

Supplementary information

Biodiversity and Conservation

Agroforestry enhances functional trait diversity and promotes early season pest control potential of carabid beetles

Viktoria Sagolla, Lukas Beule, Andreas Schuldt

Corresponding Author:

Viktoria Sagolla

Forest Nature Conservation,

University of Göttingen, Büsgenweg 3,

37077, Göttingen, Germany

Email: viktoria.sagolla@uni-goettingen.de

Table S1: Study sites characteristics. Adapted from Matevski et al. (2024). Reproduced under the terms of a Creative Commons CC BY 4.0 license (DOI: <https://doi.org/10.1111/1365-2664.14797>).

Study sites	Dornburg	Forst	Senftenberg	Vechta	Wendhausen
Coordinates	51°0'49.57"N, 11°38'38.12"E	51°47'19.67"N, 14°37'56.84"E	51°27'31.75"N, 13°58'22.21"E	52°45'29.08"N, 8°32'51.03"E	52°19'58.33"N, 10°37'53.38"E
Temperature and precipitation					
Mean annual air temperature (1991-2020)	10.3 °C ^a	10 °C ^b	9.5 °C ^e	9.8 °C	9.8 °C ^d
Mean study period air temperature (T1-T5)	12.64 °C ^a	12.32 °C ^b	11.66 °C ^e	11.46 °C	12.14 °C ^d
Mean annual precipitation (1991-2020)	595.6 mm ^a	566 mm ^b	601 mm ^e	748 mm ^c	616.1 mm ^d
Mean study period precipitation (T1-T5)	27.63 mm ^a	29.57 mm ^b	29.15 mm ^e	52.87 mm ^c	36.42 mm ^d
Site characteristics and management					
Soil type	Calcaric Phaeozem	Gleyic Cambisol	Phaeozem	Sandy Arenosol	Vertic Cambisol
Number of sampled crop rows	1	1	1	2	2
Number of sampled tree rows	2	2	1	1	2
Tree species	Poplar (Max 1)	Poplar (Max 1)	Black locust	Poplar (Max 1)	Poplar (Max 1)
Tree established	2007	2010	2015	2019	2008
First tree harvest	2014/15	2014/15	-	-	2013/14
Tree age after last harvest	7.5 years	2 years	7 years	4 years	2 years
Crop rotation (2019-2020-2021-2022)	summer barley - summer barley- winter wheat- winter barley	summer barley- bristle oat-winter wheat-winter barley	winter rye-maize- winter rye-summer millet	maize-winter rye- potato-winter rye	maize-maize- summer barley- winter oilseed rape
Fertilizer rates 2022 (Kg N-P-K ha ⁻¹ yr ⁻¹)	152-0-0	57-0-0	60-8-52	178-3-65	99-0-0

^a Climate station at Jena (station ID: 2444) of the German Meteorological Service.

^b Climate station at Cottbus (station ID: 880) of the German Meteorological Service.

^c Climate station at Bassum (station ID: 5822) of the German Meteorological Service.

^d Climate station at Braunschweig (station ID: 662) of the German Meteorological Service.

^e Climate station at Schipkau-Klettwitz (station ID: 2627) of the German Meteorological Service.

Table S2: Trapping periods.

Study site	Period	Date start	Date end	Trapping days
Forst	1	2022-02-17	2022-03-17	28
Senftenberg	1	2022-02-18	2022-03-18	28
Dornburg	1	2022-02-21	2022-03-21	28
Wendhausen	1	2022-02-22	2022-03-22	28
Vechta	1	2022-02-24	2022-03-24	28
Forst	2	2022-03-17	2022-04-21	35
Senftenberg	2	2022-03-18	2022-04-22	35
Dornburg	2	2022-03-21	2022-04-25	35
Wendhausen	2	2022-03-22	2022-04-26	35
Vechta	2	2022-03-24	2022-04-28	35
Forst	3	2022-04-21	2022-05-12	21
Senftenberg	3	2022-04-22	2022-05-13	21
Dornburg	3	2022-04-25	2022-05-16	21
Wendhausen	3	2022-04-26	2022-05-17	21
Vechta	3	2022-04-28	2022-05-19	21
Forst	4	2022-05-12	2022-06-09	28
Senftenberg	4	2022-05-13	2022-06-10	28
Dornburg	4	2022-05-16	2022-06-13	28
Wendhausen	4	2022-05-17	2022-06-14	28
Vechta	4	2022-05-19	2022-06-16	28
Forst	5	2022-06-09	2022-06-27	18
Senftenberg	5	2022-06-10	2022-06-28	18
Dornburg	5	2022-06-13	2022-07-04	21
Wendhausen	5	2022-06-14	2022-07-05	21
Vechta	5	2022-06-16	2022-07-07	21

Table S3: Summarized habitat and humidity preferences of carabid beetle species modified after Barndt (1981).

Ecotype	Summarized habitat	Ecotype	Summarized humidity
xerophilic	open (o)	xerophilic	xerophilic (x)
weak xerophilic		mainly xerophilic	
mesophilic		dry forests	
hygrophilic		mainly dry forests	
mainly hygrophilic		hygrophilic	hygrophilic (h)
eurytopic		mainly hygrophilic	
forest species	forest (f)	humid forests	
dry forests		mainly humid forests	
humid forests		wet forests	
wet forests		mainly wet forests	
mainly forests	both (b)	mesophilic	eurytopic (eu)
mainly dry forests		eurytopic	
mainly humid forests		forest species	
mainly wet forests		mainly forests	

Table S4: Pitfall trap catches. Abundance of carabid beetle species caught in tree rows, different distances from the tree row edge within alley-cropping systems (1 m, 7 m, 24 m), open croplands (OC) and total species abundance as well as their diet preference (diet), size class (size), habitat preference (eco), humidity preference (hum), overwintering type (ow), German Red List category (RL) and current population status (PS). Diet: c = carnivorous, g = granivorous, o = omnivorous. Size: s = small, m = medium, l = large. Eco: o = open, f = forest, b = . Hum: h = hygrophilic, x = xerophilic, eu = eurytopic. Ow: l = larvae, i = imago. RL: * = least concern, V = near threatened, R = rare, 3 = vulnerable, 2 = endangered. PS: vf = very frequent, f = frequent, mf = moderately frequent, r = rare, vr = very rare, er = extremely rare.

Species	Distance category						Species traits					Conservation status	
	tree row	1 m	7 m	24 m	OC	total	diet	size	eco	hum	ow	RL	PS
1. <i>Brachinus crepitans</i>	12	248	153	21	4	438	c	m	o	x	i	V	r
2. <i>Calosoma auropunctatum</i>	0	0	0	1	4	5	c	l	o	eu	i	V	r
3. <i>Carabus auronitens</i>	0	0	0	0	1	1	c	l	f	h	i	*	mf
4. <i>Carabus convexus</i>	39	63	5	8	10	125	c	l	f	h	i	V	mf
5. <i>Carabus coriaceus</i>	0	4	10	7	0	21	c	l	f	h	l	*	f
6. <i>Carabus granulatus</i>	29	28	18	29	17	121	c	l	b	h	i	*	vf
7. <i>Carabus nemoralis</i>	32	7	3	3	0	45	c	l	b	h	i	*	vf
8. <i>Carabus violaceus</i>	1	2	0	0	0	3	c	l	f	x	l	*	mf
9. <i>Cychrus caraboides</i>	2	0	0	0	0	2	c	l	f	h	l	*	f
10. <i>Leistus ferrugineus</i>	4	2	0	1	0	7	c	m	b	x	l	*	f
11. <i>Leistus fulvibarbis</i>	0	1	0	0	0	1	c	m	f	h	l	*	vr
12. <i>Leistus rufomarginatus</i>	1	0	1	0	0	2	c	m	f	h	l	*	mf
13. <i>Nebria brevicollis</i>	1064	409	275	348	104	2200	c	l	b	h	l	*	vf
14. <i>Nebria livida</i>	0	0	0	1	0	1	c	l	o	h	l	3	r
15. <i>Nebria salina</i>	33	20	9	14	18	94	c	l	o	x	l	*	mf
16. <i>Notiophilus aestuans</i>	12	45	45	35	62	199	c	s	o	x	l	V	mf
17. <i>Notiophilus biguttatus</i>	61	27	43	30	31	192	c	s	o	eu	i	*	vf
18. <i>Notiophilus germinyi</i>	4	3	11	4	1	23	c	s	b	x	l	*	mf
19. <i>Notiophilus palustris</i>	1	0	0	0	0	1	c	s	b	h	i	*	f
20. <i>Notiophilus quadripunctatus</i>	12	31	33	23	36	135	c	s	o	eu	l	R	er
21. <i>Notiophilus substriatus</i>	0	2	1	0	3	6	c	s	o	x	i	*	r
22. <i>Loricera pilicornis</i>	21	84	153	112	78	448	c	m	b	h	i	*	vf
23. <i>Clivina fossor</i>	18	43	31	32	10	134	c	m	o	eu	i	*	vf
24. <i>Dyschirius politus</i>	0	1	0	0	0	1	c	s	o	x	i	*	mf
25. <i>Broscus cephalotes</i>	1	3	0	1	4	9	g	l	o	x	l	*	mf
26. <i>Trechus quadristriatus</i>	54	46	25	31	127	283	c	s	o	x	l	*	vf
27. <i>Bembidion femoratum</i>	6	30	9	25	3	73	c	s	o	eu	i	*	vf
28. <i>Bembidion gilvipes</i>	0	1	0	0	0	1	c	s	b	h	i	*	mf
29. <i>Bembidion lampros</i>	142	369	354	207	188	1260	c	s	b	x	i	*	vf
30. <i>Bembidion lunulatum</i>	0	0	0	0	1	1	c	s	o	h	i	*	mf
31. <i>Bembidion obtusum</i>	25	50	84	91	77	327	c	s	o	x	i	*	mf
32. <i>Bembidion properans</i>	43	287	255	198	243	1026	c	s	o	x	i	*	vf
33. <i>Bembidion quadrimaculatum</i>	3	38	32	19	29	121	c	s	o	x	l	*	vf
34. <i>Bembidion tetracolum</i>	46	91	43	40	23	243	c	s	o	eu	i	*	vf

35. <i>Asaphidion curtum</i>	5	0	1	2	1	9	c	s	f	h	i	*	mf
36. <i>Asaphidion flavipes</i>	3	12	10	10	8	43	c	s	o	eu	i	*	f
37. <i>Stomis pumicatus</i>	3	3	2	4	0	12	c	m	f	h	i	*	f
38. <i>Poecilus cupreus</i>	74	747	1529	2318	7021	11689	o	l	o	h	i	*	vf
39. <i>Poecilus lepidus</i>	1	131	57	69	55	313	c	l	o	x	i	*	mf
40. <i>Poecilus punctulatus</i>	36	244	256	451	394	1381	c	l	o	x	i	3	vr
41. <i>Poecilus versicolor</i>	331	973	804	1002	1207	4317	c	l	o	h	i	*	vf
42. <i>Pterostichus anthracinus</i>	0	0	0	1	0	1	c	l	b	h	i	*	f
43. <i>Pterostichus longicollis</i>	0	0	1	0	0	1	c	m	o	x	l	3	vr
44. <i>Pterostichus macer</i>	1	4	5	5	0	15	c	l	o	x	i	V	mf
45. <i>Pterostichus melanarius</i>	204	281	346	629	209	1669	c	l	o	eu	l	*	vf
46. <i>Pterostichus niger</i>	4	2	2	0	1	9	c	l	b	h	l	*	vf
47. <i>Pterostichus oblongopunctatus</i>	1	2	0	1	1	5	c	l	f	h	i	*	vf
48. <i>Pterostichus strenuus</i>	63	5	4	0	0	72	c	m	f	h	i	*	vf
49. <i>Pterostichus vernalis</i>	9	0	1	1	1	12	c	m	o	h	i	*	vf
50. <i>Abax parallelepipedus</i>	3	2	0	0	0	5	c	l	f	h	l	*	f
51. <i>Oxypselaphus obscurus</i>	5	1	0	0	0	6	c	s	b	h	i	*	f
52. <i>Limodromus assimilis</i>	17	5	4	4	0	30	c	l	b	h	i	*	vf
53. <i>Anchomenus dorsalis</i>	87	218	248	170	106	829	c	m	o	x	i	*	f
54. <i>Agonum muelleri</i>	0	7	9	5	1	22	c	m	o	h	i	*	f
55. <i>Agonum piceum</i>	1	0	0	0	0	1	c	m	o	h	i	3	r
56. <i>Agonum sexpunctatum</i>	0	2	0	3	1	6	c	m	o	h	i	*	mf
57. <i>Synuchus vivalis</i>	11	2	0	0	0	13	g	m	b	x	l	*	mf
58. <i>Calathus ambiguus</i>	46	87	77	80	181	471	c	l	o	x	l	*	mf
59. <i>Calathus cinctus</i>	111	54	30	36	181	412	c	m	o	x	l	*	mf
60. <i>Calathus erratus</i>	37	129	49	60	233	508	c	l	o	x	l	*	mf
61. <i>Calathus fuscipes</i>	458	753	317	337	634	2499	c	l	b	x	l	*	vf
62. <i>Calathus micropterus</i>	1	0	0	0	0	1	c	m	f	x	l	*	vf
63. <i>Calathus rotundicollis</i>	4	0	0	1	0	5	c	m	f	h	l	*	mf
64. <i>Dolichus halensis</i>	14	7	7	6	2	36	c	l	o	x	l	2	r
65. <i>Zabrus tenebrioides</i>	10	28	24	17	394	473	g	l	o	x	l	*	mf
66. <i>Amara aenea</i>	69	586	609	684	383	2331	g	m	o	x	i	*	vf
67. <i>Amara anthobia</i>	28	61	27	24	38	178	g	m	o	x	i	*	r
68. <i>Amara apricaria</i>	0	4	6	3	4	17	g	m	o	x	l	*	mf
69. <i>Amara aulica</i>	1	1	3	0	0	5	g	l	o	x	l	*	mf
70. <i>Amara bifrons</i>	12	15	13	4	1	45	g	m	o	x	l	*	f
71. <i>Amara communis</i>	18	11	4	0	3	36	g	m	o	h	i	*	vf
72. <i>Amara consularis</i>	21	33	26	24	47	151	g	m	o	x	l	*	mf
73. <i>Amara convexior</i>	1	6	0	1	0	8	g	m	o	x	i	*	mf
74. <i>Amara eurynota</i>	1	7	17	13	12	50	g	l	o	x	i	*	mf
75. <i>Amara familiaris</i>	11	97	165	146	85	504	g	m	b	x	i	*	vf
76. <i>Amara fulva</i>	1	1	2	0	0	4	g	m	o	x	l	*	mf
77. <i>Amara ingenua</i>	2	2	1	0	62	67	g	l	o	x	i	*	r
78. <i>Amara lucida</i>	26	106	112	136	57	437	g	s	o	x	i	V	r
79. <i>Amara lunicollis</i>	6	11	9	25	31	82	g	m	b	x	i	*	mf
80. <i>Amara ovata</i>	12	97	203	237	187	736	g	m	b	h	i	*	mf

