	1	**26**
Dendrophilus punctatus			3			1	1	**5**
Kissister minimus					1			**1**
Paromalus flavicornis	3	4		1	3	5		**16**

Histerinae								
Hololepta plana		1				1		**2**
Margarinotus merdarius						1		**1**
Platysoma compressum	3	2						**5**
Saprininae								
Gnathoncus buyssoni		3	14	8		4	1	**30**
Gnathoncus communis			1					**1**
Gnathoncus nidorum		12	35	18				**65**
Gnathoncus rotundatus			1					**1**
Laemophloeidae								
Cryptolestes corticinus	4	2		3			1	**10**
Cryptolestes duplicatus	4	9	3	3	17	11	30	**77**
Cryptolestes ferrugineus	19	1			16	1	6	**43**
Cryptolestes pusillus	1	1						**2**
Cryptolestes sp	1	1						**2**
Cryptolestes spartii						1		**1**
Laemophloeus monilis							1	**1**
Lathropus sepicola	13	26	3	1	4	1		**48**
Leptophloeus alternans				1				**1**
Notolaemus unifasciatus	1	3		1	2	4		**11**
Placonotus testaceus	1	1	2		4		3	**11**
Latridiidae								
Corticariinae								
Corticaria bella						5	1	**6**
Corticaria crenulata					1			**1**
Corticaria polypori							1	**1**
Corticaria serrata							1	**1**
Corticaria sp					12	3	2	**17**
Corticariinae	347	308	485	356	35	31	34	**1596**
Corticarina curta					54	9	6	**69**
Corticarina minuta					2	2		**4**
Corticarina similata					4	1	2	**7**
Corticarina truncatella					33	1	2	**36**
Cortinicara gibbosa					567	35	40	**642**
Melanophthalma distinguenda					58	123	64	**245**
Melanophthalma extensa						16	18	**34**
Melanophthalma fuscipennis					1			**1**
Melanophthalma transversalis					85	8	18	**111**
Latridiinae								
Cartodere bifasciata	1				1		1	**3**
Cartodere constricta	1				2			**3**
Cartodere delamarei	1							**1**
Cartodere nodifer							1	**1**
Enicmus atriceps					3			**3**
Enicmus brevicornis					1	2	1	**4**
Enicmus histrio					40	1	1	**42**
Enicmus rugosus					9	99	74	**182**
Enicmus sp	32	197	487	329				**1045**
Enicmus testaceus					1	10	15	**26**
Enicmus transversus					2		1	**3**
Latridius hirtus		1	6	13	1	5	4	**30**
Leiodidae								
Leiodinae								
Agathidium sp							1	**1**
Anisotoma orbicularis					1			**1**
Colenis immunda						1		**1**
Lucanidae								
Dorcinae								
Dorcus parallelipipedus	2		2	3	1	1	5	**14**
Lucaninae								
Lucanus cervus				1		12	3	**16**
Platycerinae								
Platycerus caraboides	12	1		2	7		5	**27**

Lycidae								
Lygistopterus sanguineus	211	110	16	14	83	20	16	**470**
Lymexylidae								
Lymexylinae								
Lymexylon navale			2	1		1	1	**5**
Malachiidae								
Malachiinae								
Anthocomus fasciatus					2		2	**4**
Axinotarsus marginalis					14	5	5	**24**
Cordylepherus viridis					1			**1**
Sphinginus lobatus					8	7	2	**17**
Melandryidae								
Melandryinae								
Abdera biflexuosa	86	35	14	6	53	14	10	**218**
Abdera flexuosa						1		**1**
Abdera quadrifasciata		16	10	2	11	41	21	**101**
Anisoxya fuscula				1				**1**
Melandrya barbata		1	4	7		1	6	**19**
Melandrya caraboides				1				**1**
Orchesia undulata				2			2	**4**
Phloiotrya tenuis	14	33	12	5	6	8	5	**83**
Osphyinae								
Conopalpus brevicollis				3	1			**4**
Conopalpus testaceus	1	3	6	2	3	22	14	**51**
Monotomidae								
Monotominae								
Monotoma bicolor	2							**2**
Monotoma longicollis	1			1	3			**5**
Monotoma picipes	8	1			11	4	4	**28**
Monotoma spinicollis					1			**1**
Rhizophaginae								
Rhizophagus bipustulatus			8	5	1	9	7	**30**
Rhizophagus depressus					1	1	3	**5**
Rhizophagus fenestralis				1				**1**
Rhizophagus ferrugineus							1	**1**
Rhizophagus perforatus				1				**1**
Rhizophagus sp				1				**1**
Mordellidae								
Mordellinae								
Hoshihananomia gacognei	1							**1**
Mordella brachyura	18	2			9		2	**31**
Mordellistena neuwaldeggiana		6	3	1				**10**
Mordellistena variegata	1	1		2				**4**
Tolida artemisiae	1					1		**2**
Tomoxia bucephala	1	40	25	31	2	27	62	**188**
Variimorda mendax			1					**1**
Variimorda villosa			1					**1**
Mycetophagidae								
Berginినae								
Berginus tamarisci	685	459	45	30	116	9	6	**1350**
Mycetophaginae								
Eulagius filicornis	224	173	82	116	20	122	92	**829**
Litargus connexus	47	61	52	59	46	38	36	**339**
Mycetophagus fulvicollis		1	2	1	1	3	1	**9**
Mycetophagus multipunctatus			1	3				**4**
Mycetophagus piceus				1			1	**2**
Mycetophagus populi			1					**1**
Mycetophagus quadriguttatus						1	2	**3**
Triphyllus bicolor						1		**1**
Typhaea stercorea	1							**1**
Nitidulidae								
Carpophilinae								
Carpophilus sexpustulatus					3			**3**

Cryptarchinae								
Cryptarcha strigata	3	18	15	11	11	120	71	**249**
Cryptarcha undata	2	38	13	6	15	95	49	**218**
Glischrochilus quadriguttatus						3	1	**4**
Epuraeinae								
Epuraea sp	2	1			8	3	5	**19**
Nitidulinae								
Ipidia binotata				1				**1**
Soronia grisea	2	9	19	18	22	143	161	**374**
Soronia oblonga		8				1	2	**11**
Oedemeridae								
Nacerdinae								
Nacerdes carniolica	196	364	11	9	171	498	222	**1471**
Oedemerinae								
Ischnomera caerulea	18	23	12	17	6	35	35	**146**
Oedemera femoralis					24	10	4	**38**
Ptiliidae								
Acrotrichinae								
Acrotrichis sp					36	9	10	**55**
Ptiliinae								
Ptiliinae					1		1	**2**
PTILIIDAE	23	5	2	2				**32**
Ptinidae								
Anobiinae								
Anobium hederae			1	1				**2**
Anobium inexspectatum	1			1				**2**
Gastrallus immarginatus	3	3	26	36	3	24	41	**136**
Gastrallus laevigatus	15	24	16	19	7	20	13	**114**
Hadrobregmus denticollis							2	**2**
Hemicoelus canaliculatus				1				**1**
Hemicoelus costatus			4	10				**14**
Hemicoelus fulvicornis			2	4	2	9	21	**38**
Oligomerus brunneus	2	10	11	4	1	23	25	**76**
Priobium carpini							2	**2**
Dorcatominae								
Dorcatoma androgyna			2	4				**6**
Dorcatoma chrysomelina				3	1	3	5	**12**
Dorcatoma flavicornis							1	**1**
Dorcatoma minor				1				**1**
Dorcatoma setosella			1	1				**2**
Dorcatoma substriata			6	4				**10**
Stagetus sp				1			2	**3**
Ernobiinae								
Ernobius mollis					1			**1**
Ernobius nigrinus					1			**1**
Hyperisus plumbeum	6	8	13	15	2	10	13	**67**
Xestobium rufovillosum			1	12			12	**25**
Eucradinae								
Hedobia pubescens	7	3	5	2				**17**
Ptinomorphus imperialis			4	5		1	2	**12**
Mesocoelopodinae								
Mesocoelopus collaris					1	1		**2**
Mesocoelopus niger	1	3	7	8		3	1	**23**
Ptilininae								
Ptilinus pectinicornis			4	17	1	12	30	**64**
Ptininae								
Ptinus aubei					1			**1**
Ptinus bidens							1	**1**
Ptinus rufipes					1		1	**2**
Ptinus subpillosus					2		30	**32**
Xyletininae								
Xyletinus sp	1	3	1		6		2	**13**

Pyrochroidae								
Pyrochroinae								
Pyrochroa coccinea	9	8	2		2	1	2	**24**
Salpingidae								
Salpinginae								
Cariderus aeneus			1	1				**2**
Lissodema denticolle		1	1	9		2	1	**14**
Salpingus planirostris		3	8	9	1	6	8	**35**
Salpingus ruficollis			2	7				**9**
Salpingus tapirus		1		3		1	1	**6**
Vincenzellus ruficollis			3	12		2	2	**19**
Scarabaeidae								
Cetoniinae								
Cetonia aurata	46	82	32	16	20	146	41	**383**
Cetonischema speciosissima	4	79	33	1	2	37	23	**179**
Liocola marmorata	1	2		1		6	1	**11**
Potosia cuprea	9	6			3	11	4	**33**
Potosia fieberi	34	75	15	8	16	25	23	**196**
Trichiinae								
Gnorimus nobilis		1	6	1		2		**10**
Valginae								
Valgus hemipterus		2						**2**
Scirtidae								
Prionocyphon serricornis			14	3		4	2	**23**
Scraptiidae								
Anaspidinae								
Anaspis fasciata	225	78	37	23	198	38	25	**624**
Anaspis flava		1	2	4			1	**8**
Anaspis frontalis	1		1	2	2	2	4	**12**
Anaspis garneysi	1	12	9	17		2	1	**42**
Anaspis lurida	5	12	3	4	2	9	8	**43**
Anaspis maculata	81	54	34	29	117	40	25	**380**
Anaspis pulicaria					1	3	2	**6**
Anaspis regimbarti	42	56	61	10	19	18	26	**232**
Anaspis sp	3	18	14	11				**46**
Scraptiinae								
Scraptia fuscula				1				**1**
Scraptia testacea							2	**2**
Silvanidae								
Brontinae								
Uleiota planatus	3	24	2	4	14	6	7	**60**
Silvaninae								
Ahasverus advena	2				1		1	**4**
Silvanoprus fagi	1			1	2		2	**6**
Silvanus bidentatus					1			**1**
Silvanus unidentatus	1			2	1			**4**
Sphindidae								
Sphindinae								
Aspidiphorus lareyniei		3	8	19	1	2	5	**38**
Aspidiphorus orbiculatus		1						**1**
Staphylinidae								
Osoriinae								
Thoracophorus corticinus					1			**1**
Pselaphinae								
Batrisus formicarius							1	**1**
Bibloporus bicolor					1			**1**
Bryaxis bulbifer					2			**2**
Bryaxis curtisii					1			**1**
Bythinus macropalpus					1			**1**
Scaphidiinae								
Scaphisoma agaricinum					13	1	2	**16**
Scydmaeninae								
Neuraphes angulatus					2			**2**