81. <i>Amara plebeja</i>	2	32	11	3	6	54	g	m	o	eu	i	*	f
82. <i>Amara similata</i>	10	67	206	243	291	817	g	m	o	eu	i	*	vf
83. <i>Amara tibialis</i>	1	1	0	0	0	2	g	s	o	x	i	*	mf
84. <i>Anisodactylus binotatus</i>	4	5	7	7	5	28	g	l	o	h	i	*	vf
85. <i>Anisodactylus signatus</i>	0	0	0	1	4	5	o	l	o	h	i	V	vr
86. <i>Harpalus affinis</i>	172	689	542	502	468	2373	g	l	o	x	i	*	vf
87. <i>Harpalus anxius</i>	13	150	70	62	24	319	o	m	o	x	i	*	mf
88. <i>Harpalus attenuatus</i>	2	0	0	1	0	3	g	m	o	x	i	*	vr
89. <i>Harpalus distinguendus</i>	7	104	61	49	142	363	g	m	o	x	i	*	mf
90. <i>Harpalus froelichii</i>	5	17	4	9	47	82	g	m	o	x	i	*	r
91. <i>Harpalus griseus</i>	71	186	198	191	0	646	o	l	o	x	l	*	mf
92. <i>Harpalus latus</i>	6	16	4	4	2	32	g	m	b	h	i	*	f
93. <i>Harpalus luteicornis</i>	9	14	11	13	10	57	g	m	o	x	i	*	r
94. <i>Harpalus pumilus</i>	6	94	113	62	2	277	g	s	o	x	i	*	mf
95. <i>Harpalus rubripes</i>	12	46	21	12	4	95	g	l	o	x	i	*	f
96. <i>Harpalus rufipes</i>	605	1379	820	826	516	4146	g	l	o	x	l	*	vf
97. <i>Harpalus serripes</i>	2	31	7	1	4	45	g	l	o	x	i	3	r
98. <i>Harpalus signaticornis</i>	2	212	583	227	17	1041	g	m	o	x	i	*	mf
99. <i>Harpalus smaragdinus</i>	1	13	14	7	1	36	g	m	o	x	l	*	mf
100. <i>Harpalus tardus</i>	28	73	73	60	26	260	c	m	o	x	i	*	mf
101. <i>Ophonus ardosiacus</i>	0	18	14	4	0	36	g	l	o	x	i	*	r
102. <i>Ophonus azureus</i>	6	219	86	73	2	386	g	m	o	x	i	*	mf
103. <i>Ophonus laticollis</i>	3	5	0	0	1	9	g	m	o	eu	l	*	mf
104. <i>Ophonus rufibarbis</i>	1	0	0	0	0	1	g	m	b	x	l	*	vf
105. <i>Stenolophus mixtus</i>	0	1	3	2	0	6	c	s	o	h	i	*	f
106. <i>Acupalpus exiguus</i>	0	1	0	0	0	1	g	s	o	h	i	*	mf
107. <i>Acupalpus meridianus</i>	0	1	1	2	2	6	o	s	o	x	i	*	f
108. <i>Bradycellus csikii</i>	0	2	2	0	0	4	o	s	o	x	l	*	mf
109. <i>Bradycellus harpalinus</i>	1	0	0	0	0	1	o	s	o	eu	l	*	f
110. <i>Badister bullatus</i>	7	1	0	0	0	8	c	s	b	x	i	*	f
111. <i>Panagaeus bipustulatus</i>	9	6	0	1	0	16	o	m	b	x	i	*	mf
112. <i>Demetrias atricapillus</i>	0	0	0	1	5	6	c	s	o	eu	i	*	mf
113. <i>Paradromius linearis</i>	1	0	0	0	0	1	c	s	o	x	i	*	f
114. <i>Philorhizus melanocephalus</i>	1	0	0	0	0	1	c	s	o	x	i	*	mf
115. <i>Philorhizus notatus</i>	1	1	0	0	0	2	c	s	o	x	i	*	mf
116. <i>Microlestes maurus</i>	65	56	28	8	6	163	c	s	o	x	i	*	mf
117. <i>Microlestes minutulus</i>	33	182	139	91	173	618	c	s	o	x	i	*	mf
118. <i>Syntomus truncatellus</i>	4	34	21	22	4	85	c	s	o	x	i	*	f
Total abundance:	4505	10328	9612	10274	14377	49096							

Table S5: Emergence trap catches. Abundance of carabid beetle species caught in tree rows, different distances from the tree row edge within alley-cropping systems (1 m, 7 m, 24 m), open croplands (OC) and total species abundance as well as their diet preference (diet), size class (size), habitat preference (eco), humidity preference (hum), overwintering type (ow), German Red List category (RL) and current population status (PS). Diet: c = carnivorous, g = granivorous, o = omnivorous. Size: s = small, m = medium, l = large. Eco: o = open, f = forest, b = both. Hum: h = hygrophilic, x = xerophilic, eu = eurytopic. Ow: l = larvae, i = imago. RL: * = least concern, V = near threatened, R = rare, 3 = vulnerable, 2 = endangered. PS: vf = very frequent, f = frequent, mf = moderately frequent, r = rare, vr = very rare, er = extremely rare.

Species	Distance category						Species traits					Conservation status	
	tree row	1 m	7 m	24 m	OC	Total	diet	size	eco	hum	ow	RL	PS
1. <i>Brachinus crepitans</i>	1	33	11	15	5	65	c	m	o	x	i	V	r
2. <i>Carabus convexus</i>	1	0	1	2	1	5	c	l	f	h	i	V	mf
3. <i>Carabus coriaceus</i>	0	0	10	8	0	18	c	l	f	h	l	*	f
4. <i>Carabus granulatus</i>	13	47	26	95	9	190	c	l	b	h	i	*	vf
5. <i>Carabus nemoralis</i>	5	3	2	2	0	12	c	l	b	h	i	*	vf
6. <i>Carabus violaceus</i>	0	0	1	0	0	1	c	l	f	x	l	*	mf
7. <i>Leistus ferrugineus</i>	0	1	0	0	0	1	c	m	b	x	l	*	mf
8. <i>Nebria brevicollis</i>	564	92	47	109	40	852	c	l	b	h	l	*	vf
9. <i>Notiophilus aestuans</i>	0	3	2	1	7	13	c	s	o	x	l	V	mf
10. <i>Notiophilus biguttatus</i>	13	8	4	3	5	33	c	s	o	eu	i	*	vf
11. <i>Notiophilus germinyi</i>	2	8	2	1	4	17	c	s	b	x	l	*	mf
12. <i>Notiophilus quadripunctatus</i>	0	2	4	3	8	17	c	s	o	eu	l	R	er
13. <i>Loricera pilicornis</i>	12	46	20	19	15	112	c	m	b	h	i	*	vf
14. <i>Clivina fossor</i>	15	63	22	12	0	112	c	m	o	eu	i	*	vf
15. <i>Trechus quadristriatus</i>	128	191	111	174	687	1291	c	s	o	x	l	*	vf
16. <i>Bembidion femoratum</i>	19	100	23	32	4	178	c	s	o	eu	i	*	vf
17. <i>Bembidion lampros</i>	43	102	77	58	36	316	c	s	b	x	i	*	vf
18. <i>Bembidion lunulatum</i>	0	1	0	0	0	1	c	s	o	h	i	*	mf
19. <i>Bembidion obtusum</i>	3	21	23	27	18	92	c	s	o	x	i	*	mf
20. <i>Bembidion properans</i>	0	11	10	7	22	50	c	s	o	x	i	*	vf
21. <i>Bembidion quadrimaculatum</i>	1	16	6	5	29	57	c	s	o	x	l	*	vf
22. <i>Bembidion tetracolum</i>	0	15	2	7	1	25	c	s	o	eu	i	*	vf
23. <i>Asaphidion flavipes</i>	4	13	2	4	1	24	c	s	o	eu	i	*	f
24. <i>Stomis pumicatus</i>	3	1	1	4	0	9	c	m	f	h	i	*	f
25. <i>Poecilus cupreus</i>	13	109	186	559	885	1752	o	l	o	h	i	*	vf
26. <i>Poecilus punctulatus</i>	0	3	0	0	0	3	c	l	o	x	i	3	vr
27. <i>Poecilus versicolor</i>	23	113	92	113	96	437	c	l	o	h	i	*	vf
28. <i>Pterostichus macer</i>	1	1	0	0	0	2	c	l	o	x	i	V	mf
29. <i>Pterostichus melanarius</i>	423	191	144	219	17	994	c	l	o	eu	l	*	vf
30. <i>Pterostichus niger</i>	2	6	0	2	1	11	c	l	b	h	l	*	vf
31. <i>Pterostichus oblongopunctatus</i>	3	0	1	0	0	4	c	l	f	h	i	*	vf
32. <i>Pterostichus strenuus</i>	2	0	0	0	0	2	c	m	f	h	i	*	vf
33. <i>Pterostichus vernalis</i>	6	0	0	0	1	7	c	m	o	h	i	*	vf
34. <i>Abax parallelepipedus</i>	2	3	0	0	0	5	c	l	f	h	l	*	f

35. <i>Olisthopus rotundatus</i>	0	1	0	0	0	1	c	m	o	x	l	V	mf
36. <i>Limodromus assimilis</i>	9	2	4	0	1	16	c	l	b	h	i	*	f
37. <i>Anchomenus dorsalis</i>	14	144	98	144	85	485	c	m	o	x	i	*	f
38. <i>Agonum muelleri</i>	0	0	2	0	0	2	c	m	o	h	i	*	f
39. <i>Agonum sexpunctatum</i>	0	4	0	3	0	7	c	m	o	h	i	*	mf
40. <i>Synuchus vivalis</i>	3	2	0	0	0	5	g	m	b	x	l	*	mf
41. <i>Calathus ambiguus</i>	3	9	4	1	15	32	c	l	o	x	l	*	mf
42. <i>Calathus cinctus</i>	33	66	56	64	317	536	c	m	o	x	l	*	mf
43. <i>Calathus erratus</i>	18	6	1	2	17	44	c	l	o	x	l	*	mf
44. <i>Calathus fuscipes</i>	82	61	10	12	59	224	c	l	b	x	l	*	vf
45. <i>Calathus rotundicollis</i>	13	2	0	0	0	15	c	m	f	h	l	*	mf
46. <i>Zabrus tenebrioides</i>	0	0	1	1	59	61	g	l	o	x	l	*	mf
47. <i>Amara aenea</i>	9	15	8	5	30	67	g	m	o	x	i	*	vf
48. <i>Amara anthobia</i>	3	0	1	0	5	9	g	m	o	x	i	*	r
49. <i>Amara apricaria</i>	0	1	0	0	1	2	g	m	o	x	l	*	mf
50. <i>Amara aulica</i>	0	1	0	1	1	3	g	l	o	x	l	*	mf
51. <i>Amara bifrons</i>	23	11	9	5	11	59	g	m	o	x	l	*	f
52. <i>Amara consularis</i>	6	5	2	2	7	22	g	m	o	x	l	*	mf
53. <i>Amara eurynota</i>	0	2	1	0	1	4	g	l	o	x	i	*	mf
54. <i>Amara familiaris</i>	2	5	1	6	17	31	g	m	b	x	i	*	vf
55. <i>Amara ingenua</i>	0	0	0	0	33	33	g	l	o	x	i	*	r
56. <i>Amara lucida</i>	9	7	3	9	12	40	g	s	o	x	i	V	r
57. <i>Amara lunicollis</i>	1	2	3	0	3	9	g	m	b	x	i	*	mf
58. <i>Amara ovata</i>	15	60	350	309	318	1052	g	m	b	h	i	*	mf
59. <i>Amara plebeja</i>	2	5	1	3	7	18	g	m	o	e	i	*	f
60. <i>Amara similata</i>	3	22	203	340	428	996	g	m	o	e	i	*	vf
61. <i>Amara tibialis</i>	0	0	1	0	0	1	g	s	o	x	i	*	mf
62. <i>Anisodactylus binotatus</i>	0	1	3	0	3	7	g	l	o	h	i	*	vf
63. <i>Harpalus affinis</i>	54	109	98	88	278	627	g	l	o	x	i	*	vf
64. <i>Harpalus anxius</i>	1	2	0	0	0	3	o	m	o	x	i	*	mf
65. <i>Harpalus distinguendus</i>	0	3	2	5	12	22	g	m	o	x	i	*	mf
66. <i>Harpalus froelichii</i>	1	1	0	1	1	4	g	m	o	x	i	*	r
67. <i>Harpalus griseus</i>	0	1	0	2	0	3	o	l	o	x	l	*	mf
68. <i>Harpalus latus</i>	0	0	0	0	1	1	g	m	b	h	i	*	f
69. <i>Harpalus luteicornis</i>	8	3	1	9	6	27	g	m	o	x	i	*	r
70. <i>Harpalus pumilus</i>	1	1	3	5	0	10	g	s	o	x	i	*	mf
71. <i>Harpalus rubripes</i>	0	3	2	2	4	11	g	l	o	x	i	*	f
72. <i>Harpalus rufipes</i>	56	135	64	42	72	369	g	l	o	x	l	*	vf
73. <i>Harpalus serripes</i>	0	5	0	0	0	5	g	l	o	x	i	3	r
74. <i>Harpalus signaticornis</i>	0	5	0	14	6	25	g	m	o	x	i	*	mf
75. <i>Harpalus tardus</i>	6	9	3	1	2	21	c	m	o	x	i	*	mf
76. <i>Ophonus ardosiacus</i>	0	5	2	0	0	7	g	l	o	x	i	*	r
77. <i>Ophonus azureus</i>	1	26	6	6	1	40	g	m	o	x	i	*	mf
78. <i>Ophonus laticollis</i>	1	0	0	0	0	1	g	m	o	eu	l	*	mf
79. <i>Ophonus rufibarbis</i>	1	0	0	0	0	1	g	m	b	x	l	*	vf
80. <i>Acupalpus dubius</i>	0	0	0	2	0	2	c	s	o	h	i	V	mf

81. <i>Acupalpus exiguus</i>	0	0	0	2	6	8	g	s	o	h	i	*	mf
82. <i>Acupalpus meridianus</i>	0	8	1	10	10	29	o	s	o	x	i	*	f
83. <i>Bradycellus harpalinus</i>	1	0	0	0	0	1	o	s	o	eu	l	*	f
84. <i>Badister bullatus</i>	1	1	0	1	1	4	c	s	b	x	i	*	f
85. <i>Badister dilatatus</i>	1	0	0	0	0	1	c	s	o	h	i	*	f
86. <i>Panagaeus bipustulatus</i>	0	1	0	1	0	2	o	m	b	x	i	*	mf
87. <i>Demetrias atricapillus</i>	2	2	12	16	24	56	c	s	o	eu	i	*	mf
88. <i>Paradromius linearis</i>	0	0	0	1	0	1	c	s	o	x	i	*	f
89. <i>Dromius quadrimaculatus</i>	0	0	0	1	0	1	c	s	f	eu	i	*	vf
90. <i>Philorhizus melanocephalus</i>	1	0	0	0	0	1	c	s	o	x	i	*	mf
91. <i>Microlestes minutulus</i>	5	3	1	0	9	18	c	s	o	x	i	*	mf
92. <i>Syntomus truncatellus</i>	5	3	1	2	3	14	c	s	o	x	i	*	f
Total abundance:	1696	1963	1788	2599	3758	11804							

Table S6: Abundance of carabid beetles with different habitat and diet preferences, as well as size classes caught in pitfall and emergence traps within tree rows, at different distances from the tree row edge within agroforestry systems (1 m, 7 m, 24 m) and open croplands (OC).

	Pitfall traps							Emergence traps					
Diet	tree row	1 m	7 m	24 m	OC	total		tree row	1 m	7 m	24 m	OC	total
carnivorous	3250	5202	4087	4341	4500	21380		1482	1407	836	1172	1540	6437
granivorous	1087	4034	3725	3358	2826	15030		199	435	765	855	1323	3577
omnivorous	168	1092	1800	2575	7051	12686		15	121	187	572	895	1790
Habitat	tree row	1 m	7 m	24 m	OC	total		tree row	1 m	7 m	24 m	OC	total
open	2538	8352	8071	8792	13036	40789		917	1518	1232	1969	3252	8888
forest	123	82	23	23	13	264		24	6	14	15	1	60
both	1844	1894	1518	1459	1328	8043		755	439	542	615	505	2856
Size	tree row	1 m	7 m	24 m	OC	total		tree row	1 m	7 m	24 m	OC	total
small	568	1514	1365	1039	1082	5568		239	516	288	371	887	2301
medium	629	2519	2820	2286	1730	9984		185	539	800	968	1279	3771
large	3308	6295	5427	6949	11565	33544		1272	908	700	1260	1592	5732

Table S7: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m, open cropland, on total overwintering (emergence traps) carabid beetle abundance, α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) as well as functional diversity (functional richness, functional evenness, functional dispersion) with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	<i>z</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>
Intercept	3.89 (0.29)	76	13.7	<0.001	8.53 (1.26)	76	6.7	<0.001	6.2 (0.85)	76	7.3	<0.001	4.86 (0.69)	76	7.1	<0.001
1 m	0.21 (0.3)	76	0.7	0.486	0.66 (1.06)	76	0.6	0.536	0.1 (0.83)	76	0.1	0.906	-0.09 (0.84)	76	-0.1	0.912
7 m	0.12 (0.3)	76	0.4	0.679	-0.51 (1.06)	76	-0.5	0.631	-0.08 (0.83)	76	-0.1	0.921	0.42 (0.84)	76	0.5	0.623
24 m	0.42 (0.3)	76	1.4	0.162	-2.47 (1.06)	76	-2.3	0.022	-1.71 (0.83)	76	-2.1	0.043	-1.23 (0.84)	76	-1.5	0.15
open cropland	1.03 (0.31)	76	3.3	<0.001	-2.21 (1.06)	76	-2.1	0.04	-2.19 (0.83)	76	-2.6	0.01	-1.86 (0.84)	76	-2.2	0.03
<i>mR</i> ² / <i>cR</i> ²	0.07 / 0.43				0.08 / 0.47				0.09 / 0.36				0.09 / 0.19			
Response/Predictor	Functional richness (FRic)				Functional evenness (FEve)				Functional dispersion (FDis)							
	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>				
Intercept	0.48 (0.1)	76	4.7	<0.001	0.63 (0.04)	76	15.2	<0.001	0.3 (0.03)	76	9.4	<0.001				
1 m	0.01 (0.07)	76	0.1	0.941	-0.04 (0.06)	76	-0.7	0.484	-0.04 (0.02)	76	-1.9	0.064				
7 m	-0.001 (0.07)	76	0.0	0.983	-0.02 (0.06)	76	-0.3	0.783	-0.03 (0.02)	76	-1.5	0.15				
24 m	-0.02 (0.07)	76	-0.3	0.785	-0.05 (0.06)	76	-0.8	0.433	-0.05 (0.02)	76	-2.0	0.053				
open cropland	-0.01 (0.07)	76	-0.1	0.923	-0.1 (0.06)	76	-1.7	0.092	-0.09 (0.02)	76	-4.1	<0.001				
<i>mR</i> ² / <i>cR</i> ²	0.0007 / 0.52				0.03 / 0.03				0.09 / 0.47							

Table S8: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in total overwintering (emergence traps) carabid beetle abundance, α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) and functional diversity (functional richness, functional evenness, functional dispersion) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	0.21 (0.3)	0.7	1	0.66 (1.06)	0.6	1	0.1 (0.83)	0.1	1	-0.09 (0.82)	-0.1	1
7 m - tree row	0.12 (0.3)	0.4	1	-0.51 (1.06)	-0.5	1	-0.08 (0.83)	-0.1	1	0.42 (0.82)	0.5	1
24 m - tree row	0.42 (0.3)	1.4	0.970	-2.47 (1.06)	-2.3	0.175	-1.71 (0.83)	-2.1	0.260	-1.23 (0.82)	-1.5	0.902
open cropland - tree row	1.03 (0.3)	3.3	0.009	-2.21 (1.06)	-2.1	0.278	-2.19 (0.83)	-2.6	0.093	-1.86 (0.82)	-2.3	0.273
7 m - 1 m	-0.08 (0.29)	-0.3	1	-1.17 (1.06)	-1.1	1	-0.18 (0.83)	-0.2	1	0.51 (0.82)	0.6	1
24 m - 1 m	0.21 (0.29)	0.7	1	-3.13 (1.06)	-3.0	0.041	-1.81 (0.83)	-2.2	0.230	-1.13 (0.82)	-1.4	0.919
open cropland - 1 m	0.83 (0.3)	2.8	0.041	-2.86 (1.06)	-2.7	0.074	-2.29 (0.83)	-2.8	0.074	-1.77 (0.82)	-2.2	0.315
24 m - 7 m	0.29 (0.28)	1.0	1	-1.96 (1.06)	-1.9	0.403	-1.63 (0.83)	-2.0	0.271	-1.64 (0.82)	-2.0	0.387
open cropland - 7 m	0.91 (0.3)	3.1	0.016	-1.7 (1.06)	-1.6	0.558	-2.11 (0.83)	-2.5	0.107	-2.28 (0.82)	-2.8	0.085
open cropland - 24 m	0.62 (0.3)	2.1	0.261	0.26 (1.06)	0.3	1	-0.48 (0.83)	-0.6	1	-0.64 (0.82)	-0.8	1
Distance category	Functional richness (FRic)			Functional evenness (FEve)			Functional dispersion (FDis)					
	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P			
1 m - tree row	0.01 (0.07)	0.1	1	-0.04 (0.06)	-0.7	1	-0.04 (0.02)	-1.9	0.323			
7 m - tree row	-0.001 (0.07)	-0.02	1	-0.02 (0.06)	-0.3	1	-0.03 (0.02)	-1.5	0.600			
24 m - tree row	-0.02 (0.07)	-0.3	1	-0.05 (0.06)	-0.8	1	-0.05 (0.02)	-2.0	0.320			
open cropland - tree row	-0.01 (0.07)	-0.1	1	-0.1 (0.06)	-1.7	0.915	-0.09 (0.02)	-4.1	0.001			
7 m - 1 m	-0.01 (0.07)	-0.1	1	0.03 (0.06)	0.4	1	0.01 (0.02)	0.4	1			
24 m - 1 m	-0.02 (0.07)	-0.4	1	-0.01 (0.06)	-0.1	1	-0.002 (0.02)	-0.1	1			
open cropland - 1 m	-0.01 (0.07)	-0.2	1	-0.056(0.06)	-1.0	1	-0.05 (0.02)	-2.2	0.256			
24 m - 7 m	-0.02 (0.07)	-0.3	1	-0.03 (0.06)	-0.5	1	-0.01 (0.02)	-0.5	1			
open cropland - 7 m	-0.01 (0.07)	-0.1	1	-0.08 (0.06)	-1.4	1	-0.06 (0.02)	-2.6	0.099			
open cropland - 24 m	0.01 (0.07)	0.2	1	-0.05 (0.06)	-0.9	1	-0.05 (0.02)	-2.1	0.275			

Table S9: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m, open cropland, on total active (pitfall traps) carabid beetle abundance, α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) as well as functional diversity (functional richness, functional evenness, functional dispersion) with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	<i>z</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>
Intercept	5.06 (0.13)	116	39.5	<0.001	25.71 (2.09)	116	12.3	<0.001	10.67 (1.22)	116	8.8	<0.001	6.31 (0.83)	116	7.6	<0.001
1 m	0.65 (0.14)	116	4.8	<0.001	-3.02 (1.27)	116	-2.4	0.019	1.06 (0.63)	116	1.7	0.096	1.59 (0.51)	116	3.1	0.002
7 m	0.54 (0.14)	116	3.9	<0.001	-4.37 (1.27)	116	-3.4	<0.001	-0.21 (0.63)	116	-0.3	0.736	0.8 (0.51)	116	1.6	0.117
24 m	0.64 (0.14)	116	4.6	<0.001	-7.22 (1.27)	116	-5.7	<0.001	-1.63 (0.63)	116	-2.6	0.011	-0.14 (0.51)	116	-0.3	0.781
open cropland	0.85 (0.14)	116	6	<0.001	-8.86 (1.27)	116	-7.0	<0.001	-3.17 (0.63)	116	-5.1	<0.001	-1.54 (0.51)	116	-3.0	0.003
<i>mR</i> ² / <i>cR</i> ²	0.14 / 0.49				0.2 / 0.54				0.15 / 0.59				0.15 / 0.51			
Response/Predictor	Functional richness (FRic)				Functional evenness (FEve)				Functional dispersion (FDis)							
	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>				
Intercept	0.14 (0.03)	116	4.4	<0.001	0.57 (0.03)	116	16.6	<0.001	0.34 (0.01)	116	42.0	<0.001				
1 m	0.03 (0.02)	116	1.6	0.119	-0.09 (0.02)	116	-5.1	<0.001	-0.02 (0.01)	116	-1.7	0.099				
7 m	0.01 (0.02)	116	0.6	0.541	-0.06 (0.02)	116	-3.1	0.003	-0.01 (0.01)	116	-0.9	0.385				
24 m	-0.02 (0.02)	116	-0.9	0.366	-0.06 (0.02)	116	-3.2	0.002	-0.02 (0.01)	116	-2.1	0.034				
open cropland	-0.03 (0.02)	116	-1.4	0.155	-0.05 (0.02)	116	-2.5	0.013	-0.04 (0.01)	116	-3.7	<0.001				
<i>mR</i> ² / <i>cR</i> ²	0.04 / 0.46				0.09 / 0.54				0.1 / 0.12							