Stenichnus godarti						1		**1**
Stenichnus scutellaris					22	5	3	**30**
Staphylininae								
Atrecus affinis							1	**1**
Hesperus rufipennis					1	182	90	**273**
Quedius dilatatus				2				**2**
Quedius truncicola						7	4	**11**
Tenebrionidae								
Alleculinae								
Allecula rhenana				1				**1**
Gonodera luperus	1	1	2					**4**
Mycetochara maura	1	16	77	58		80	45	**277**
Prionychus fairmairii	1	12	20	10		30	20	**93**
Pseudocistela ceramboides					2			**2**
Diaperinae								
Alphitophagus bifasciatus				1				**1**
Corticeus fasciatus						1	2	**3**
Corticeus linearis			1					**1**
Corticeus suberis		2		1				**3**
Diaperis boleti							2	**2**
Pentaphyllus testaceus			1	4			2	**7**
Platydema violacea				1			1	**2**
Tenebrionidae								
Palorus depressus		2	2				1	**5**
Palorus subdepressus					3			**3**
Tenebrioninae								
Alphitobius diaperinus	16	3			26	4		**49**
Nalassus laevioctostriatus	1	2	3	6	1		4	**17**
Tribolium castaneum	11	3			89	7	5	**115**
Throscidae								
Aulonothroscus brevicollis			3	1		2		**6**
Trogidae								
Trox perrisi						1		**1**
Trox scaber			3				1	**4**
Trogossitidae								
Trogossitinae								
Nemozoma elongatum			2	3	1		3	**9**
Tenebroides fuscus		1	2	2		3	7	**15**
Zopheridae								
Colydiinae								
Aulonium ruficorne				1				**1**
Bitoma crenata	19	7			27		1	**54**
Colobicus hirtus	9	12	8	10	14	26	61	**140**
Colydium elongatum	2	1	1	2	1	6	5	**18**
Colydium noblecourti			1					**1**
Coxelus pictus				1				**1**
Endophloeus markovichianus	40	15	14	4	16	7	3	**99**
Synchita separanda				1				**1**
Synchita undata			1		1		1	**3**
Zopherinae								
Pycnomerus terebrans	2	3	1	9		2	2	**19**

Table S8: *Details of all sampled saproxylic beetle species and their abundance per stratum and per year. No number means that no specimens of the species were captured in the stratum for that year.*

SI 9: NMDS representation of taxonomic composition by stratum in 2024 and 2025

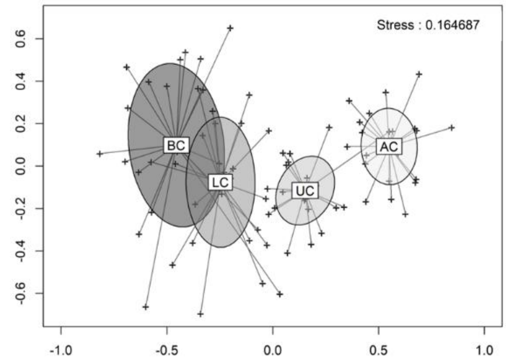
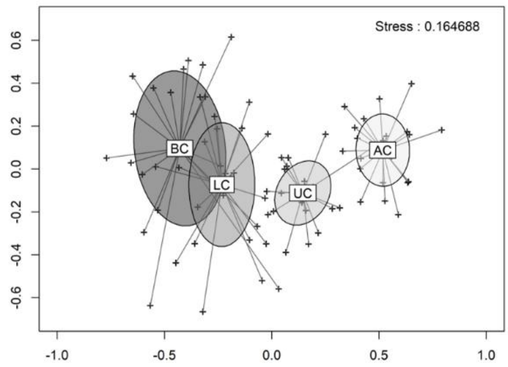
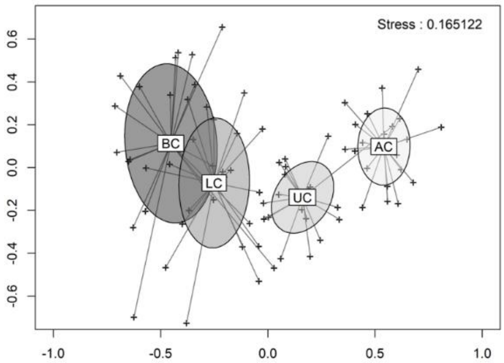
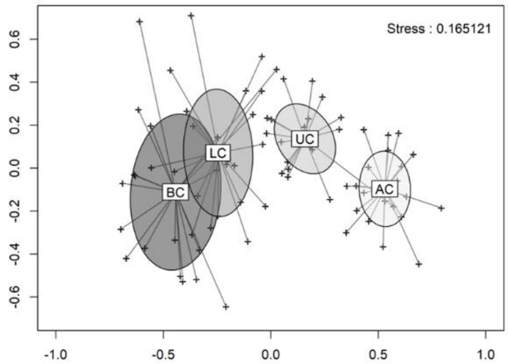
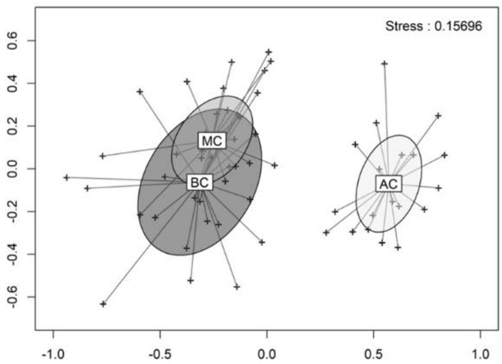
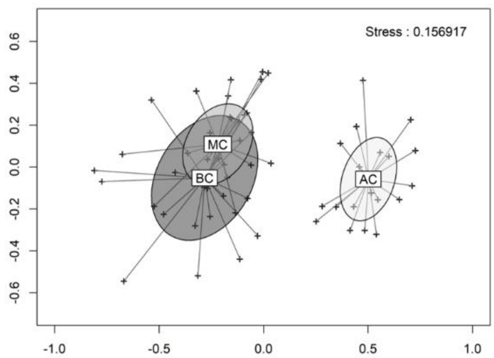
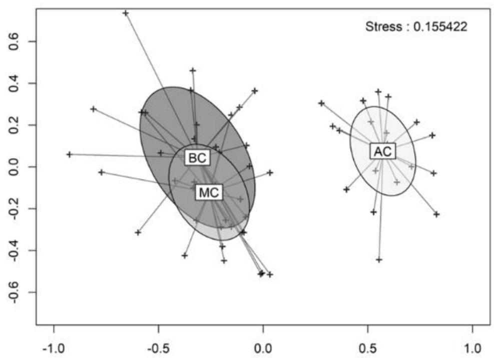
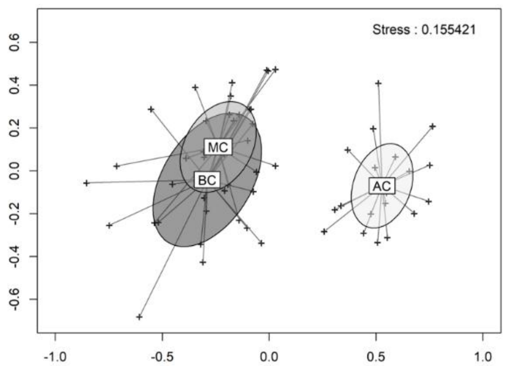
Year	Dataset	Bray-Curtis	Jaccard
2024	All species		
	Without singletons and doubletons		
2025	All species		
	Without singletons and doubletons		

***Table S9**: NMDS results per year and per analysis strategy.*

SI 10: Details of the Permanova and dissimilarity values in yearly catch for both year

Year	Dataset	Dissimilarity index	Global stratum effect	Pairwise stratum comparison		
				Compared strata	Significance	Dissimilarity value
2024	All species	Bray-Curtis	R^2 = 23% p-value = 0.0001	AC - UC	***	0.6395
				AC - LC	***	0.7384
				AC - BC	***	0.7645
				UC - LC	***	0.6983
				UC - BC	***	0.7434
				LC - BC	*	0.6485
		Jaccard	R^2 = 16% p-value = 0.0001	AC - UC	***	0.7768
				AC - LC	***	0.8475
				AC - BC	***	0.8644
				UC - LC	***	0.8187
				UC - BC	***	0.8498
				LC - BC	*	0.7818
	Without singletons and doubletons	Bray-Curtis	R^2 = 24% p-value = 0.0001	AC - UC	***	0.6370
				AC - LC	***	0.7360
				AC - BC	***	0.7616
				UC - LC	***	0.6965
				UC - BC	***	0.7411
				LC - BC	*	0.6444
		Jaccard	R^2 = 17% p-value = 0.0001	AC - UC	***	0.7749
				AC - LC	***	0.8459
				AC - BC	***	0.8625
				UC - LC	***	0.8174
				UC - BC	***	0.8482
				LC - BC	*	0.7786
2025	All species	Bray-Curtis	R^2 = 20.4% p-value = 0.0001	AC - MC	***	0.7577
				AC - BC	***	0.7718
				MC - BC	ns	0.6727
		Jaccard	R^2 = 14.2% p-value = 0.0001	AC - MC	***	0.8595
				AC - BC	***	0.8678
				MC - BC	ns	0.7980
	Without singletons and doubletons	Bray-Curtis	R^2 = 20.6% p-value = 0.0001	AC - MC	***	0.7554
				AC - BC	***	0.7690
				MC - BC	ns	0.6697
		Jaccard	R^2 = 14.3% p-value = 0.0001	AC - MC	***	0.8580
				AC - BC	***	0.8630
				MC - BC	ns	0.7957

Table S10: *PERMANOVA results for the global model and pairwise comparisons among strata, including inter-stratum dissimilarity values, with Bray-Curtis and Jaccard dissimilarity indices. Significance codes: *** < 0.001, ** < 0.01, * < 0.05 and ns >= 0.05.*

SI 11: Sørensen dissimilarity partitioning

			Mean Total Sørensen diversity (β_sor)	Mean % Turnover (β_sim)	Mean % Nestedness (β_sne)
2024	With singletons and doubletons	All	0,55	87,14	12,86
		UC / LC	0,49	84,01	15,99
		UC / BC	0,58	89,96	10,04
		LC / BC	0,64	91,53	8,47
	Without singletons and doubletons	All	0,53	86,06	13,94
		UC / LC	0,48	81,90	18,10
		UC / BC	0,57	89,88	10,12
		LC / BC	0,62	90,56	9,44
2025	With singletons and doubletons	All	0,56	89,54	10,46
		AC / MC	0,58	93,24	6,76
		AC / BC	0,63	87,97	12,03
	Without singletons and doubletons	All	0,54	89,03	10,97
		AC / MC	0,56	92,39	7,61
		AC / BC	0,61	87,11	12,89

Table S11: Sørensen dissimilarity values and partitioning between the CAI (AC) and the other strata in 2024 and 2025. The values are mean values for all 20 plots per year.

SI 12: Details of the values and differences in intra-stratum heterogeneity in yearly catch data according to various analytical strategies

Year	Dataset	Dissimilarity index	Differences in intra-stratum heterogeneity (permuted p-val)	Mean values		Pairwise stratum comparison		
				Stratum	Average distance to centroid	Compared strata	Signif.	Permuted p-value
2024	All species	Bray-Curtis	p-value = 0.0057 **	AC	0.37 ± 0.08	AC - UC	ns	0.0367
				UC	0.42 ± 0.07	AC - LC	ns	0.0142
				LC	0.42 ± 0.07	AC - BC	*	0.0027
				BC	0.45 ± 0.08	UC - LC	ns	0.6748
						UC - BC	ns	0.2492
						LC - BC	ns	0.4566
		Jaccard	p-value = 0.0028 **	AC	0.48 ± 0.07	AC - UC	*	0.0322
				UC	0.52 ± 0.06	AC - LC	*	0.0117
				LC	0.53 ± 0.05	AC - BC	*	0.0024
				BC	0.54 ± 0.06	UC - LC	ns	0.6683
						UC - BC	ns	0.2453
						LC - BC	ns	0.4541
	Without singletons and doubletons	Bray-Curtis	p-value = 0.0067 **	AC	0.37 ± 0.08	AC - UC	ns	0.0337
				UC	0.42 ± 0.07	AC - LC	ns	0.0152
				LC	0.42 ± 0.07	AC - BC	*	0.0037
				BC	0.44 ± 0.08	UC - LC	ns	0.7147
						UC - BC	ns	0.3217
						LC - BC	ns	0.5099
		Jaccard	p-value = 0.0037 **	AC	0.48 ± 0.07	AC - UC	ns	0.0290
				UC	0.52 ± 0.06	AC - LC	ns	0.0114
				LC	0.53 ± 0.05	AC - BC	*	0.0027
				BC	0.54 ± 0.06	UC - LC	ns	0.7061
						UC - BC	ns	0.3079
						LC - BC	ns	0.5044
2025	All species	Bray-Curtis	p-value = 0.0024 **	AC	0.40 ± 0.07	AC - MC	ns	0.0834
				MC	0.44 ± 0.07	AC - BC	*	0.0012
				BC	0.48 ± 0.07	MC - BC	ns	0.0822
		Jaccard	p-value = 0.0022 **	AC	0.50 ± 0.06	AC - MC	ns	0.0696
				MC	0.53 ± 0.05	AC - BC	*	0.0011
				BC	0.56 ± 0.05	MC - BC	ns	0.0960
	Without singletons and doubletons	Bray-Curtis	p-value = 0.0025 **	AC	0.40 ± 0.07	AC - MC	ns	0.0742
				MC	0.44 ± 0.07	AC - BC	*	0.0012
				BC	0.48 ± 0.07	MC - BC	ns	0.0895
		Jaccard	p-value = 0.0021 **	AC	0.50 ± 0.06	AC - MC	ns	0.0614
				MC	0.53 ± 0.06	AC - BC	*	0.0011
				BC	0.56 ± 0.05	MC - BC	ns	0.1025

***Table S12**: Mean distance to the centroid per stratum (a proxy for beta-diversity), and results of tests for differences in these intra-stratum homogeneities for the overall model and pairwise comparisons*

SI 13: GLMM results for all entomological metrics

Metric		ab. colsx	sr. colsx	ab. colsx rar	sr. colsx rar	ab. colsx com	sr. colsx com	FRic	ab. myc	sr. myc	ab. xyl	sr. xyl	ab. sxy	sr. sxy	ab. zoo	sr. zoo	ab. flo	sr. flo	CWM canop	CWM diam	CWM size
Family used for the model		nbinom2 (log)	gaussian (identity)	nbinom1 (sqrt)	genpois (log)	nbinom2 (log)	nbinom2 (log)	nbinom12 (log)	nbinom1 (log)	lognormal (log)	nbinom2 (log)	lognormal (identity)	nbinom2 (log)	nbinom2 (log)	nbinom1 (sqrt)	nbinom2 (log)	nbinom2 (log)	nbinom2 (log)	lognormal (log)	gaussian (log)	Gamma (identity)
Best model		m1	m1	m1	m1	m1	m1	m1	m1	m2	m1	m1	m1	m1	m1	m1	m1	m1	m2	m2	m1
Spatial component		yes	yes	yes	yes	yes	yes	no	yes	no	no	yes	yes	yes	yes	yes	no	yes	no	yes	no
AICc	**m1**	941	642	592	339	929	607	817	755	391	797	450	702	471	701	438	722	474	6	76	221
	m2	973	651	638	383	949	616	820	764	391	814	484	739	493	730	458	788	508	6	74	259
Chi² anova		1,2E-08	7,8E-04	1,9E-11	5,4E-11	4,0E-06	7,5E-04	1,2E-02	1,3E-03	9,5E-02	2,3E-05	4,9E-09	2,0E-09	1,9E-06	6,8E-08	6,4E-06	1,3E-15	7,2E-09	6,7E-02	1,3E-01	1,4E-09
AC	**mean**	276	59	19	6	246	52	145	87	11	89	19	45	13	45	13	75	17	2	2	5
	sd	127	11	9	2	119	9	39	32	2	96	4	26	4	21	4	33	4	0	0	1
UC	**mean**	332	69	34	9	276	59	147	77	11	103	17	75	19	64	17	88	21	2	2	6
	sd	161	13	17	3	143	12	44	31	3	84	5	54	5	37	4	60	5	0	0	1
LC	**mean**	207	57	18	6	184	50	135	70	12	62	12	33	16	31	12	39	15	2	2	4
	sd	109	14	9	2	106	13	38	43	3	76	3	16	5	17	4	20	5	0	0	1
BC	**mean**	181	54	8	4	170	49	122	58	12	65	12	28	15	21	11	23	12	2	2	4
	sd	84	11	6	2	84	10	39	20	4	73	2	14	5	8	3	11	4	0	0	1
p-val	**AC_UC**	1,66E-01	2,73E-02	8,62E-05	8,18E-06	6,70E-01	8,17E-03	9,18E-01	8,16E-01	NA	5,98E-01	1,69E-01	1,14E-03	2,29E-07	7,91E-02	1,36E-03	7,50E-01	1,56E-02	NA	NA	1,60E-03
	AC_LC	5,99E-02	9,50E-01	1,00E+00	4,32E-01	5,42E-02	7,01E-01	9,87E-01	4,15E-01	NA	1,21E-02	3,29E-10	3,75E-01	4,40E-04	1,04E-01	9,33E-01	1,46E-05	9,89E-01	NA	NA	2,02E-01

	AC_BC	2,27E-06	5,26E-01	3,30E-05	2,32E-03	1,93E-04	7,34E-01	7,24E-02	3,52E-04	NA	6,42E-03	2,29E-09	1,97E-03	2,89E-01	1,04E-04	5,24E-01	0,00E+00	5,61E-05	NA	NA	5,84E-04
estimates	AC_UC	-0,2	-9,8	-1,4	-0,4	-0,1	-0,2	0,0	0,1	NA	-0,2	2,2	-0,5	-0,4	-1,1	-0,3	-0,1	-0,2	NA	NA	-1,0
	AC_LC	0,2	1,9	0,0	-0,1	0,2	0,1	0,0	0,1	NA	0,4	6,5	0,2	-0,3	1,0	0,1	0,6	0,0	NA	NA	0,5
	AC_BC	0,5	4,8	1,5	0,4	0,4	0,1	0,2	0,4	NA	0,4	6,3	0,5	-0,2	1,9	0,1	1,2	0,4	NA	NA	0,9
Unif.	**Stat.**	0,1	0,1	0,1	0,1	0,1	0,0	0,1	0,1	NA	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	NA	NA	0,1
	p-val	0,6	0,9	0,6	0,7	0,5	1,0	0,7	1,0	NA	0,1	0,3	0,8	0,8	0,4	0,1	0,6	1,0	NA	NA	0,4
Disp.	**Stat.**	1,2	1,0	1,1	1,1	1,2	1,0	1,0	1,1	NA	1,5	0,9	1,6	1,0	1,4	0,8	1,3	1,0	NA	NA	1,3
	p-val	0,5	1,0	0,6	0,5	0,5	0,8	0,9	0,5	NA	0,3	0,6	0,1	0,9	0,1	0,3	0,3	0,8	NA	NA	0,3
Outliers	**Stat.**	1,0	2,0	0,0	0,0	1,0	1,0	0,0	1,0	NA	1,0	1,0	2,0	0,0	2,0	0,0	1,0	0,0	NA	NA	1,0
	p-val	1,0	0,1	0,8	1,0	1,0	1,0	1,0	1,0	NA	1,0	0,5	0,4	1,0	0,4	1,0	1,0	1,0	NA	NA	0,5
Zero infl.	**Stat.**	NA	NA	0,0	0,0	NA	NA	NA	NA	NA	0,0	NA	NA	NA	0,0	0,0	NA	NA	NA	NA	NA
	p-val	1,0	1,0	0,8	1,0	1,0	1,0	1,0	1,0	NA	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	NA	NA	1,0

Table S13.1*: Results of glmm models for all entomological metrics for 2024. The formula of the models are:*
m1 (with stratum effect): metric ~ strata + (1 | LOCA / plot) + exp(pos + 0 | ID) + offset(log(prop.trap.season)),
m2 (null model): metric ~ 1 + (1 | LOCA / plot) + exp(pos + 0 | ID) + offset(log(prop.trap.season))
with LOCA: the forest massif; pos: the scaled geographical coordinates; ID: the plot and prop.trap.season the cumulative proportion of valid traps throughout the sampling season.
exp(pos + 0 | ID) is the spatial component of the model and was added when it allowed a better.