Table S10: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in total active (pitfall traps) carabid beetle abundance, α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) and functional diversity (functional richness, functional evenness, functional dispersion) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	0.65 (0.14)	4.8	<0.001	-3.02 (1.27)	-2.4	0.076	1.06 (0.63)	1.7	0.191	1.59 (0.51)	3.1	0.015
7 m - tree row	0.54 (0.14)	3.9	0.001	-4.37 (1.27)	-3.5	0.005	-0.21 (0.63)	-0.3	0.736	0.8 (0.51)	1.6	0.351
24 m - tree row	0.64 (0.14)	4.6	<0.001	-7.22 (1.27)	-5.8	<0.001	-1.63 (0.63)	-2.6	0.065	-0.14 (0.51)	-0.3	0.782
open cropland - tree row	0.86 (0.14)	6.0	<0.001	-8.86 (1.27)	-7.1	<0.001	-3.17 (0.63)	-5.1	<0.001	-1.54 (0.51)	-3.0	0.018
7 m - 1 m	-0.11 (0.14)	-0.8	1	-1.35 (1.27)	-1.1	0.398	-1.28 (0.63)	-2.0	0.138	-0.8 (0.51)	-1.6	0.351
24 m - 1 m	-0.02 (0.14)	-0.1	1	-4.21 (1.27)	-3.4	0.006	-2.68 (0.63)	-4.3	<0.001	-1.73 (0.51)	-3.4	0.007
open cropland - 1 m	0.2 (0.14)	1.5	0.574	-5.84 (1.27)	-4.7	<0.001	-4.23(0.63)	-6.7	<0.001	-3.12 (0.51)	-6.2	<0.001
24 m - 7 m	0.1 (0.14)	0.7	1	-2.86 (1.27)	-2.3	0.078	-1.42(0.63)	-2.3	0.104	-0.94 (0.51)	-1.9	0.264
open cropland - 7 m	0.31 (0.14)	2.3	0.135	-4.5 (1.27)	-3.6	0.004	-2.96 (0.63)	-4.7	<0.001	-2.33 (0.51)	-4.6	0.001
open cropland - 24 m	0.22 (0.14)	1.6	0.557	-1.64 (1.27)	-1.3	0.398	-1.55 (0.63)	-2.5	0.077	-1.4 (0.51)	-2.8	0.033
Distance category	Functional richness (FRic)			Functional evenness (FEve)			Functional dispersion (FDis)					
	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P			
1 m - tree row	0.03 (0.02)	1.6	0.832	-0.09(0.02)	-5.2	<0.001	-0.02 (0.01)	-1.7	0.591			
7 m - tree row	0.01 (0.02)	0.6	1	-0.06 (0.02)	-3.1	0.021	-0.01 (0.01)	-0.9	1			
24 m - tree row	-0.02 (0.02)	-0.9	1	-0.06 (0.02)	-3.3	0.015	-0.02 (0.01)	-2.2	0.270			
open cropland - tree row	-0.03 (0.02)	-1.4	0.832	-0.05 (0.02)	-2.6	0.084	-0.04 (0.01)	-3.8	0.003			
7 m - 1 m	-0.02 (0.02)	-1.0	1	0.04 (0.02)	2.0	0.239	0.01 (0.01)	0.8	1			
24 m - 1 m	-0.05 (0.02)	-2.5	0.132	0.03 (0.02)	1.9	0.266	-0.01 (0.01)	-0.5	1			
open cropland - 1 m	-0.06 (0.02)	-3.0	0.033	0.05 (0.02)	2.6	0.084	-0.02 (0.01)	-2.1	0.276			
24 m - 7 m	-0.03 (0.02)	-1.5	0.832	-0.01 (0.02)	-0.2	1	-0.01 (0.01)	-1.3	0.818			
open cropland - 7 m	-0.04 (0.02)	-2.1	0.344	0.01 (0.02)	0.6	1	-0.03 (0.01)	-2.9	0.043			
open cropland - 24 m	-0.01 (0.02)	-0.5	1	0.01 (0.02)	0.7	1	-0.02 (0.01)	-1.6	0.591			

Table S11: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m and open cropland, on abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence trap) carabid beetle species separated by different habitat preferences (open, forest, both) with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Open habitat species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	3.45 (0.26)	76	13.3	<0.001	5.92 (0.93)	76	6.3	<0.001	4.59 (0.64)	76	7.2	<0.001	3.82 (0.57)	76	6.8	<0.001
1 m	0.43 (0.29)	76	1.5	0.137	0.53 (0.75)	76	0.7	0.483	-0.04 (0.66)	76	-0.1	0.956	-0.29 (0.75)	76	-0.4	0.702
7 m	0.28 (0.29)	76	1.0	0.329	0.13 (0.75)	76	0.2	0.868	0.13 (0.66)	76	0.2	0.841	0.44 (0.75)	76	0.6	0.553
24 m	0.68 (0.29)	76	2.4	0.019	-1.47 (0.75)	76	-2.0	0.054	-1.2 (0.66)	76	-1.8	0.075	-1.0 (0.75)	76	-1.3	0.184
open cropland	1.34 (0.3)	76	4.5	<0.001	-1.3 (0.75)	76	-1.7	0.087	-1.46 (0.66)	76	-2.2	0.031	-1.4 (0.75)	76	-1.9	0.065
mR²/cR²	0.12 / 0.4				0.06 / 0.53				0.07 / 0.34				0.07 / 0.13			
Forest habitat species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	-0.99 (0.65)	76	-1.5	0.13	0.44 (0.11)	76	4.0	<0.001	0.41 (0.1)	76	4.0	<0.001	0.41 (0.1)	76	4.0	<0.001
1 m	-2.13 (0.98)	76	-2.2	0.03	-0.34 (0.12)	76	-2.8	0.007	-0.31 (0.11)	76	-2.8	0.007	-0.31 (0.11)	76	-2.7	0.008
7 m	-0.86 (0.74)	76	-1.2	0.246	-0.2 (0.12)	76	-1.6	0.109	-0.2 (0.11)	76	-1.7	0.089	-0.2 (0.11)	76	-1.8	0.083
24 m	-0.51 (0.73)	76	-0.7	0.481	-0.24 (0.12)	76	-2.0	0.054	-0.21 (0.11)	76	-1.9	0.064	-0.21 (0.11)	76	-1.8	0.068
open cropland	-3.2 (1.25)	76	-2.6	0.011	-0.39 (0.12)	76	-3.2	0.002	-0.36 (0.11)	76	-3.2	0.002	-0.36 (0.11)	76	-3.2	0.002
mR²/cR²	0.07 / 0.17				0.1 / 0.27				0.1 / 0.26				0.1 / 0.25			
Both habitat species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	2.35 (0.46)	76	5.1	<0.001	1.87 (0.49)	76	3.8	<0.001	1.7 (0.4)	76	4.2	<0.001	1.64 (0.36)	76	4.5	<0.001
1 m	-0.16 (0.38)	76	-0.4	0.683	0.43 (0.43)	76	1.0	0.315	0.27 (0.38)	76	0.7	0.479	0.14 (0.38)	76	0.4	0.709
7 m	-0.14 (0.39)	76	-0.4	0.725	0.15 (0.43)	76	0.4	0.726	0.08 (0.38)	76	0.2	0.829	-0.02 (0.38)	76	0.0	0.965
24 m	-0.13 (0.38)	76	-0.3	0.735	-0.22 (0.43)	76	-0.5	0.606	-0.26 (0.38)	76	-0.7	0.505	-0.31 (0.38)	76	-0.8	0.421

open cropland	0.01 (0.42)	76	0.0	0.988	0.04 (0.43)	76	0.1	0.931	0.06 (0.38)	76	0.2	0.876	0.08 (0.38)	76	0.2	0.844
mR^2/cR^2	0.001 / 0.59				0.02 / 0.31				0.02 / 0.25				0.01 / 0.19			

Table S12: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence trap) carabid beetle species separated by different habitat preferences (open, forest, both) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Open habitat species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	0.43 (0.29)	1.5	0.683	0.53 (0.73)	0.7	1	-0.04 (0.66)	-0.1	1	-0.29 (0.75)	-0.4	1
7 m - tree row	0.28 (0.29)	1.0	0.986	0.13 (0.73)	0.2	1	0.13 (0.66)	0.2	1	0.44 (0.75)	0.6	1
24 m - tree row	0.68 (0.29)	2.4	0.130	-1.47 (0.73)	-2.0	0.376	-1.2 (0.66)	-1.8	0.45	-1.0 (0.75)	-1.3	1
open cropland - tree row	1.34 (0.3)	4.5	<0.001	-1.3 (0.73)	-1.8	0.435	-1.46 (0.66)	-2.2	0.276	-1.4 (0.75)	-1.9	0.518
7 m - 1 m	-0.15 (0.29)	-0.5	0.986	-0.4 (0.73)	-0.6	1	0.17 (0.66)	0.3	1	0.73 (0.75)	1.0	1
24 m - 1 m	0.25 (0.29)	0.9	0.986	-2.0 (0.73)	-2.7	0.09	-1.16 (0.66)	-1.8	0.45	-0.71 (0.75)	-1.0	1
open cropland - 1 m	0.91 (0.29)	3.2	0.013	-1.83 (0.73)	-2.5	0.154	-1.42 (0.66)	-2.2	0.28	-1.11 (0.75)	-1.5	0.981
24 m - 7 m	0.4 (0.28)	1.5	0.683	-1.6 (0.73)	-2.2	0.293	-1.33 (0.66)	-2.0	0.34	-1.44 (0.75)	-1.0	0.51
open cropland - 7 m	1.06 (0.28)	3.8	0.002	-1.43 (0.73)	-2.0	0.376	-1.59 (0.66)	-2.4	0.187	-1.84 (0.75)	-2.5	0.157
open cropland - 24 m	0.66 (0.29)	2.3	0.133	0.17 (0.73)	0.2	1	-0.26 (0.66)	-0.4	1	-0.4 (0.75)	-0.5	1
Forest habitat species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	-2.13 (0.98)	-2.2	0.270	-0.34 (0.12)	-2.8	0.062	-0.31 (0.11)	-2.8	0.066	-0.31 (0.11)	-2.7	0.069
7 m - tree row	-0.86 (0.74)	-1.2	1	-0.2 (0.12)	-1.6	0.763	-0.2 (0.11)	-1.7	0.623	-0.2 (0.11)	-1.8	0.584
24 m - tree row	-0.51 (0.73)	-0.7	1	-0.24 (0.12)	-2.0	0.436	-0.21 (0.11)	-1.9	0.514	-0.21 (0.11)	-1.9	0.547
open cropland - tree row	-3.2 (1.25)	-2.6	0.106	-0.39 (0.12)	-3.2	0.021	-0.36 (0.11)	-3.2	0.020	-0.36 (0.11)	-3.2	0.021
7 m - 1 m	1.27 (1.01)	1.3	1	0.14 (0.12)	1.2	1	0.12 (0.11)	1.0	1	0.11 (0.11)	1.0	1
24 m - 1 m	1.62 (0.97)	1.7	0.572	0.1 (0.12)	0.8	1	0.1 (0.11)	0.9	1	0.1 (0.11)	0.9	1

open cropland - 1 m	-1.07 (1.42)	-0.8	1	-0.05 (0.12)	-0.4	1	-0.05 (0.11)	-0.4	1	-0.05 (0.11)	-0.4	1
24 m - 7 m	0.35 (0.75)	0.5	1	-0.04 (0.12)	-0.3	1	-0.02 (0.11)	-0.2	1	-0.01 (0.11)	-0.1	1
open cropland - 7 m	-2.34 (1.23)	-1.9	0.394	-0.19 (0.12)	-1.6	0.763	-0.17 (0.11)	-1.5	0.872	-0.16 (0.11)	-1.4	0.945
open cropland - 24 m	-2.69 (1.24)	-2.2	0.270	-0.15 (0.12)	-1.2	1	-0.15 (0.11)	-1.3	0.96	-0.15 (0.11)	-1.3	0.945
Both habitat species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	z	P	Est.(±SE)	z	P	Est.(±SE)	z	P
1 m - tree row	-0.16 (0.38)	-0.4	1	0.43 (0.43)	1.0	1	0.27 (0.38)	0.7	1	0.14 (0.38)	0.4	1
7 m - tree row	-0.14 (0.39)	-0.4	1	0.15 (0.43)	0.4	1	0.08 (0.38)	0.2	1	-0.02 (0.38)	0.04	1
24 m - tree row	-0.13 (0.38)	-0.3	1	-0.22 (0.43)	-0.5	1	-0.26 (0.38)	-0.7	1	-0.31 (0.38)	-0.8	1
open cropland - tree row	0.01 (0.42)	0.02	1	0.04 (0.43)	0.1	1	0.06 (0.38)	0.2	1	0.08 (0.38)	0.2	1
7 m - 1 m	0.02 (0.38)	0.1	1	-0.28 (0.43)	-0.7	1	-0.19 (0.38)	-0.5	1	-0.16 (0.38)	-0.4	1
24 m - 1 m	0.03 (0.38)	0.1	1	-0.65 (0.43)	-1.5	1	-0.53 (0.38)	-1.4	1	-0.45 (0.38)	-1.2	1
open cropland - 1 m	0.16 (0.39)	0.4	1	-0.39 (0.43)	-0.9	1	-0.21 (0.38)	-0.6	1	-0.07 (0.38)	-0.2	1
24 m - 7 m	0.01 (0.36)	0.02	1	-0.37 (0.43)	-0.9	1	-0.34 (0.38)	-0.9	1	-0.29 (0.38)	-0.8	1
open cropland - 7 m	0.14 (0.38)	0.4	1	-0.11 (0.43)	-0.3	1	-0.02 (0.38)	-0.1	1	0.09 (0.38)	0.2	1
open cropland - 24 m	0.14 (0.38)	0.4	1	0.26 (0.43)	0.6	1	0.32 (0.38)	0.8	1	0.38 (0.38)	1.0	1