Metric	Family	Best mod	Spat. comp.	AICc		Chi^{2}	AC		MC		BC		p-values		estimates		Unif.		Disp.		Outliers		Zero infl.	
				m1	m2	ano.	mean	sd	mean	sd	mean	sd	AC_MC	AC_BC	AC_MC	AC_BC	Stat.	pval	Stat.	pval	Stat.	pval	Stat.	pval
ab.colsx	nbinom2 (log)	m2	no	763	758	0,91	287	119	321	194	306	196	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sr.colsx	nbinom2 (log)	m2	no	497	494	0,51	62	11	66	8	68	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ab.colsxrar	nbinom12 (log)	m1	yes	427	452	0,00	26	30	12	8	8	8	3,6E-04	1,2E-10	0,7	1,2	0,1	1,0	1,5	0,4	0	1,0	1,9	0,488
sr.colsxrar	nbinom2 (log)	m2	no	253	253	0,08	3	1	4	2	4	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ab.colsxcom	nbinom1 (log)	m2	yes	765	761	0,43	246	98	297	190	293	194	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sr.colsxcom	lognormal (log)	m2	no	488	484	0,53	58	11	61	7	63	18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FRic	Gamma (identity)	m2	no	627	623	0,66	172	30	168	41	164	46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ab.myc	nbinom1 (log)	m1	yes	544	593	1,78E-12	99	27	48	25	43	16	5,6E-16	0,0E+00	0,8	0,9	0,1	0,6	1,1	0,6	1	0,9	NA	1
sr.myc	genpois (identity)	m1	no	308	313	0,01	17	3	14	2	16	3	3,5E-03	2,3E-01	2,8	1,4	0,1	0,8	1,0	0,9	1	0,8	NA	1
ab.xyl	nbinom2 (log)	m2	no	688	684	0,67	104	92	138	157	151	169	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sr.xyl	nbinom12 (log)	m2	yes	371	368	0,40	14	4	14	3	13	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ab.sxy	nbinom2 (log)	m1	no	585	591	4,52E-03	45	26	79	43	58	35	2,1E-03	3,9E-01	-0,5	-0,2	0,1	0,8	1,1	0,6	0	1,0	NA	1
sr.sxy	nbinom1 (sqrt)	m1	no	369	386	2,01E-05	13	4	19	4	20	7	8,8E-05	2,4E-06	-0,7	-0,8	0,1	0,4	1,1	0,7	0	1,0	NA	1
ab.zoo	nbinom1 (log)	m1	no	524	529	0,01	26	16	40	16	42	29	4,6E-03	2,9E-02	-0,5	-0,4	0,1	0,1	1,2	0,5	0	1,0	0,0	1
sr.zoo	genpois (log)	m1	no	349	352	0,02	12	4	15	4	14	5	1,4E-02	7,8E-02	-0,2	-0,2	0,1	0,9	1,0	0,9	1	0,9	0,0	1
ab.flo	nbinom2 (log)	m2	no	589	589	0,07	52	33	71	41	48	35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sr.flo	Gamma (identity)	m2	no	375	374	0,20	14	4	17	4	16	6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CWM_canop	lognormal (identity)	m2	no	-144	-144	0,10	2	0	2	0	2	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CWM_diam	lognormal (identity)	m1	no	-103	-87	3,47E-05	2	0	2	0	2	0	6,6E-06	1,6E-04	-0,1	-0,1	0,1	1,0	1,0	0,9	0	1,0	NA	1
CWM_size	gaussian (identity)	m1	no	202	224	1,41E-06	4	1	6	1	5	1	2,2E-09	3,3E-04	-2,0	-1,3	0,1	0,2	1,0	0,9	1	0,4	NA	1

Table S13.2*: Results of glmm models for all entomological metrics for 2025. The formula of the models are:*
m1 (with stratum effect): metric ~ strata + (1 | LOCA / plot) + exp(pos + 0 | ID) + offset(log(prop.trap.season)),
m2 (null model): metric ~ 1 + (1 | LOCA / plot) + exp(pos + 0 | ID) + offset(log(prop.trap.season))
with LOCA: the forest massif; pos: the scaled geographical coordinates; ID: the plot and prop.trap.season the cumulative proportion of valid traps throughout the sampling season.
exp(pos + 0 | ID) is the spatial component of the model and was added when it allowed a better fit.

SI 14: Measured abundance and richness values

Variable	Yearly catch		By sampling event (2024)				By health status (2024)		By position (2025)	
	2024	2025	April	May	June	Jul. Aug.	Healthy	Declining	Centre	Edge
ab.colsx	19903	18280	2469	5355	6386	5693	7183	5953	8473	9807
sr.colsx	375	393	140	217	242	216	270	262	314	334
ab.colsxrar	1601	909	333	589	363	316	417	508	403	506
sr.colsxrar	47	46	12	20	30	29	29	30	26	38
ab.colsxcom	17520	16712	2098	4745	5986	4691	6521	5237	7707	9005
sr.colsxcom	321	340	126	196	209	183	236	229	284	289
ab.myc	5831	3799	724	1782	2057	1268	1925	1802	1773	2026
sr.myc	68	79	28	43	43	37	47	39	67	64
ab.xyl	6355	7865	263	928	2760	2404	2547	1885	3786	4079
sr.xyl	94	90	27	49	57	60	65	66	68	74
ab.sxy	3609	3652	472	1262	602	1273	1303	1092	1653	1999
sr.sxy	93	94	28	50	58	56	73	74	80	85
ab.zoo	3222	2160	809	1038	768	607	1133	892	869	1291
sr.zoo	90	96	45	55	64	47	67	59	73	81
ab.flo	4506	3433	1055	1797	587	1067	1543	1452	1609	1824
sr.flo	78	74	32	59	50	31	58	63	60	66

***Table S14**: Abundance and richness values for all taxonomical groups and functional guilds per year and per category.*

SI 15: Rarefaction curves

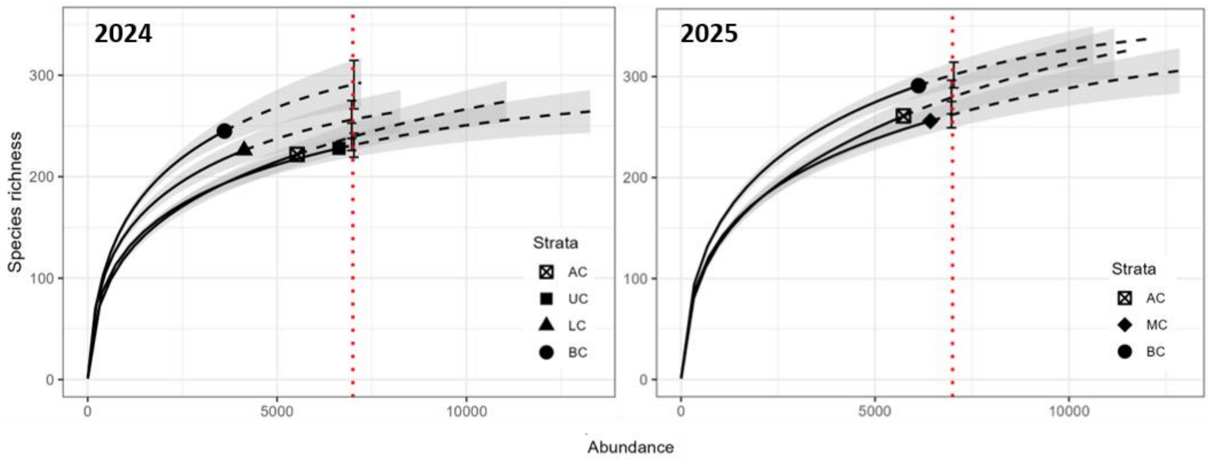


Fig. S15*: Rarefaction curves for each strata for the 2024 and 2025 datasets. Extrapolation of specific richness for a population size of 7,000 individuals.*

SI 16: Details of the Permanova and dissimilarity values along the 2024 sampling season for each stratum

Stratum	Global effect of the sampling event	Pairwise stratum comparison			
		Compared month	**Significance**	**Dissimilarity value**	**Mean dissimilarity value between two successive sampling events**
AC	R^2 = 35,7% p-value = 0,0001	April - May	***	0.7035	0.745
		May - June	***	0.7568	
		June - Jul.Aug	***	0.7747	
UC	R^2 = 30,4% p-value = 0,0001	April - May	***	0.7548	0.780
		May - June	***	0.7669	
		June - Jul.Aug	***	0.8172	
LC	R^2 = 22,7% p-value = 0,0001	April - May	***	0.7363	0.763
		May - June	***	0.7597	
		June - Jul.Aug	***	0.7933	
BC	R^2 = 17,8% p-value = 0,0001	April - May	***	0.7748	0.784
		May - June	***	0.7793	
		June - Jul.Aug	***	0.7982	

Table S16*: Global effect of the period and comparison of the taxonomical composition of the assemblages sampled in two consecutive months.*

*Significance codes: *** < 0.001, ** < 0.01, * < 0.05 and ns >= 0.05.*

SI 17: Changes in the cumulative abundance of the most abundant species over the course of the sampling season

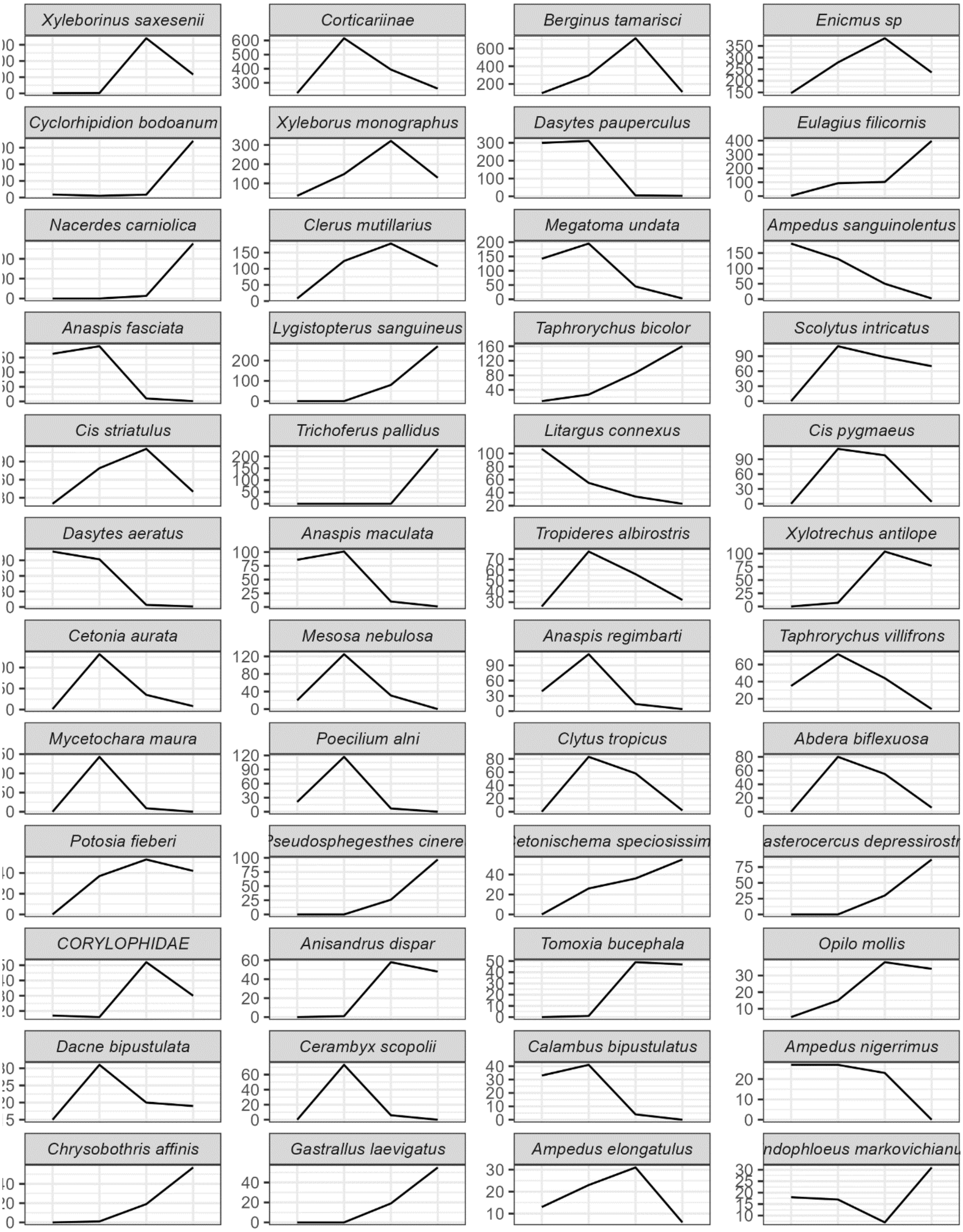


Fig. S17: Trends for the cumulative abundance of the 48 most abundant species throughout the 2024 sampling season.

SI 18: Proportion of identical species for two consecutive months

Transition 2024	% of identical species among all strata	% of identical species in the CAI
April to May	0,79	0,83
May to June	0,57	0,54
June to Jul.Aug.	0,51	0,58

***Table S18**: Proportion of identical species for two consecutive months in all strata and in the CAI in 2024.*

SI 19: Changes in the stratification of entomological metrics over the 2024 sampling season

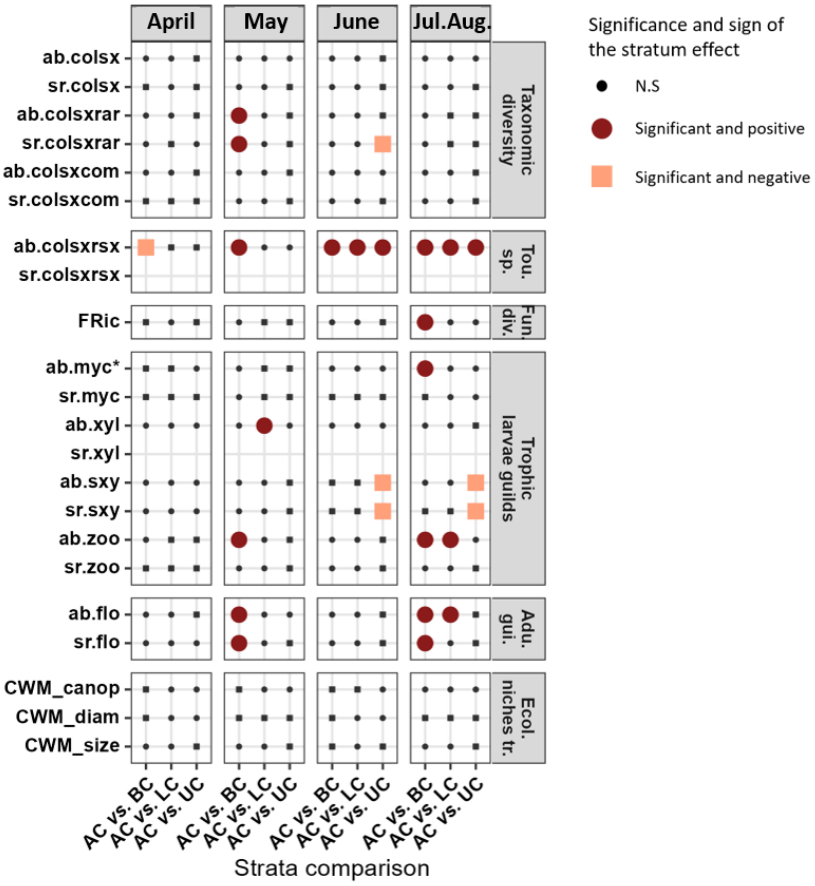


Fig. S19-1: *Graphical summary of the results from the GLMM models examining the impact of the sampling event on the vertical stratification of entomological indicators. The meanings of the abbreviations are given in Table 1.*

*A metric appears in bold when it is vertically stratified, i.e. when the model with strata as a fixed effect fitted the data significantly better than the null model with only random effects. A * means that spatial autocorrelation could be added as a random effect (it had to be removed from some models in order to allow them to converge).*

Details of the formulas used in the tested models:

- *M1 (nul model) : variable ~ 1 + (1 | LOCA/placette) + exp(pos + 0 | ID) + offset(log(offset.temp))*
- *M2 (stratum effect only) : variable ~ stratum + (1 | LOCA/placette) + exp(pos + 0 | ID) + offset(log(offset.temp))*
- *M3 (interaction between stratum effect and sampling event) : variable ~ stratum * sampling event + (1 | LOCA/placette) + offset(log(offset.temp))*
- *M4 (interaction between stratum effect and sampling event with temporal autocorrelation) : variable ~ stratum * sampling event + (1 | LOCA/placette) + exp(pos + 0 | ID) + offset(log(offset.temp)) + ar1(num.releve + 0 | placette)*

No dot means that the interactive model was not the best fit. Small black dots mean that the difference between the two strata is not significant. Large red circles mean that the difference is significant and that the effect is positive. Large orange squares mean that the difference between the two strata is significant and that the effect is negative.

The specific abundance and richness values measured are given in SM14.

Metric	Family used for the model	Spat. comp.	Best mod.	AICc m1	m2	m3	m4	Chi² anova m2	m3	m4	Uniformity Stat.	p-val	Dispersion Stat.	p-val	Outliers Stat.	p-val	Zero inflation Stat.	p-val
ab.colsx	lognormal(link = \log\)	no	m3	3077.5	3052.6	2897.9	NA	7.8e-07	2.4e-32	NA	0.07	0.11	1.64	0.04	7,00	0.01	NA	1,00
sr.colsx	nbinom1(link = \sqrt\)	no	m3	2052,0	2024.8	1935.3	1933.8	2.6e-07	4.0e-19	4.6e-02	0.04	0.76	1.01	0.81	3,00	1,00	0,00	1,00
ab.colsxrar	nbinom1(link = \log\)	no	m3	1687.3	1641.8	1578.1	NA	3.4e-11	4.5e-14	NA	0.04	0.82	1.31	0.06	4,00	0.2	0.67	0.03
sr.colsxrar	genpois(link = \log\)	no	m4	1099.8	1057.7	983.3	976.6	1.7e-10	3.8e-16	3.5e-03	0.03	0.92	1.07	0.56	0,00	0.9	0.76	0.13
ab.colsxcom	nbinom2(link = \log\)	no	m3	2883.5	2860.8	2779.1	NA	2.3e-06	1.4e-17	NA	0.07	0.18	1.41	0.24	4,00	0.56	0,00	1,00
sr.colsxcom	nbinom1(link = \identity\)	no	m3	1936.8	1913.9	1852.1	1852.7	2.1e-06	1.0e-13	1.4e-01	0.04	0.83	1.01	0.88	3,00	0.96	NA	1,00
ab.colsxrsx	nbinom1(link = \sqrt\)	no	m3	601.1	539.4	508.2	572.4	4.8e-14	4.5e-08	1.0e+00	0.04	0.86	0.93	0.78	0,00	1,00	0.99	0.84
sr.colsxrsx	nbinom12(link = \sqrt\)	no	m2	566,0	551.3	611,0	660.5	1.2e-04	1.0e+00	1.0e+00	0.1	0.01	0.3	0.52	0,00	0.18	0.88	0.31
FRic	nbinom12(link = \sqrt\)	no	m3	2848.8	2808,0	2797,0	2800.9	3.4e-10	1.8e-04	6.5e-01	0.03	0.88	0.73	0.24	1,00	0.73	0,00	0.06
ab.flo	nbinom2(link = \log\)	no	m3	2213.5	2155.2	2014.2	NA	6.3e-14	1.6e-29	NA	0.05	0.41	1.12	0.5	3,00	0.6	0.79	0.58
sr.flo	nbinom1(link = \log\)	no	m3	1765.4	1745.5	1402.3	NA	8.8e-06	1.0e-71	NA	0.06	0.27	1.1	0.49	0,00	0.42	0.68	0.21
ab.myc	nbinom2(link = \log\)	yes	m3	2328.6	2324.5	2173.8	NA	1.6e-02	1.4e-31	NA	0.04	0.72	0.88	0.81	1,00	0.52	0.95	1,00
sr.myc	genpois(link = \identity\)	no	m3	1234.8	1237.7	1199.7	NA	3.5e-01	3.4e-09	NA	0.04	0.85	1.04	0.58	2,00	1,00	2.12	0.7
ab.xyl	nbinom2(link = \log\)	no	m3	2253.7	2231.7	2174.7	NA	3.3e-06	9.1e-13	NA	0.09	0.03	2.16	0.1	7,00	0.06	0.29	0.01
sr.xyl	nbinom1(link = \sqrt\)	no	m2	1440.5	1395,0	1529.1	NA	3.5e-11	1.0e+00	NA	0.04	0.64	0.97	0.86	0,00	0.44	0.55	0.31
ab.sxy	nbinom2(link = \log\)	no	m3	2037.5	1988.2	1934,0	NA	5.1e-12	3.2e-12	NA	0.04	0.81	1.51	0.18	3,00	0.8	0.56	0.31
sr.sxy	nbinom1(link = \log\)	no	m3	1529.6	1509.3	1392.1	NA	7.5e-06	1.1e-24	NA	0.07	0.17	1.04	0.64	0,00	0.42	0.66	0.51
ab.zoo	nbinom1(link = \identity\)	no	m3	1975.1	1923.7	1897.7	1899.6	1.8e-12	5.2e-07	2.6e-01	0.04	0.71	1.38	0.02	4,00	0.24	0.58	0.12
sr.zoo	nbinom1(link = \log\)	no	m3	1579.2	1567.3	1340.3	NA	4.1e-04	2.6e-47	NA	0.06	0.32	1.11	0.52	0,00	0.54	0.67	0.36
CWM_canop	lognormal(link = \log\)	no	m3	782,0	786.8	114.3	124.3	7.0e-01	7.4e-142	1.0e+00	0.23	0,00	1.04	0.71	10,00	0,00	NA	1,00
CWM_diam	gaussian(link = \identity\)	no	m4	325.5	330.1	55,0	14.4	6.4e-01	2.3e-57	1.5e-10	0.11	0,00	0.97	0.94	7,00	0.01	NA	1,00
CWM_size	Gamma(link = \log\)	no	m4	1241,0	1215.5	1075.1	1045.8	5.9e-07	2.1e-29	4.1e-08	0.04	0.68	1.13	0.49	4,00	0.3	NA	1,00