Table S13: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m and open cropland, on abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of active (pitfall trap) carabid beetle species separated by different habitat preferences (open, forest, both) with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Open habitat species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	4.37 (0.15)	116	29.5	<0.001	20.42 (1.92)	116	10.7	<0.001	9.66 (1.06)	116	9.2	<0.001	6.13 (0.72)	116	8.5	<0.001
1 m	1.05 (0.13)	116	7.9	<0.001	-2.3 (1.24)	116	-1.9	0.065	-0.17 (0.54)	116	-0.3	0.757	0.32 (0.44)	116	0.7	0.467
7 m	0.98 (0.13)	116	7.4	<0.001	-2.58 (1.24)	116	-2.1	0.039	-1.34 (0.54)	116	-2.5	0.015	-0.45 (0.44)	116	-1.0	0.313
24 m	1.1 (0.13)	116	8.3	<0.001	-6.56 (1.24)	116	-5.3	<0.001	-2.83 (0.54)	116	-5.2	<0.001	-1.36 (0.44)	116	-3.1	0.002
open cropland	1.38 (0.14)	116	10.1	<0.001	-7.83 (1.24)	116	-6.3	<0.001	-3.72 (0.54)	116	-6.9	<0.001	-2.19 (0.44)	116	-5.0	<0.001

mR^2/cR^2	0.25 / 0.68				0.19 / 0.51				0.19 / 0.63				0.15 / 0.51			
Forest habitat species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	0.79 (0.32)	116	2.5	0.013	0.82 (0.19)	116	4.2	<0.001	0.74 (0.18)	116	4.2	<0.001	0.72 (0.18)	116	4.0	<0.001
1 m	-0.88 (0.33)	116	-2.7	0.007	-0.34 (0.13)	116	-2.7	0.009	-0.3 (0.12)	116	-2.4	0.017	-0.28 (0.14)	116	-2.1	0.039
7 m	-1.75 (0.38)	116	-4.6	<0.001	-0.39 (0.13)	116	-3.1	0.003	-0.29 (0.12)	116	-2.3	0.022	-0.2 (0.14)	116	-1.5	0.138
24 m	-1.58 (0.38)	116	-4.2	<0.001	-0.29 (0.13)	116	-2.3	0.023	-0.23 (0.12)	116	-1.9	0.067	-0.21 (0.14)	116	-1.6	0.118
open cropland	-2.42 (0.43)	116	-5.6	<0.001	-0.55 (0.13)	116	-4.3	<0.001	-0.48 (0.12)	116	-3.9	<0.001	-0.45 (0.14)	116	-3.3	0.001
mR^2/cR^2	0.14 / 0.43				0.07 / 0.47				0.06 / 0.44				0.05 / 0.39			
Both habitat species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	4.12 (0.12)	116	33.3	<0.001	5.57 (0.45)	116	12.4	<0.001	2.95 (0.23)	116	12.6	<0.001	2.28 (0.2)	116	11.4	<0.001
1 m	0.01 (0.18)	116	0.0	0.968	-1.0 (0.5495)	116	-2.0	0.045	-0.01 (0.27)	116	0.0	0.979	0.15 (0.27)	116	0.6	0.567
7 m	-0.22 (0.18)	116	-1.3	0.203	-1.39 (0.5)	116	-2.8	0.006	-0.23 (0.27)	116	-0.9	0.394	-0.02 (0.27)	116	-0.1	0.94
24 m	-0.25 (0.18)	116	-1.4	0.155	-1.1 (0.5)	116	-2.2	0.029	-0.13 (0.27)	116	-0.5	0.618	-0.01 (0.27)	116	0.0	0.965
open cropland	-0.35 (0.18)	116	-2.0	0.044	-1.72 (0.5)	116	-3.5	<0.001	-0.48 (0.27)	116	-1.8	0.078	-0.13 (0.27)	116	-0.5	0.621
mR^2/cR^2	0.03 / 0.03				0.08 / 0.17				0.03 / 0.1				0.008 / 0.05			

Table S14: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of active (pitfall traps) carabid beetle species separated by different habitat preferences (open, forest, both) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Open habitat species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	1.05 (0.13)	7.9	<0.001	-2.3 (1.24)	-1.9	0.196	-0.17 (0.53)	-0.3	0.757	0.32 (0.44)	0.7	0.626
7 m - tree row	0.98 (0.13)	7.4	<0.001	-2.58 (1.24)	-2.1	0.157	-1.34 (0.53)	-2.5	0.059	-0.45 (0.44)	-1.0	0.626

24 m - tree row	1.1 (0.13)	8.3	<0.001	-6.56 (1.24)	-5.3	<0.001	-2.83 (0.53)	-5.2	<0.001	-1.36 (0.44)	-3.1	0.015
open cropland - tree row	1.38 (0.14)	10.1	<0.001	-7.83 (1.24)	-6.3	<0.001	-3.72 (0.53)	-6.9	<0.001	-2.19 (0.44)	-5.0	<0.001
7 m - 1 m	-0.08 (0.13)	-0.6	1	-0.28 (1.24)	-0.2	0.822	-1.17 (0.53)	-2.2	0.1	-0.77 (0.44)	-1.7	0.252
24 m - 1 m	0.05 (0.13)	0.4	1	-4.26 (1.24)	-3.5	0.005	-2.67 (0.53)	-4.9	<0.001	-1.68 (0.44)	-3.8	0.002
open cropland - 1 m	0.32 (0.13)	2.4	0.081	-5.53 (1.24)	-4.5	<0.001	-3.55 (0.53)	-6.6	<0.001	-2.51 (0.44)	-5.7	<0.001
24 m -7 m	0.12 (0.13)	1.0	1	-3.98 (1.24)	-3.2	0.008	-1.5 (0.53)	-2.8	0.033	-0.92 (0.44)	-2.1	0.199
open cropland - 7 m	0.4 (0.13)	3.0	0.019	-5.25 (1.24)	-4.3	<0.001	-2.38 (0.53)	-4.4	<0.001	-1.74 (0.44)	-4.0	0.001
open cropland - 24 m	0.27 (0.13)	2.1	0.161	-1.27 (1.24)	-1.0	0.611	-0.89 (0.53)	-1.7	0.206	-0.83 (0.44)	-1.9	0.252
Forest habitat species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	-0.88 (0.33)	-2.7	0.042	-0.34 (0.13)	-2.7	0.07	-0.3 (0.12)	-2.4	0.156	-0.28 (0.13)	-2.1	0.351
7 m - tree row	-1.75 (0.38)	-4.7	<0.001	-0.39 (0.13)	-3.1	0.025	-0.29 (0.12)	-2.3	0.172	-0.2 (0.13)	-1.5	0.709
24 m - tree row	-1.58 (0.38)	-4.2	<0.001	-0.29 (0.13)	-2.3	0.163	-0.23 (0.12)	-1.9	0.399	-0.21 (0.13)	-1.6	0.709
open cropland - tree row	-2.42 (0.43)	-5.6	<0.001	-0.55 (0.13)	-4.3	<0.001	-0.48 (0.12)	-3.9	0.002	-0.45 (0.13)	-3.3	0.012
7 m - 1 m	-0.87 (0.39)	-2.3	0.123	-0.05 (0.13)	-0.4	1	0.01 (0.12)	0.1	1	0.08 (0.13)	0.6	1
24 m - 1 m	-0.7 (0.38)	-1.8	0.271	0.05 (0.13)	0.4	1	0.07 (0.12)	0.6	1	0.07 (0.13)	0.5	1
open cropland - 1 m	-1.54 (0.43)	-3.6	0.003	-0.21 (0.13)	-1.7	0.502	-0.18 (0.12)	-1.5	0.631	-0.17 (0.13)	-1.2	0.872
24 m -7 m	0.17 (0.43)	0.4	0.694	0.1 (0.13)	0.8	1	0.06 (0.12)	0.5	1	-0.01 (0.13)	-0.1	1
open cropland - 7 m	-0.67 (0.48)	-1.4	0.317	-0.16 (0.13)	-1.3	0.834	-0.19 (0.12)	-1.5	0.631	-0.25 (0.13)	-1.8	0.553
open cropland - 24 m	-0.84 (0.47)	-1.8	0.271	-0.26 (0.13)	-2.0	0.272	-0.25 (0.12)	-2.0	0.321	-0.24 (0.13)	-1.8	0.577
Both habitat species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	0.01 (0.18)	0.04	1	-1.0 (0.5)	-2.0	0.316	-0.01 (0.27)	0.03	1	0.15 (0.27)	0.6	1
7 m - tree row	-0.22 (0.18)	-1.3	1	-1.39 (0.5)	-2.8	0.054	-0.23 (0.27)	-0.9	1	-0.02 (0.27)	-0.1	1
24 m - tree row	-0.25 (0.18)	-1.4	1	-1.1 (0.5)	-2.2	0.229	-0.13 (0.27)	-0.5	1	-0.01 (0.27)	0.04	1
open cropland - tree row	-0.35 (0.18)	-2.0	0.401	-1.72 (0.5)	-3.5	0.007	-0.48 (0.27)	-1.8	0.781	-0.13 (0.27)	-0.5	1
7 m - 1 m	-0.23 (0.18)	-1.3	1	-0.38 (0.5)	-0.8	1	-0.22 (0.27)	-0.8	1	-0.17 (0.27)	-0.7	1
24 m - 1 m	-0.26 (0.18)	-1.5	1	-0.1 (0.5)	-0.2	1	-0.13 (0.27)	-0.5	1	-0.16 (0.27)	-0.6	1

open cropland - 1 m	-0.36 (0.18)	-2.1	0.401	-0.71 (0.5)	-1.4	0.915	-0.47 (0.27)	-1.8	0.781	-0.28 (0.27)	-1.1	1
24 m -7 m	-0.03 (0.18)	-0.2	1	0.29 (0.5)	0.6	1	0.1 (0.27)	0.4	1	0.01 (0.27)	0.03	1
open cropland - 7 m	-0.13 (0.18)	-0.7	1	-0.33 (0.5)	-0.7	1	-0.25 (0.27)	-0.9	1	-0.11 (0.27)	-0.4	1
open cropland - 24 m	-0.1 (0.18)	-0.6	1	-0.62 (0.5)	-1.3	1	-0.34 (0.27)	-1.3	1	-0.12 (0.27)	-0.5	1

Table S15: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m and open cropland, on abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence trap) carabid beetle species separated by different diet preferences (carnivorous, granivorous, omnivorous) with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Carnivorous species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	3.47 (0.28)	76	12.5	<0.001	5.53 (1.2)	76	4.6	<0.001	3.91 (0.91)	76	4.3	<0.001	3.05 (0.87)	76	3.5	<0.001
1 m	0.13 (0.29)	76	0.5	0.647	1.41 (1.0)	76	1.4	0.161	1.62 (0.81)	76	2.0	0.048	2.03 (0.94)	76	2.2	0.033
7 m	-0.15 (0.29)	76	-0.5	0.604	1.26 (1.0)	76	1.3	0.211	1.26 (0.81)	76	1.6	0.123	1.17 (0.94)	76	1.2	0.217
24 m	0.18 (0.29)	76	0.6	0.545	-0.68 (1.0)	76	-0.7	0.498	-0.14 (0.81)	76	-0.2	0.863	0.1 (0.94)	76	0.1	0.92
open cropland	0.78 (0.31)	76	2.5	0.011	-0.24 (1.0)	76	-0.2	0.808	-0.22 (0.81)	76	-0.3	0.791	-0.11 (0.94)	76	-0.1	0.905
mR²/cR²	0.06 / 0.41				0.05 / 0.4				0.06 / 0.36				0.06 / 0.26			
Granivorous species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	2.29 (0.44)	76	5.2	<0.001	3.35 (0.76)	76	4.4	<0.001	2.98 (0.59)	76	5.0	<0.001	2.65 (0.49)	76	5.4	<0.001
1 m	-0.09 (0.43)	76	-0.2	0.834	0.2 (0.85)	76	0.2	0.82	-0.18 (0.69)	76	-0.3	0.791	-0.32 (0.61)	76	-0.5	0.605
7 m	-0.11 (0.44)	76	-0.3	0.797	-0.99 (0.85)	76	-1.2	0.247	-0.96 (0.69)	76	-1.4	0.171	-0.69 (0.61)	76	-1.1	0.263
24 m	-0.19 (0.45)	76	-0.4	0.678	-1.03 (0.85)	76	-1.2	0.231	-0.87 (0.69)	76	-1.3	0.213	-0.74 (0.61)	76	-1.2	0.225
open cropland	0.34 (0.46)	76	0.7	0.459	-1.06 (0.85)	76	-1.2	0.217	-0.91 (0.69)	76	-1.3	0.194	-0.72 (0.61)	76	-1.2	0.238
mR²/cR²	0.01 / 0.43				0.04 / 0.18				0.03 / 0.13				0.02 / 0.09			
Omnivorous species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			

	Est.(±SE)	DF	<i>z</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>
Intercept	-2.82 (0.8)	76	-3.5	<0.001	0.25 (0.19)	76	1.3	0.185	0.25 (0.17)	76	1.5	0.148	0.25 (0.17)	76	1.5	0.143
1 m	1.93 (0.65)	76	3.0	0.003	0.29 (0.13)	76	2.2	0.033	0.26 (0.13)	76	2.0	0.046	0.25 (0.13)	76	2.0	0.054
7 m	2.82 (0.62)	76	4.5	<0.001	0.21 (0.13)	76	1.6	0.113	0.21 (0.13)	76	1.6	0.109	0.21 (0.13)	76	1.6	0.111
24 m	3.43 (0.6)	76	5.7	<0.001	0.24 (0.13)	76	1.8	0.078	0.21 (0.13)	76	1.6	0.115	0.2 (0.13)	76	1.6	0.116
open cropland	3.68 (0.6)	76	6.1	<0.001	0.34 (0.13)	76	2.6	0.012	0.3 (0.13)	76	2.4	0.021	0.3 (0.13)	76	2.4	0.021
<i>mR</i> ² / <i>cR</i> ²	0.19 / 0.84				0.04 / 0.46				0.04 / 0.43				0.04 / 0.42			

Table S16: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence trap) carabid beetle species separated by different diet preferences (carnivorous, granivorous, omnivorous) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Carnivorous species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	<i>z</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>
1 m - tree row	0.13 (0.29)	0.5	1	1.41 (1.0)	1.4	0.965	1.62 (0.80)	2.0	0.386	2.03 (0.94)	2.2	0.299
7 m - tree row	-0.15 (0.29)	-0.5	1	1.26 (1.0)	1.3	1	1.26 (0.80)	1.6	0.615	1.17 (0.94)	1.2	1
24 m - tree row	0.18 (0.28)	0.6	1	-0.68 (1.0)	-0.7	1	-0.14 (0.80)	-0.2	1	0.1 (0.94)	0.1	1
open cropland - tree row	0.78 (0.31)	2.5	0.102	-0.24 (1.0)	-0.2	1	-0.22 (0.80)	-0.3	1	-0.11 (0.94)	-0.1	1
7 m - 1 m	-0.28 (0.29)	-1.0	1	-0.15 (1.0)	-0.2	1	-0.36 (0.80)	-0.5	1	-0.87 (0.94)	-0.9	1
24 m - 1 m	0.04 (0.29)	0.2	1	-2.09 (1.0)	-2.1	0.393	-1.76 (0.80)	-2.2	0.291	-1.94 (0.94)	-2.1	0.337
open cropland - 1 m	0.65 (0.29)	2.2	0.212	-1.65 (1.0)	-1.7	0.809	-1.84 (0.80)	-2.3	0.259	-2.15 (0.94)	-2.3	0.249
24 m - 7 m	0.32 (0.28)	1.2	1	-1.94 (1.0)	-1.9	0.500	-1.4 (0.80)	-1.7	0.524	-1.07 (0.94)	-1.1	1
open cropland - 7 m	0.93 (0.29)	3.2	0.014	-1.5 (1.0)	-1.5	0.953	-1.48 (0.80)	-1.8	0.504	-1.28 (0.94)	-1.4	1
open cropland - 24 m	0.61 (0.29)	2.1	0.274	0.44 (1.0)	0.4	1	-0.08 (0.80)	-0.1	1	-0.21 (0.94)	-0.2	1
Granivorous species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	<i>z</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>

1 m - tree row	-0.09 (0.43)	-0.2	1	0.2 (0.85)	0.2	1	-0.18 (0.69)	-0.3	1	-0.32 (0.61)	-0.5	1
7 m - tree row	-0.11 (0.44)	-0.3	1	-0.99 (0.85)	-1.2	1	-0.96 (0.69)	-1.4	1	-0.69 (0.61)	-1.1	1
24 m - tree row	-0.19 (0.45)	-0.4	1	-1.03 (0.85)	-1.2	1	-0.87 (0.69)	-1.3	1	-0.74 (0.61)	-1.2	1
open cropland - tree row	0.34 (0.46)	0.7	1	-1.06 (0.85)	-1.3	1	-0.91 (0.69)	-1.3	1	-0.72 (0.61)	-1.2	1
7 m - 1 m	-0.02 (0.43)	-0.1	1	-1.19 (0.85)	-1.4	1	-0.77 (0.69)	-1.1	1	-0.37 (0.61)	-0.6	1
24 m - 1 m	-0.1 (0.44)	-0.2	1	-1.22 (0.85)	-1.4	1	-0.69 (0.69)	-1.0	1	-0.43 (0.61)	-0.7	1
open cropland - 1 m	0.43 (0.46)	0.9	1	-1.26 (0.85)	-1.5	1	-0.72 (0.69)	-1.0	1	-0.41 (0.61)	-0.7	1
24 m -7 m	-0.07 (0.4)	-0.2	1	-0.04 (0.85)	0.04	1	0.09 (0.69)	0.1	1	-0.06 (0.61)	-0.1	1
open cropland - 7 m	0.45 (0.43)	1.1	1	-0.07 (0.85)	-0.1	1	0.05 (0.69)	0.1	1	-0.04 (0.61)	-0.1	1
open cropland - 24 m	0.53 (0.44)	1.2	1	-0.03 (0.85)	0.04	1	-0.04 (0.69)	-0.1	1	0.02 (0.61)	0.04	1
Omnivorous species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	1.93 (0.65)	3.0	0.015	0.29 (0.13)	2.2	0.301	0.26 (0.13)	2.0	0.418	0.25 (0.13)	2.0	0.482
7 m - tree row	2.82 (0.62)	4.5	<0.001	0.21 (0.13)	1.6	0.788	0.21 (0.13)	1.6	0.876	0.21 (0.13)	1.6	0.888
24 m - tree row	3.43 (0.6)	5.7	<0.001	0.24 (0.13)	1.8	0.627	0.2 (0.13)	1.6	0.876	0.2 (0.13)	1.6	0.888
open cropland - tree row	3.68 (0.6)	6.1	<0.001	0.34 (0.13)	2.6	0.124	0.3 (0.13)	2.4	0.211	0.3 (0.13)	2.4	0.206
7 m - 1 m	0.89 (0.5)	1.8	0.226	-0.07 (0.13)	-0.6	1	-0.05 (0.13)	-0.4	1	-0.04 (0.13)	-0.4	1
24 m - 1 m	1.5 (0.47)	3.2	0.008	-0.05 (0.13)	-0.4	1	-0.06 (0.13)	-0.4	1	-0.05 (0.13)	-0.4	1
open cropland - 1 m	1.75 (0.48)	3.7	0.002	0.05 (0.13)	0.4	1	0.04 (0.13)	0.3	1	0.05 (0.13)	0.4	1
24 m -7 m	0.61 (0.44)	1.4	0.325	0.02 (0.13)	0.2	1	-0.003 (0.13)	0.02	1	-0.003 (0.13)	0.03	1
open cropland - 7 m	0.86 (0.43)	2.0	0.191	0.13 (0.13)	1.0	1	0.09 (0.13)	0.7	1	0.1 (0.13)	0.8	1
open cropland - 24 m	0.25 (0.4)	0.6	0.533	0.1 (0.13)	0.8	1	0.1 (0.13)	0.8	1	0.1 (0.13)	0.8	1

Table S17: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m and open cropland, on abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of active (pitfall trap) carabid beetle species separated by different diet preferences (carnivorous, granivorous, omnivorous) with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Carnivorous species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	4.74 (0.15)	116	32.1	<0.001	12.36 (0.72)	116	17.3	<0.001	7.1 (0.47)	116	15.2	<0.001	4.9(0.38)	116	13.0	<0.001
1 m	0.18 (0.14)	116	1.3	0.199	-0.94 (0.92)	116	-1.0	0.304	0.38 (0.62)	116	0.6	0.543	0.664(0.49)	116	1.3	0.181
7 m	-0.07 (0.14)	116	-0.5	0.603	-0.78 (0.92)	116	-0.9	0.397	0.15 (0.62)	116	0.2	0.811	0.51 (0.49)	116	1.0	0.304
24 m	-0.02 (0.14)	116	-0.1	0.906	-1.9 (0.92)	116	-2.1	0.04	-0.15 (0.62)	116	-0.2	0.805	0.38 (0.49)	116	0.8	0.442
open cropland	0.02 (0.14)	116	0.1	0.911	-2.12 (0.92)	116	-2.3	0.022	-0.3 (0.62)	116	-0.5	0.627	0.22 (0.49)	116	0.5	0.651
mR²/cR²	0.01 / 0.53				0.05 / 0.08				0.01 / 0.05				0.01 / 0.06			
Granivorous species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	3.33 (0.21)	116	15.9	<0.001	6.8 (1.01)	116	6.7	<0.001	3.95 (0.54)	116	7.3	<0.001	3.06 (0.39)	116	7.8	<0.001
1 m	1.22 (0.17)	116	7.3	<0.001	-0.72 (0.66)	116	-1.1	0.278	0.2 (0.37)	116	0.5	0.59	0.19 (0.3)	116	0.6	0.532
7 m	0.98 (0.17)	116	5.9	<0.001	-0.79 (0.66)	116	-1.2	0.234	0.04 (0.37)	116	0.1	0.905	0.14 (0.3)	116	0.5	0.631
24 m	0.95 (0.17)	116	5.7	<0.001	-1.82 (0.66)	116	-2.8	0.007	-0.43 (0.37)	116	-1.2	0.246	-0.19 (0.3)	116	-0.7	0.517
open cropland	0.72 (0.17)	116	4.3	<0.001	-0.93 (0.66)	116	-1.4	0.159	0.1 (0.37)	116	0.3	0.779	0.17 (0.3)	116	0.6	0.57
mR²/cR²	0.12 / 0.7				0.03 / 0.4				0.02 / 0.36				0.01 / 0.3			
Omnivorous species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	1.14 (0.31)	116	3.7	<0.001	1.3 (0.24)	116	5.5	<0.001	1.14 (0.16)	116	7.3	<0.001	1.11 (0.13)	116	8.8	<0.001
1 m	1.68 (0.22)	116	7.5	<0.001	0.2 (0.12)	116	1.7	0.087	0.19 (0.1)	116	1.9	0.066	0.15 (0.11)	116	1.4	0.172
7 m	2.37 (0.22)	116	10.6	<0.001	0.03 (0.12)	116	0.3	0.802	0.06 (0.1)	116	0.6	0.558	0.05 (0.11)	116	0.4	0.663
24 m	2.66 (0.23)	116	11.8	<0.001	0.1 (0.12)	116	0.8	0.398	0.04 (0.1)	116	0.4	0.678	0.02 (0.11)	116	0.2	0.879

open cropland	3.62 (0.23)	116	15.7	<0.001	-0.13 (0.12)	116	-1.1	0.267	-0.11 (0.1)	116	-1.1	0.292	-0.09 (0.11)	116	-0.9	0.375
mR^2/cR^2	0.37 / 0.83				0.02 / 0.59				0.03 / 0.43				0.02 / 0.33			

Table S18: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of active (pitfall traps) carabid beetle species separated by different diet preferences (carnivorous, granivorous, omnivorous) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Carnivorous species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	0.18 (0.14)	1.3	1	-0.94 (0.92)	-1.0	1	0.38 (0.62)	0.6	1	0.66 (0.49)	1.4	1
7 m - tree row	-0.07 (0.14)	-0.5	1	-0.78 (0.92)	-0.9	1	0.15 (0.62)	0.2	1	0.51 (0.49)	1.0	1
24 m - tree row	-0.02 (0.14)	-0.1	1	-1.9 (0.92)	-2.1	0.361	-0.15 (0.62)	-0.3	1	0.38 (0.49)	0.8	1
open cropland - tree row	0.02 (0.14)	0.1	1	-2.12 (0.92)	-2.3	0.222	-0.3 (0.62)	-0.5	1	0.22 (0.49)	0.5	1
7 m - 1 m	-0.25 (0.14)	-1.8	0.666	0.17 (0.92)	0.2	1	-0.23 (0.62)	-0.4	1	-0.15 (0.49)	-0.3	1
24 m - 1 m	-0.2 (0.14)	-1.4	1	-0.96 (0.92)	-1.0	1	-0.53 (0.62)	-0.9	1	-0.28 (0.49)	-0.6	1
open cropland - 1 m	-0.17 (0.14)	-1.2	1	-1.18 (0.92)	-1.3	1	-0.68 (0.62)	-1.1	1	-0.44 (0.49)	-0.9	1
24 m - 7 m	0.06 (0.14)	0.4	1	-1.12 (0.92)	-1.2	1	-0.3 (0.62)	-0.5	1	-0.13 (0.49)	-0.3	1
open cropland - 7 m	0.1 (0.14)	0.6	1	-1.34 (0.92)	-1.5	1	-0.45 (0.62)	-0.7	1	-0.29 (0.49)	-0.6	1
open cropland - 24 m	0.03 (0.14)	0.2	1	-0.22 (0.92)	-0.2	1	-0.15 (0.62)	-0.2	1	-0.16 (0.49)	-0.3	1
Granivorous species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	1.22 (0.17)	7.3	<0.001	-0.72 (0.66)	-1.1	1	0.2 (0.37)	0.5	1	0.19 (0.3)	0.6	1
7 m - tree row	0.98 (0.17)	5.9	<0.001	-0.79 (0.66)	-1.2	1	0.04 (0.37)	0.1	1	0.14 (0.3)	0.5	1
24 m - tree row	0.95 (0.17)	5.7	<0.001	-1.82 (0.66)	-2.8	0.066	-0.43 (0.37)	-1.2	1	-0.19 (0.3)	-0.7	1
open cropland - tree row	0.72 (0.17)	4.3	0.001	-0.93 (0.66)	-1.4	1	0.1 (0.37)	0.3	1	0.17 (0.3)	0.6	1
7 m - 1 m	-0.24 (0.16)	-1.5	0.500	-0.07 (0.66)	-0.1	1	-0.16 (0.37)	-0.4	1	-0.04 (0.3)	-0.1	1
24 m - 1 m	-0.27 (0.16)	-1.7	0.500	-1.1 (0.66)	-1.7	0.868	-0.63 (0.37)	-1.7	0.909	-0.38 (0.3)	-1.3	1