***Table S19-2**: Details of the models above.*

Metric	Sampl.	Mean value				AC - UC constrast		AC - LC constrast		AC - BC constrast	
	event	AC	UC	LC	BC	z-ratio	p-val	z-ratio	p-val	z-ratio	p-val
ab.colsx	April	76.6 ± 9.8	78.7 ± 10.2	55.4 ± 7.9	68 ± 8.8	-0.2	1.0e+00	1.9	2.2e-01	0.7	8.8e-01
	May	105.9 ± 10.8	102.8 ± 10.5	79.3 ± 8.6	71.6 ± 8.3	0.3	9.9e-01	2.4	8.5e-02	3.1	1.1e-02
	June	99.2 ± 11.2	108.5 ± 11.9	87.8 ± 10.7	77.6 ± 9.2	-0.7	9.0e-01	0.9	8.1e-01	1.8	2.7e-01
	Jul.Aug.	47.6 ± 4.9	44 ± 5.4	34.4 ± 4	32.8 ± 3.9	0.6	9.3e-01	2.5	5.4e-02	2.9	1.9e-02
sr.colsx	April	20 ± 1.6	20.3 ± 1.7	19.5 ± 1.6	21.3 ± 1.6	-0.1	1.0e+00	0.2	1.0e+00	-0.6	9.4e-01
	May	30.4 ± 1.8	35.5 ± 1.9	27.8 ± 1.7	22 ± 1.6	-2	1.9e-01	1.1	6.8e-01	3.7	1.1e-03
	June	27.3 ± 1.7	34.8 ± 1.9	24.7 ± 1.7	23.9 ± 1.6	-3.2	8.7e-03	1.1	6.6e-01	1.6	4.0e-01
	Jul.Aug.	19.7 ± 1.5	22.5 ± 1.6	17.4 ± 1.4	15.9 ± 1.3	-1.4	5.2e-01	1.2	6.5e-01	2	1.9e-01
ab.colsxrar	April	7.5 ± 1.6	12 ± 2.2	7.4 ± 1.6	3.3 ± 0.9	-1.7	3.0e-01	0.1	1.0e+00	2.4	7.4e-02
	May	10 ± 1.6	13.3 ± 1.9	6.6 ± 1.2	2.9 ± 0.8	-1.4	4.9e-01	1.8	2.7e-01	4	3.0e-04
	June	6.6 ± 1.3	11.2 ± 1.7	5.4 ± 1.2	3.3 ± 0.8	-2.3	9.5e-02	0.7	8.9e-01	2.2	1.1e-01
	Jul.Aug.	2.3 ± 0.5	4 ± 0.7	3 ± 0.6	1.6 ± 0.4	-2.1	1.5e-01	-0.9	8.0e-01	1.1	6.7e-01
sr.colsxrar	April	1.9 ± 0.4	1.9 ± 0.4	2.1 ± 0.4	1.3 ± 0.3	0.1	1.0e+00	-0.3	9.9e-01	1.4	4.8e-01
	May	3.2 ± 0.4	4.1 ± 0.5	2.2 ± 0.3	1.5 ± 0.3	-1.7	3.5e-01	2.2	1.2e-01	3.8	7.9e-04
	June	3.1 ± 0.4	5.5 ± 0.6	2.6 ± 0.4	1.8 ± 0.3	-4.1	2.8e-04	0.8	8.3e-01	2.8	2.3e-02
	Jul.Aug.	1.2 ± 0.2	1.9 ± 0.2	1.4 ± 0.2	0.9 ± 0.1	-2.6	4.2e-02	-0.9	8.0e-01	1.4	5.1e-01
ab.colsxcom	April	52.4 ± 9.4	55.9 ± 10.2	43 ± 7.7	47.8 ± 8.2	-0.3	9.9e-01	1	7.6e-01	0.5	9.7e-01
	May	91.3 ± 14.9	93.9 ± 15.3	65.8 ± 10.7	50.8 ± 8.5	-0.2	1.0e+00	1.9	2.4e-01	3.3	5.5e-03
	June	109.7 ± 17.6	109.6 ± 17.6	84 ± 14.2	77.8 ± 12.6	0	1.0e+00	1.5	4.3e-01	2	1.8e-01
	Jul.Aug.	42.4 ± 7	57.5 ± 9.6	25.3 ± 4.2	27.8 ± 4.6	-1.7	3.3e-01	2.9	2.2e-02	2.4	8.0e-02
sr.colsxcom	April	15.1 ± 1.3	15.9 ± 1.4	15.6 ± 1.3	17.2 ± 1.3	-0.4	9.7e-01	-0.3	9.9e-01	-1.2	6.2e-01
	May	25.3 ± 1.5	29.6 ± 1.6	24.3 ± 1.5	18.7 ± 1.3	-2.1	1.7e-01	0.5	9.6e-01	3.5	3.0e-03
	June	21.6 ± 1.3	26.9 ± 1.5	20 ± 1.4	19.5 ± 1.3	-2.8	2.8e-02	0.8	8.4e-01	1.2	6.2e-01
	Jul.Aug.	21.1 ± 1.4	22.6 ± 1.5	18.1 ± 1.3	17.4 ± 1.3	-0.8	8.7e-01	1.6	3.5e-01	2.1	1.6e-01
ab.colsxrsx	April	0 ± 0	0 ± 0	0 ± 0	1.3 ± 0.4	-0.8	8.3e-01	-2.2	1.1e-01	-6.8	5.5e-11
	May	3 ± 0.6	1.2 ± 0.4	0.9 ± 0.3	0.6 ± 0.3	2.7	3.5e-02	3.4	3.3e-03	4	3.5e-04
	June	2.4 ± 0.5	0.5 ± 0.2	0.5 ± 0.2	0.1 ± 0.1	4	3.0e-04	4	3.1e-04	4.8	1.0e-05
	Jul.Aug.	0.8 ± 0.2	0 ± 0	0 ± 0	0 ± 0	5.1	1.8e-06	6.4	7.2e-10	6.4	1.0e-09
FRic	April	51.2 ± 10.8	55.8 ± 12.2	46.9 ± 10	53.6 ± 10.9	-0.3	9.9e-01	0.3	9.9e-01	-0.2	1.0e+00
	May	60.5 ± 11.8	100.6 ± 19.6	61.6 ± 12.4	22.3 ± 5.1	-1.9	2.2e-01	-0.1	1.0e+00	3.6	1.9e-03
	June	51.1 ± 9.7	108.4 ± 20.2	46.1 ± 9.6	22.5 ± 4.8	-2.9	1.9e-02	0.4	9.8e-01	3.2	7.4e-03
	Jul.Aug.	84.7 ± 17.7	66.6 ± 14.5	31.5 ± 7.7	13.1 ± 3.6	0.8	8.4e-01	3.2	7.3e-03	5.6	1.5e-07
ab.flo	April	28.3 ± 6	33.9 ± 7.4	24 ± 5.2	16 ± 3.3	-0.7	9.1e-01	0.6	9.2e-01	2.2	1.2e-01
	May	43.4 ± 8.3	38.4 ± 7.3	20.5 ± 4	9.8 ± 2	0.5	9.5e-01	3.2	6.6e-03	6.1	5.9e-09
	June	12.8 ± 2.5	16.4 ± 3.2	6.7 ± 1.5	5.1 ± 1.1	-1	7.2e-01	2.4	7.0e-02	3.6	1.9e-03
	Jul.Aug.	12.5 ± 2.5	18.6 ± 3.8	2.5 ± 0.6	1.4 ± 0.3	-1.7	3.5e-01	6.2	4.3e-09	8	6.2e-14
sr.flo	April	9.3 ± 1.2	9.1 ± 1.2	8.2 ± 1.1	8.1 ± 1.1	0.1	1.0e+00	0.8	8.7e-01	0.9	8.0e-01
	May	12.9 ± 1.3	15.7 ± 1.5	9.9 ± 1.1	6.6 ± 0.9	-1.8	2.6e-01	2.2	1.1e-01	4.7	1.6e-05
	June	7.8 ± 1	9.1 ± 1.1	5 ± 0.8	4.2 ± 0.7	-1.1	7.1e-01	2.5	5.8e-02	3.4	4.4e-03
	Jul.Aug.	2.1 ± 0.3	2.1 ± 0.3	1.5 ± 0.3	0.7 ± 0.2	0	1.0e+00	1.7	3.3e-01	4	4.1e-04
ab.myc	April	14.3 ± 2.4	12.5 ± 2.2	15.8 ± 2.6	19.6 ± 3.1	0.6	9.3e-01	-0.5	9.6e-01	-1.6	4.0e-01
	May	28.5 ± 4.1	30.2 ± 4.3	29.4 ± 4.2	22.1 ± 3.3	-0.3	9.9e-01	-0.2	1.0e+00	1.4	5.0e-01
	June	48.9 ± 6.8	38.5 ± 5.4	30.9 ± 4.6	27.1 ± 3.9	1.4	4.7e-01	2.6	4.3e-02	3.5	2.7e-03
	Jul.Aug.	14.4 ± 2.1	10 ± 1.5	8.6 ± 1.3	6.9 ± 1.1	2	1.8e-01	2.8	2.4e-02	4	3.8e-04
sr.myc	April	4 ± 0.4	4.8 ± 0.4	4.6 ± 0.4	5.5 ± 0.4	-1.4	5.2e-01	-1	7.3e-01	-2.8	2.5e-02
	May	5.9 ± 0.4	6.7 ± 0.5	6.8 ± 0.5	5.8 ± 0.4	-1.3	5.9e-01	-1.4	4.9e-01	0.3	9.9e-01
	June	6.3 ± 0.4	7.1 ± 0.5	6.5 ± 0.5	6.4 ± 0.4	-1.4	4.8e-01	-0.4	9.8e-01	-0.2	1.0e+00
	Jul.Aug.	5 ± 0.4	4.8 ± 0.4	4.6 ± 0.4	5.1 ± 0.4	0.2	1.0e+00	0.6	9.2e-01	-0.3	9.9e-01
ab.xyl	April	8.9 ± 2.3	6.9 ± 1.9	5.6 ± 1.5	5.3 ± 1.4	0.8	8.6e-01	1.4	5.1e-01	1.6	4.0e-01
	May	26 ± 5.8	19.6 ± 4.4	9 ± 2.1	10 ± 2.4	1	7.2e-01	3.8	7.8e-04	3.4	3.6e-03
	June	35.2 ± 7.7	33 ± 7.2	24.8 ± 5.9	24.1 ± 5.4	0.2	9.9e-01	1.3	5.7e-01	1.5	4.6e-01
	Jul.Aug.	17.5 ± 3.9	35.9 ± 8.1	12.7 ± 2.9	14.7 ± 3.3	-2.7	3.7e-02	1.2	6.5e-01	0.7	9.1e-01
ab.sxy	April	15.7 ± 3.1	11.5 ± 2.4	7.6 ± 1.6	7.5 ± 1.5	1.2	6.2e-01	2.8	3.0e-02	2.9	2.2e-02
	May	24.6 ± 4.2	28.5 ± 4.8	15.8 ± 2.7	11.6 ± 2.1	-0.7	9.1e-01	2	1.8e-01	3.3	5.4e-03