open cropland - 1 m	-0.51 (0.17)	-3.0	0.014	-0.22 (0.66)	-0.3	1	-0.1 (0.37)	-0.3	1	-0.02 (0.3)	-0.1	1
24 m - 7 m	-0.03 (0.16)	-0.2	0.847	-1.03 (0.66)	-1.6	0.955	-0.47 (0.37)	-1.3	1	-0.34 (0.3)	-1.1	1
open cropland - 7 m	-0.27 (0.17)	-1.6	0.500	-0.15 (0.66)	-0.2	1	0.06 (0.37)	0.2	1	0.03 (0.3)	0.1	1
open cropland - 24 m	-0.24 (0.17)	-1.4	0.500	0.89 (0.66)	1.4	1	0.53 (0.37)	1.5	1	0.36 (0.3)	1.2	1
Omnivorous species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	1.68 (0.22)	7.5	< 0.001	0.2 (0.12)	1.7	0.699	0.19 (0.1)	1.9	0.590	0.15 (0.11)	1.4	1
7 m - tree row	2.37 (0.22)	10.6	< 0.001	0.03 (0.12)	0.3	1	0.06 (0.1)	0.6	1	0.05 (0.11)	0.4	1
24 m - tree row	2.66 (0.23)	11.8	< 0.001	0.1 (0.12)	0.9	1	0.04 (0.1)	0.4	1	0.02 (0.11)	0.2	1
open cropland - tree row	3.62 (0.23)	15.7	< 0.001	-0.13 (0.12)	-1.1	1	-0.11 (0.1)	-1.1	1	-0.09 (0.11)	-0.9	1
7 m - 1 m	0.69 (0.21)	3.4	0.001	-0.17 (0.12)	-1.5	1	-0.13 (0.1)	-1.3	1	-0.1 (0.11)	-1.0	1
24 m - 1 m	0.98 (0.2)	4.8	< 0.001	-0.10 (0.12)	-0.9	1	-0.15 (0.1)	-1.5	1	-0.13 (0.11)	-1.2	1
open cropland - 1 m	1.94 (0.2)	9.4	< 0.001	-0.33 (0.12)	-2.8	0.054	-0.3 (0.1)	-3.0	0.042	-0.24 (0.11)	-2.3	0.253
24 m - 7 m	0.29 (0.2)	1.5	0.138	0.07 (0.12)	0.6	1	-0.02 (0.1)	-0.2	1	-0.03 (0.11)	-0.3	1
open cropland - 7 m	1.25 (0.2)	6.2	< 0.001	-0.16 (0.12)	-1.4	1	-0.17 (0.1)	-1.7	0.821	-0.14 (0.11)	-1.3	1
open cropland - 24 m	0.96 (0.2)	4.8	< 0.001	-0.23 (0.12)	-2.0	0.468	-0.15 (0.1)	-1.5	1	-0.11 (0.11)	-1.0	1

Table S19: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m and open cropland, on abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence trap) carabid beetle species separated by different size classes (small, medium, large) with marginal and conditional R squared values (mR² / cR²). Data leveled for tree row.

Small species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	2.39 (0.2)	116	11.7	< 0.001	2.84 (0.75)	116	3.8	< 0.001	2.54 (0.62)	116	4.1	< 0.001	2.51 (0.64)	116	3.9	< 0.001
1 m	0.65 (0.26)	116	2.5	0.014	0.75 (0.68)	116	1.1	0.269	0.47 (0.61)	116	0.8	0.449	0.44 (0.75)	116	0.6	0.553
7 m	0.23 (0.27)	116	0.8	0.397	1.04 (0.68)	116	1.5	0.13	0.66 (0.61)	116	1.1	0.285	0.26 (0.75)	116	0.3	0.733
24 m	0.41 (0.27)	116	1.6	0.121	1.16 (0.68)	116	1.7	0.09	0.48 (0.61)	116	0.8	0.442	-0.02 (0.75)	116	-0.02	0.983

open cropland	1.31 (0.27)	116	4.9	<0.001	1.07 (0.68)	116	1.6	0.117	0.42 (0.61)	116	0.7	0.498	-0.03 (0.75)	116	-0.04	0.972
mR^2/cR^2	0.17 / 0.25				0.03 / 0.32				0.01 / 0.23				0.01 / 0.13			
Medium species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	2.15 (0.35)	116	6.1	<0.001	3.12 (0.64)	116	4.9	<0.001	2.78 (0.44)	116	6.3	<0.001	2.65 (0.4)	116	6.6	<0.001
1 m	0.73 (0.36)	116	2.0	0.044	0.29 (0.56)	116	0.5	0.602	-0.02 (0.45)	116	-0.1	0.957	-0.11 (0.5)	116	-0.2	0.823
7 m	0.77 (0.38)	116	2.1	0.04	-0.77 (0.56)	116	-1.4	0.174	-0.71 (0.45)	116	-1.6	0.118	-0.71 (0.5)	116	-1.4	0.155
24 m	0.97 (0.38)	116	2.6	0.011	-0.86 (0.56)	116	-1.5	0.127	-0.83 (0.45)	116	-1.9	0.068	-0.91 (0.5)	116	-1.8	0.07
open cropland	1.11 (0.39)	116	2.8	0.005	-0.9 (0.56)	116	-1.6	0.113	-0.87 (0.45)	116	-1.9	0.055	-0.94 (0.5)	116	-1.9	0.061
mR^2/cR^2	0.05 / 0.39				0.05 / 0.36				0.06 / 0.27				0.06 / 0.18			
Large species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	2.86 (0.46)	116	6.3	<0.001	2.54 (0.55)	116	4.6	<0.001	2.18 (0.41)	116	5.4	<0.001	1.93 (0.32)	116	6.0	<0.001
1 m	-0.48 (0.4)	116	-1.2	0.239	0.32 (0.48)	116	0.7	0.499	0.26 (0.37)	116	0.7	0.479	0.21 (0.31)	116	0.7	0.508
7 m	-0.31 (0.41)	116	-0.8	0.44	0.4 (0.48)	116	0.8	0.406	0.28 (0.37)	116	0.8	0.456	0.24 (0.31)	116	0.8	0.445
24 m	-0.04 (0.41)	116	-0.1	0.919	-0.69 (0.48)	116	-1.4	0.154	-0.59 (0.37)	116	-1.6	0.118	-0.5 (0.31)	116	-1.6	0.113
open cropland	0.5 (0.44)	116	1.1	0.258	0.11 (0.48)	116	0.2	0.824	-0.05 (0.37)	116	-0.1	0.9	-0.1 (0.31)	116	-0.3	0.747
mR^2/cR^2	0.02 / 0.51				0.05 / 0.33				0.05 / 0.32				0.05 / 0.3			

Table S20: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence trap) carabid beetle species separated by different size classes (small, medium, large) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Small species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	t	P	Est.(±SE)	t	P
1 m - tree row	0.65 (0.26)	2.5	0.085	0.75 (0.68)	1.1	1	0.47 (0.61)	0.8	1	0.44 (0.75)	0.6	1

7 m - tree row	0.23 (0.27)	0.9	1	1.04 (0.68)	1.5	1	0.66 (0.61)	1.1	1	0.26 (0.75)	0.3	1
24 m - tree row	0.41 (0.27)	1.6	0.57	1.16 (0.68)	1.7	0.899	0.48 (0.61)	0.8	1	-0.02 (0.75)	-0.02	1
open cropland - tree row	1.31 (0.27)	5.0	< 0.001	1.07 (0.68)	1.6	1	0.42 (0.61)	0.7	1	-0.03 (0.75)	-0.04	1
7 m - 1 m	-0.42 (0.27)	-1.6	0.57	0.28 (0.68)	0.4	1	0.2 (0.61)	0.3	1	-0.19 (0.75)	-0.3	1
24 m - 1 m	-0.23 (0.26)	-0.9	1	0.41 (0.68)	0.6	1	0.01 (0.61)	0.01	1	-0.46 (0.75)	-0.6	1
open cropland - 1 m	0.67 (0.26)	2.6	0.072	0.32 (0.68)	0.5	1	-0.05 (0.61)	-0.1	1	-0.47 (0.75)	-0.6	1
24 m -7 m	0.19 (0.26)	0.7	1	0.13 (0.68)	0.2	1	-0.19 (0.61)	-0.3	1	-0.27 (0.75)	-0.4	1
open cropland - 7 m	1.09 (0.26)	4.1	< 0.001	0.04 (0.68)	0.1	1	-0.24 (0.61)	-0.4	1	-0.28 (0.75)	-0.4	1
open cropland - 24 m	0.9 (0.26)	3.5	0.004	-0.09 (0.68)	-0.1	1	-0.06 (0.61)	-0.1	1	-0.01 (0.75)	-0.01	1
Medium species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	<i>z</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>
1 m - tree row	0.73 (0.36)	2.0	0.321	0.29 (0.56)	0.5	1	-0.02 (0.45)	-0.1	1	-0.11 (0.5)	-0.2	1
7 m - tree row	0.77 (0.38)	2.1	0.321	-0.77 (0.56)	-1.4	0.872	-0.71 (0.45)	-1.6	0.711	-0.71 (0.5)	-1.4	0.933
24 m - tree row	0.97 (0.38)	2.6	0.095	-0.86 (0.56)	-1.5	0.789	-0.83 (0.45)	-1.9	0.561	-0.91 (0.5)	-1.8	0.631
open cropland - tree row	1.11 (0.39)	2.8	0.047	-0.9 (0.56)	-1.6	0.789	-0.87 (0.45)	-2.0	0.554	-0.94 (0.5)	-1.9	0.612
7 m - 1 m	0.04 (0.37)	0.1	1	-1.06 (0.56)	-1.9	0.495	-0.68 (0.45)	-1.5	0.711	-0.6 (0.5)	-1.2	1
24 m - 1 m	0.24 (0.37)	0.7	1	-1.15 (0.56)	-2.1	0.381	-0.81 (0.45)	-1.8	0.561	-0.8 (0.5)	-1.6	0.782
open cropland - 1 m	0.38 (0.38)	1.0	1	-1.19 (0.56)	-2.1	0.365	-0.85 (0.45)	-1.9	0.561	-0.83 (0.5)	-1.7	0.782
24 m -7 m	0.2 (0.35)	0.6	1	-0.1 (0.56)	-0.2	1	-0.12 (0.45)	-0.3	1	-0.2 (0.5)	-0.4	1
open cropland - 7 m	0.34 (0.36)	0.9	1	-0.13 (0.56)	-0.2	1	-0.16 (0.45)	-0.4	1	-0.23 (0.5)	-0.5	1
open cropland - 24 m	0.14 (0.37)	0.4	1	-0.04 (0.56)	-0.1	1	-0.04 (0.45)	-0.1	1	-0.03 (0.48)	-0.1	1
Large species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	<i>z</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>
1 m - tree row	-0.48 (0.4)	-1.2	1	0.32 (0.48)	0.7	1	0.26 (0.37)	0.7	1	0.21 (0.31)	0.7	1
7 m - tree row	-0.31 (0.41)	-0.8	1	0.4 (0.48)	0.8	1	0.28 (0.37)	0.8	1	0.24 (0.31)	0.8	1
24 m - tree row	-0.04 (0.41)	-0.1	1	-0.69 (0.48)	-1.4	1	-0.59 (0.37)	-1.6	0.940	-0.5 (0.31)	-1.6	0.902
open cropland - tree row	0.5 (0.44)	1.1	1	0.11 (0.48)	0.2	1	-0.05 (0.37)	-0.1	1	-0.1 (0.31)	-0.3	1
7 m - 1 m	0.16 (0.4)	0.4	1	0.08 (0.48)	0.2	1	0.01 (0.37)	0.04	1	0.03 (0.31)	0.1	1

24 m - 1 m	0.44 (0.4)	1.1	1	-1.01 (0.48)	-2.1	0.337	-0.85 (0.37)	-2.3	0.223	-0.71 (0.31)	-2.3	0.235
open cropland - 1 m	0.98 (0.43)	2.3	0.215	-0.22 (0.48)	-0.5	1	-0.31 (0.37)	-0.9	1	-0.31 (0.31)	-1.0	1
24 m - 7 m	0.27 (0.4)	0.7	1	-1.09 (0.48)	-2.3	0.257	-0.87 (0.37)	-2.3	0.223	-0.74 (0.31)	-2.4	0.202
open cropland - 7 m	0.81 (0.43)	1.9	0.498	-0.29 (0.48)	-0.6	1	-0.33 (0.37)	-0.9	1	-0.34 (0.31)	-1.1	1
open cropland - 24 m	0.54 (0.42)	1.3	1	0.79 (0.48)	1.7	0.803	0.54 (0.37)	1.5	1	0.4 (0.31)	1.3	1