	June	5.9 ± 1.1	19.5 ± 3.3	7.4 ± 1.5	9.2 ± 1.7	-5.1	1.8e-06	-0.9	8.2e-01	-1.8	2.7e-01
	Jul.Aug.	8.2 ± 1.5	22.1 ± 3.9	6.4 ± 1.2	5.2 ± 0.9	-4.4	6.2e-05	1.1	6.9e-01	2	1.9e-01
sr.sxy	April	6.2 ± 0.9	5.4 ± 0.8	4.3 ± 0.7	4.7 ± 0.7	0.7	9.0e-01	1.9	2.3e-01	1.4	4.7e-01
	May	8.3 ± 0.9	10.7 ± 1	7.6 ± 0.8	7 ± 0.8	-2	1.7e-01	0.6	9.4e-01	1.1	6.9e-01
	June	4.1 ± 0.6	9.6 ± 1	6.1 ± 0.8	6.5 ± 0.8	-5.1	2.1e-06	-2	1.7e-01	-2.5	5.5e-02
	Jul.Aug.	2.4 ± 0.3	4.7 ± 0.5	3.9 ± 0.4	3.1 ± 0.4	-4.5	4.4e-05	-3.3	5.7e-03	-1.8	2.9e-01
ab.zoo	April	10.7 ± 1.8	21.3 ± 2.8	12.6 ± 2	10 ± 1.6	-3.3	6.2e-03	-0.7	8.8e-01	0.3	9.9e-01
	May	15.6 ± 2	20.3 ± 2.3	11.3 ± 1.7	6.2 ± 1.2	-1.5	4.2e-01	1.6	3.6e-01	4.1	2.7e-04
	June	11 ± 1.6	15.4 ± 2	9.3 ± 1.6	8 ± 1.3	-1.8	2.7e-01	0.8	8.7e-01	1.5	4.6e-01
	Jul.Aug.	12.8 ± 1.9	11.4 ± 1.8	3.4 ± 0.9	4.3 ± 1	0.6	9.5e-01	4.5	4.6e-05	4	3.5e-04
sr.zoo	April	4.9 ± 0.9	5.9 ± 1	6.5 ± 1	7.4 ± 1.1	-0.9	8.0e-01	-1.5	4.7e-01	-2.2	1.2e-01
	May	7.3 ± 1	9.6 ± 1.2	6.5 ± 0.9	3.9 ± 0.7	-2.1	1.7e-01	0.9	8.1e-01	3.7	1.4e-03
	June	7.6 ± 1.1	9.5 ± 1.2	5.8 ± 0.9	5.3 ± 0.8	-1.7	3.4e-01	1.7	3.2e-01	2.3	1.0e-01
	Jul.Aug.	2.2 ± 0.3	2.6 ± 0.4	1.5 ± 0.3	1.3 ± 0.2	-0.8	8.6e-01	1.9	2.4e-01	2.7	3.7e-02
CWM_canop	April	2.1 ± 0.1	2 ± 0.1	2 ± 0.1	2.3 ± 0.2	1.3	5.5e-01	1	7.8e-01	-1.5	4.4e-01
	May	1.9 ± 0.1	1.9 ± 0.1	1.8 ± 0.1	2.2 ± 0.1	0.6	9.4e-01	0.9	7.8e-01	-3	1.2e-02
	June	2.1 ± 0.1	2 ± 0.1	2.1 ± 0.1	2.3 ± 0.2	1.2	6.3e-01	-0.3	9.9e-01	-2.1	1.6e-01
	Jul.Aug.	0.9 ± 0.1	0.8 ± 0.1	0.9 ± 0.1	0.9 ± 0.1	1.3	5.4e-01	0.5	9.6e-01	0.4	9.7e-01
CWM_diam	April	2.5 ± 0.1	2.5 ± 0.1	2.5 ± 0.1	2.6 ± 0.1	0.7	9.0e-01	0.6	9.3e-01	-1.3	5.5e-01
	May	2.3 ± 0.1	2.4 ± 0.1	2.4 ± 0.1	2.5 ± 0.1	-0.8	8.6e-01	-0.8	8.6e-01	-2.1	1.5e-01
	June	2.6 ± 0.1	2.5 ± 0.1	2.5 ± 0.1	2.6 ± 0.1	1.8	2.9e-01	1.3	5.5e-01	0	1.0e+00
	Jul.Aug.	1.8 ± 0.1	1.9 ± 0.1	1.9 ± 0.1	1.8 ± 0.1	-1.9	2.4e-01	-1.8	2.8e-01	-0.7	9.0e-01
CWM_size	April	6 ± 0.7	6.7 ± 0.8	5 ± 0.6	5.4 ± 0.7	-1.1	6.7e-01	2	1.9e-01	1.1	6.9e-01
	May	6.9 ± 0.8	7.3 ± 0.8	5.1 ± 0.6	5.5 ± 0.6	-0.8	8.7e-01	3.7	1.4e-03	2.7	3.9e-02
	June	5.8 ± 0.7	7.7 ± 0.9	5.5 ± 0.7	5.8 ± 0.7	-3.6	1.7e-03	0.6	9.4e-01	0	1.0e+00
	Jul.Aug.	3.3 ± 0.4	4.3 ± 0.5	3.1 ± 0.4	2.5 ± 0.3	-3.3	6.2e-03	0.6	9.4e-01	3.2	6.7e-03

***Table S19-3**: Details of the averages and contrasts between AC and the other strata, based on the models described above.*

SI 20: Details of the Permanova and dissimilarity values between strata for each of the 2024 sampling periods

Sampling period	Global stratum effect	Pairwise stratum comparison		
		Compared strata	Significance	Dissimilarity value
April	R^2 = 15,1% p-value = 0,0001	AC - UC	**	0.6791
		AC - LC	***	0.7385
		AC - BC	***	0.7719
May	R^2 = 18,6% p-value = 0,0001	AC - UC	***	0.7060
		AC - LC	***	0.7670
		AC - BC	***	0.8206
June	R^2 = 21,5% p-value = 0,0001	AC - UC	***	0.7121
		AC - LC	***	0.8434
		AC - BC	***	0.8561
July - August	R^2 = 22,3% p-value = 0,0001	AC - UC	***	0.6895
		AC - LC	***	0.7924
		AC - BC	***	0.8407

***Table S20**: Global stratum effect and dissimilarities between the CAI and other strata for each sampling period in the 2024 sampling season.*

SI 21: Number of abundant species by category

Dataset		Total number of abundant species	Number of species with a cumulative maximum abundance that is the same in two strata (not counted)
Yearly catch	2024	121	2
	2025	122	3
By sampling event	April	71	12
	May	98	11
	June	110	9
	Jul. Aug.	95	7
By health status	Healthy	115	10
	Declining	120	14
By position	Centre	122	3
	Edge	122	4

Table S21*: Number of abundant species by category.*

SI 22: Changes in preferred strata of abundant species between two successive sampling periods

Direction	April to May	May to June	June to Jul. Aug.
Stable	19	51	50
Up	22	6	12
Down	10	18	12
Appear	36	26	14
Disappear	8	12	27
Total	95	113	115

Table S22: *Number of abundant species found predominantly in the same stratum between two successive surveys, or in a higher or lower stratum.*

SI 23: PERMANOVA and intra-stratum heterogeneity results according to the health status of the plot

Health status of the plot	Global stratum effect	Pairwise stratum comparison				Differences in intra-stratum heterogeneity (permuted p-values)
		Compared strata	Significance	permuted p-value	Dissimilarity value	
Healthy	R^2 = 25.6% p-value = 4e-04 ***	AC - UC	ns	0.2723	0.620	p-value = 0.2601
		AC - LC	**	0.0018	0.743	
		AC - BC	**	0.002	0.792	
Declining	R^2 = 30.4% p-value = 1e-04 ***	AC - UC	**	0.003	0.639	p-value = 0.3028
		AC - LC	**	0.006	0.730	
		AC - BC	**	0.005	0.755	

Table S23: *Results of the overall stratum effect as well as the comparison between the CAI and the other strata.*

SI 24: Stratification of entomological metrics according to the tree's position within the forest island

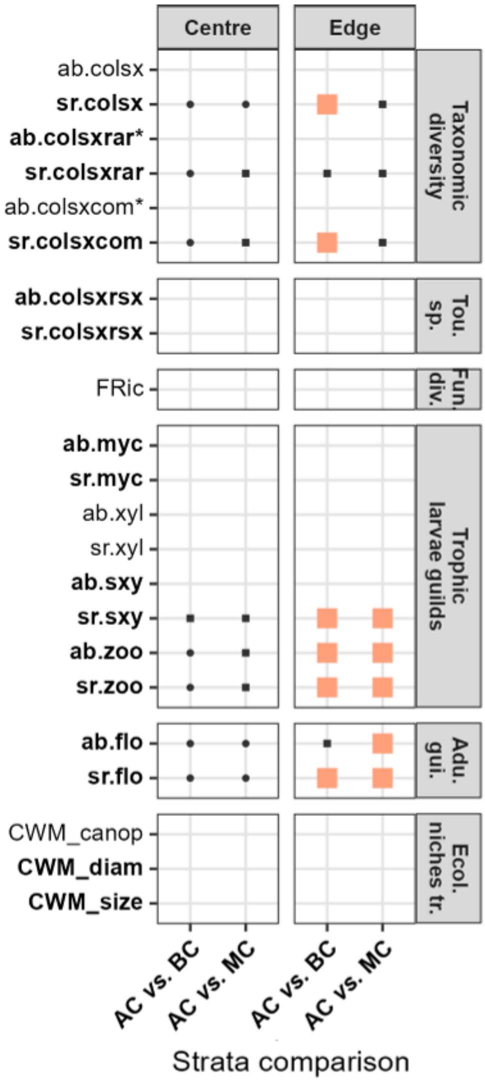


***Fig. 24-1**: Graphical summary of the results from the GLMM models examining the impact of the position of the tree on the vertical stratification of entomological indicators. The meanings of the abbreviations are given in Table 1.*
*A metric appears in bold when it is vertically stratified, i.e. when the model with strata as a fixed effect fitted the data significantly better than the null model with only random effects. A * means that spatial autocorrelation could be added as a random effect (it had to be removed from some models in order to allow them to converge).*
Details of the formulas used in the tested models:

- *M1 (nul model) : variable ~ 1 + (1 | LOCA/placette) + exp(pos + 0 | ID) + offset(log(offset.temp))*
- *M2 (stratum effect only) : variable ~ stratum + (1 | LOCA/placette) + exp(pos + 0 | ID) + offset(log(offset.temp))*
- *M3 (interaction between stratum effect and tree position) : variable ~ stratum * position + (1 | LOCA/placette)*

No dot means that the interactive model was not the best fit. Small black dots mean that the difference between the two strata is not significant. Large orange squares mean that the difference between the two strata is significant and that the effect is negative (e.g. sr.colsxrar is significantly lower in AC than in BC in edge trees).
The specific abundance and richness values measured are given in Table S14.

Metric	Family used for the model	Spat. comp.	Best mod.	AICc m1	m2	m3	Chi² anova m2	m3	Uniformity Stat.	p-val	Dispersion Stat.	p-val	Outliers Stat.	p-val	Zero inflation Stat.	p-val
ab.colsx	nbinom2(link = \log\)	no	m1	758.2	762.8	757.9	9.1e-01	4.6e-03	NA	NA	NA	NA	NA	NA	NA	NA
sr.colsx	nbinom1(link = \sqrt\)	no	m3	494.6	497.9	482.2	4.6e-01	2.9e-05	0.12	0.37	0.97	0.88	1,00	1,00	NA	1,00
ab.colsxrar	nbinom12(link = \log\)	yes	m2	452.4	426.6	431.9	1.7e-07	2.9e-01	0.06	0.98	1.49	0.38	0,00	1,00	1.94	0.49
sr.colsxrar	nbinom2(link = \sqrt\)	no	m3	252.8	252.2	246.9	6.4e-02	4.1e-03	0.1	0.53	0.74	0.4	0,00	1,00	0.93	1,00
ab.colsxcom	nbinom1(link = \log\)	yes	m1	761.1	764.7	762.9	4.3e-01	1.5e-02	NA	NA	NA	NA	NA	NA	NA	NA
sr.colsxcom	lognormal(link = \log\)	no	m3	484.4	488,0	469.2	5.3e-01	6.6e-06	0.1	0.57	1.03	0.83	0,00	1,00	NA	1,00
ab.colsxrsx	nbinom1(link = \log\)	no	m2	333.5	298.2	297.5	1.9e-09	3.3e-02	0.07	0.93	1.11	0.6	2,00	0.14	0.7	0.56
sr.colsxrsx	gaussian(link = \identity\)	no	m2	292.2	246.4	248.3	1.7e-11	1.3e-01	0.12	0.37	1.16	0.43	1,00	0.38	4.5	0,00
FRic	nbinom2(link = \identity\)	no	m1	622.8	627.3	621.2	6.6e-01	4.1e-03	NA	NA	NA	NA	NA	NA	NA	NA
ab.flo	nbinom2(link = \log\)	no	m3	589.4	588.9	586.2	6.9e-02	1.4e-02	0.07	0.89	1,00	0.86	1,00	1,00	NA	1,00
sr.flo	genpois(link = \identity\)	no	m3	371.1	372.2	365.2	1.6e-01	1.7e-03	0.06	0.95	0.96	0.87	0,00	1,00	NA	1,00
ab.myc	nbinom1(link = \log\)	no	m2	587.8	538.5	541.3	1.8e-12	1.6e-01	0.07	0.92	1.11	0.62	1,00	0.84	NA	1,00
sr.myc	genpois(link = \identity\)	no	m2	312.5	308.3	307.9	1.1e-02	3.7e-02	0.08	0.82	1.03	0.92	1,00	0.68	NA	1,00
ab.xyl	nbinom2(link = \log\)	no	m1	683.7	687.7	683.8	6.7e-01	7.8e-03	NA	NA	NA	NA	NA	NA	NA	NA
sr.xyl	nbinom1(link = \sqrt\)	no	m1	360.6	363.7	358.6	4.2e-01	4.5e-03	NA	NA	NA	NA	NA	NA	NA	NA
ab.sxy	nbinom2(link = \log\)	no	m2	590.6	584.7	583.2	4.5e-03	2.3e-02	0.08	0.83	1.07	0.61	0,00	0.88	NA	1,00
sr.sxy	nbinom1(link = \sqrt\)	no	m3	386.1	369.4	363.2	2.0e-05	2.7e-03	0.08	0.8	1,00	0.99	1,00	0.76	NA	1,00
ab.zoo	lognormal(link = \log\)	no	m3	528,0	521.2	511.3	3.0e-03	4.4e-04	0.1	0.54	1.2	0.38	0,00	1,00	NA	1,00
sr.zoo	genpois(link = \log\)	no	m3	351.7	348.6	341.3	1.9e-02	1.6e-03	0.07	0.87	0.97	0.88	0,00	1,00	NA	1,00
CWM_canop	lognormal(link = \identity\)	no	m1	-144.0	-143.8	-142.7	9.6e-02	7.5e-02	NA	NA	NA	NA	NA	NA	NA	NA
CWM_diam	Gamma(link = \log\)	no	m2	-68.7	-72.5	-66.7	1.3e-02	7.8e-01	0.14	0.17	0.91	0.70	2,00	0.08	NA	1,00
CWM_size	gaussian(link = \identity\)	no	m2	224.3	202.2	205.4	1.4e-06	1.9e-01	0.15	0.16	1.01	0.91	1,00	0.38	NA	1,00

***Table S24-2**: Details of the models above.*

Metric	Sampling event	Mean value AC	MC	BC	AC - MC constrast z-ratio	p-val	AC - BC constrast z-ratio	p-val
sr.colsx	Centre	8 ± 0.2	7.9 ± 0.2	7.4 ± 0.2	0.2	9.7e-01	1.9	1.3e-01
	Edge	7.8 ± 0.2	8.4 ± 0.2	9 ± 0.2	-2	1.2e-01	-3.9	3.0e-04
sr.colsxrar	Centre	1.8 ± 0.2	1.9 ± 0.2	1.4 ± 0.2	-0.7	7.7e-01	1.7	2.2e-01
	Edge	1.7 ± 0.2	2.2 ± 0.2	2.2 ± 0.2	-2.5	3.7e-02	-2.2	7.4e-02
sr.colsxcom	Centre	4.1 ± 0.1	4.1 ± 0.1	3.9 ± 0.1	-0.2	9.8e-01	2.2	7.0e-02
	Edge	4.1 ± 0.1	4.2 ± 0	4.3 ± 0	-1.7	2.1e-01	-3.8	4.1e-04
ab.flo	Centre	4.2 ± 0.2	4 ± 0.2	3.5 ± 0.2	0.6	8.0e-01	2.7	2.0e-02
	Edge	3.7 ± 0.2	4.4 ± 0.2	4 ± 0.2	-3.4	2.1e-03	-1.7	2.1e-01
sr.flo	Centre	15.3 ± 1.4	15 ± 1.4	12.3 ± 1.2	0.1	9.9e-01	1.6	2.4e-01
	Edge	12 ± 1.2	18.1 ± 1.5	18.7 ± 1.5	-3.1	4.7e-03	-3.5	1.5e-03
sr.sxy	Centre	3.7 ± 0.2	4.3 ± 0.2	4.1 ± 0.2	-2.2	7.1e-02	-1.5	2.8e-01
	Edge	3.6 ± 0.2	4.5 ± 0.2	4.9 ± 0.2	-3.8	4.0e-04	-5.9	9.0e-09
ab.zoo	Centre	3.4 ± 0.1	3.6 ± 0.1	3.1 ± 0.2	-1.3	3.9e-01	1.1	5.0e-01
	Edge	3.2 ± 0.2	3.9 ± 0.1	3.9 ± 0.1	-4.7	7.6e-06	-4.2	6.4e-05
sr.zoo	Centre	2.5 ± 0.1	2.6 ± 0.1	2.4 ± 0.1	-1.1	4.9e-01	0.8	7.2e-01
	Edge	2.4 ± 0.1	2.8 ± 0.1	2.8 ± 0.1	-3.2	4.6e-03	-3.8	3.8e-04

***Table S24-3**: Details of the averages and contrasts between AC and the other strata for the metrics for which the interactive model was the best fit.*