Table S21: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m and open cropland, on abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of active (pitfall trap) carabid beetle species separated by different size classes (small, medium, large) with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Small species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	2.9 (0.12)	116	23.4	<0.001	6.39 (0.53)	116	12.0	<0.001	4.93 (0.46)	116	10.7	<0.001	4.39 (0.51)	116	8.7	<0.001
1 m	0.9 (0.14)	116	6.4	<0.001	0.29 (0.62)	116	0.5	0.643	-0.48 (0.37)	116	-1.3	0.201	-0.91 (0.47)	116	-1.9	0.056
7 m	0.74 (0.14)	116	5.2	<0.001	0.33 (0.62)	116	0.5	0.597	-0.38 (0.37)	116	-1.0	0.308	-0.75 (0.47)	116	-1.6	0.112
24 m	0.5 (0.14)	116	3.5	<0.001	-0.21 (0.62)	116	-0.3	0.738	-0.33 (0.37)	116	-0.9	0.382	-0.59 (0.47)	116	-1.3	0.214
open cropland	0.58 (0.14)	116	4.1	<0.001	-0.84 (0.62)	116	-1.4	0.18	-0.96 (0.37)	116	-2.6	0.011	-1.12 (0.47)	116	-2.4	0.019
mR²/cR²	0.17 / 0.43				0.03 / 0.12				0.03 / 0.3				0.04 / 0.22			
Medium species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	t	P
Intercept	2.98 (0.17)	116	17.3	<0.001	9.09 (1.46)	116	6.2	<0.001	6.23 (0.9)	116	6.9	<0.001	4.8 (0.62)	116	7.8	<0.001
1 m	1.24 (0.19)	116	6.6	<0.001	-1.89 (0.78)	116	-2.4	0.017	-1.08 (0.45)	116	-2.4	0.018	-0.8 (0.33)	116	-2.4	0.017
7 m	1.13 (0.19)	116	6.0	<0.001	-2.49 (0.78)	116	-3.2	0.002	-1.6 (0.45)	116	-3.6	<0.001	-1.27 (0.33)	116	-3.9	<0.001
24 m	1.09 (0.19)	116	5.7	<0.001	-3.24 (0.78)	116	-4.2	<0.001	-1.98 (0.45)	116	-4.4	<0.001	-1.44 (0.33)	116	-4.4	<0.001
open cropland	0.8 (0.19)	116	4.2	<0.001	-3.5 (0.78)	116	-4.5	<0.001	-2.11 (0.45)	116	-4.7	<0.001	-1.5 (0.33)	116	-4.6	<0.001
mR²/cR²	0.18 / 0.47				0.08 / 0.54				0.08 / 0.59				0.09 / 0.56			
Large species																
Response/Predictor	Abundance				Species richness (q = 0)				Common species diversity (q = 1)				Dominant species diversity (q = 2)			

	Est.(±SE)	DF	<i>z</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>	Est.(±SE)	DF	<i>t</i>	<i>P</i>
Intercept	4.82 (0.15)	116	31.4	<0.001	8.08 (0.79)	116	10.3	<0.001	4.59 (0.54)	116	8.5	<0.001	3.42 (0.43)	116	8.0	<0.001
1 m	0.29 (0.16)	116	1.8	0.073	-0.47 (0.44)	116	-1.1	0.292	0.51 (0.31)	116	1.6	0.104	0.62 (0.27)	116	2.3	0.025
7 m	0.17 (0.16)	116	1.0	0.301	-0.32 (0.44)	116	-0.7	0.469	0.3 (0.31)	116	1.0	0.341	0.4 (0.27)	116	1.5	0.148
24 m	0.39 (0.16)	116	2.4	0.016	-1.26 (0.44)	116	-2.9	0.005	-0.19 (0.31)	116	-0.3	0.533	0.08 (0.27)	116	0.3	0.785
open cropland	0.78 (0.17)	116	4.7	<0.001	-1.72 (0.44)	116	-3.9	<0.001	-1.03 (0.31)	116	-3.3	0.001	-0.76 (0.27)	116	-2.8	0.006
<i>mR</i> ² / <i>cR</i> ²	0.08 / 0.48				0.07 / 0.51				0.1 / 0.51				0.11 / 0.46			

Table S22: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of active (pitfall trap) carabid beetle species separated by different size classes (small, medium, large) among different distance categories (tree rows, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Small species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	<i>z</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>
1 m - tree row	0.9 (0.14)	6.4	<0.001	0.29 (0.62)	0.5	1	-0.48 (0.37)	-1.3	1	-0.91 (0.47)	-1.9	0.508
7 m - tree row	0.74 (0.14)	5.2	<0.001	0.33 (0.62)	0.5	1	-0.38 (0.37)	-1.0	1	-0.75 (0.47)	-1.6	0.892
24 m - tree row	0.5 (0.14)	3.5	0.003	-0.21 (0.62)	-0.3	1	-0.33 (0.37)	-0.9	1	-0.59 (0.47)	-1.3	1
open cropland - tree row	0.58 (0.14)	4.1	<0.001	-0.84 (0.62)	-1.4	1	-0.96 (0.37)	-2.6	0.11	-1.12 (0.47)	-2.4	0.192
7 m - 1 m	-0.17 (0.14)	-1.2	0.67	0.04 (0.62)	0.1	1	0.1 (0.37)	0.3	1	0.15 (0.47)	0.3	1
24 m - 1 m	-0.41 (0.14)	-3.0	0.019	-0.5 (0.62)	-0.8	1	0.15 (0.37)	0.4	1	0.32 (0.47)	0.7	1
open cropland - 1 m	-0.33 (0.14)	-2.4	0.093	-1.13 (0.62)	-1.8	0.649	-0.48 (0.37)	-1.3	1	-0.21 (0.47)	-0.5	1
24 m - 7 m	-0.24 (0.14)	-1.8	0.323	-0.54 (0.62)	-0.9	1	0.05 (0.37)	0.2	1	0.17 (0.47)	0.4	1
open cropland - 7 m	-0.16 (0.14)	-1.1	0.67	-1.17 (0.62)	-1.9	0.626	-0.58 (0.37)	-1.6	0.967	-0.36 (0.47)	-0.8	1
open cropland - 24 m	0.08 (0.14)	0.6	0.67	-0.63 (0.62)	-1.0	1	-0.63 (0.37)	-1.7	0.813	-0.53 (0.47)	-1.1	1
Medium species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	<i>z</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>
1 m - tree row	1.24 (0.19)	6.6	<0.001	-1.89 (0.78)	-2.4	0.116	-1.08 (0.45)	-2.4	0.123	-0.8 (0.33)	-2.4	0.120

7 m - tree row	1.13 (0.19)	6.0	< 0.001	-2.49 (0.78)	-3.2	0.014	-1.6 (0.45)	-3.6	0.004	-1.27 (0.33)	-3.9	0.002
24 m - tree row	1.09 (0.19)	5.7	< 0.001	-3.24 (0.78)	-4.2	< 0.001	-1.98 (0.45)	-4.4	< 0.001	-1.44 (0.33)	-4.4	< 0.001
open cropland - tree row	0.8 (0.19)	4.2	< 0.001	-3.5 (0.78)	-4.5	< 0.001	-2.11 (0.45)	-4.7	< 0.001	-1.5 (0.33)	-4.6	< 0.001
7 m - 1 m	-0.11 (0.18)	-0.6	1	-0.61 (0.78)	-0.8	1	-0.53 (0.45)	-1.2	0.966	-0.48 (0.33)	-1.4	0.612
24 m - 1 m	-0.15 (0.19)	-0.8	1	-1.35 (0.78)	-1.7	0.422	-0.9 (0.45)	-2.0	0.224	-0.64 (0.33)	-1.9	0.277
open cropland - 1 m	-0.44 (0.19)	-2.3	0.123	-1.62 (0.78)	-2.1	0.237	-1.04 (0.45)	-2.3	0.132	-0.7 (0.33)	-2.1	0.209
24 m -7 m	-0.05 (0.18)	-0.3	1	-0.74 (0.78)	-1.0	1	-0.38 (0.45)	-0.9	0.966	-0.16 (0.33)	-0.5	1
open cropland - 7 m	-0.33 (0.19)	-1.8	0.370	-1.01 (0.78)	-1.3	0.784	-0.51 (0.45)	-1.2	0.966	-0.23 (0.33)	-0.7	1
open cropland - 24 m	-0.28 (0.19)	-1.5	0.513	-0.27 (0.78)	-0.3	1	-0.13 (0.45)	-0.3	0.966	-0.07 (0.33)	-0.2	1
Large species												
Distance category	Abundance			Species richness (q = 0)			Common species diversity (q = 1)			Dominant species diversity (q = 2)		
	Est.(±SE)	<i>z</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>	Est.(±SE)	<i>T</i>	<i>P</i>	Est.(±SE)	<i>t</i>	<i>P</i>
1 m - tree row	0.29 (0.16)	1.8	0.364	-0.47 (0.44)	-1.1	1	0.51 (0.31)	1.6	0.521	0.62 (0.27)	2.3	0.151
7 m - tree row	0.17 (0.16)	1.0	0.903	-0.32 (0.44)	-0.7	1	0.3 (0.31)	1.0	1	0.4 (0.27)	1.5	0.592
24 m - tree row	0.39 (0.16)	2.4	0.097	-1.26 (0.44)	-2.9	0.041	-0.19 (0.31)	-0.6	1	0.08 (0.27)	0.3	0.838
open cropland - tree row	0.78 (0.17)	4.7	< 0.001	-1.72 (0.44)	-4.0	0.002	-1.03 (0.31)	-3.3	0.01	-0.76 (0.27)	-2.8	0.044
7 m - 1 m	-0.12 (0.16)	-0.8	0.903	0.15 (0.44)	0.3	1	-0.21 (0.31)	-0.7	1	-0.22 (0.27)	-0.8	0.838
24 m - 1 m	0.1 (0.16)	0.7	0.903	-0.79 (0.44)	-1.8	0.377	-0.7 (0.31)	-2.3	0.153	-0.54 (0.27)	-2.0	0.242
open cropland - 1 m	0.49 (0.16)	3.1	0.015	-1.25 (0.44)	-2.8	0.041	-1.54 (0.31)	-5.0	< 0.001	-1.38 (0.27)	-5.1	< 0.001
24 m -7 m	0.22 (0.16)	1.4	0.607	-0.94 (0.44)	-2.1	0.213	-0.49 (0.31)	-1.6	0.521	-0.32 (0.27)	-1.2	0.718
open cropland - 7 m	0.61 (0.16)	3.9	0.001	-1.4 (0.44)	-3.2	0.017	-1.33 (0.31)	-4.3	< 0.001	-1.16 (0.27)	-4.2	< 0.001
open cropland - 24 m	0.39 (0.16)	2.5	0.097	-0.46 (0.44)	-1.1	1	-0.84 (0.31)	-2.7	0.056	-0.83 (0.27)	-3.1	0.022

Table S23: Output of the linear models for effects of different distance categories – tree row, 1 m, 7 m, 24 m and open cropland on abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence traps) and active (pitfall traps) carabid beetle species separated by different trapping periods with marginal and conditional R squared values (mR^2 / cR^2). Data leveled for tree row.

Period 1: February 17 - March 24																
Response/Predictor	Emergence traps								Pitfall traps							
	Abundance				Species richness (q = 0)				Activity-density				Species richness (q = 0)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P
Intercept	1.09 (0.31)	36	3.5	<0.001	4.35 (0.97)	36	4.5	<0.001	1.97 (0.14)	111	14.3	<0.001	4.3 (0.6)	111	7.2	<0.001
1 m	0.2 (0.31)	36	0.7	0.508	-2.37 (1.09)	36	-2.2	0.037	0.5 (0.15)	111	3.4	<0.001	1.4 (0.67)	111	2.1	0.038
7 m	0.09 (0.37)	36	0.2	0.818	-3.01 (1.23)	36	-2.4	0.02	-0.14 (0.15)	111	-0.9	0.369	-1.03 (0.66)	111	-1.6	0.122
24 m	-0.54 (0.36)	36	-1.5	0.134	-3.76 (1.20)	36	-3.1	0.004	-0.31 (0.16)	111	-1.9	0.051	-1.65 (0.66)	111	-2.5	0.014
open cropland	0.39 (0.34)	36	-1.1	0.258	-2.29 (1.08)	36	-2.1	0.04	0.11 (0.15)	111	0.7	0.455	-0.48 (0.66)	111	-0.7	0.469
mR²/cR²	0.05 / 0.5				0.15 / 0.29				0.15 / 0.26				0.15 / 0.22			
Period 2: March 17 - April 28																
Response/Predictor	Emergence traps								Pitfall traps							
	Abundance				Species richness (q = 0)				Activity-density				Species richness (q = 0)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P
Intercept	1.95 (0.29)	55	6.7	<0.001	5.09 (1.26)	55	4.0	<0.001	3.04 (0.12)	112	26.1	<0.001	11.66 (0.77)	112	15.2	<0.001
1 m	0.36 (0.34)	55	1.1	0.286	-0.001 (1.28)	55	-0.001	0.999	0.66 (0.13)	112	4.9	<0.001	-3.03 (1.06)	112	-2.9	0.005
7 m	0.14 (0.35)	55	0.4	0.685	-0.89 (1.33)	55	-0.7	0.506	0.52 (0.14)	112	3.8	<0.001	-3.94 (1.07)	112	-3.7	<0.001
24 m	-0.13 (0.35)	55	-0.4	0.706	-1.51 (1.35)	55	-1.1	0.267	0.36 (0.14)	112	2.6	0.008	-3.99 (1.07)	112	-3.7	<0.001
open cropland	-0.23 (0.34)	55	-0.7	0.510	-1.97 (1.26)	55	-1.6	0.124	0.59 (0.14)	112	4.4	<0.001	-5.49 (1.07)	112	-5.1	<0.001
mR²/cR²	0.02 / 0.35				0.04 / 0.26				0.03 / 0.20				0.03 / 0.13			
Period 3: April 21 - May 19																
Response/Predictor	Emergence traps								Pitfall traps							
	Abundance				Species richness (q = 0)				Activity-density				Species richness (q = 0)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P
Intercept	2.15 (0.33)	54	6.4	<0.001	4.63 (1.42)	54	3.26	0.002	3.41 (0.13)	114	26.1	<0.001	13.58 (1.61)	114	8.5	<0.001
1 m	0.09 (0.36)	54	0.3	0.793	1.75 (1.93)	54	0.9	0.369	0.63 (0.16)	114	4.1	<0.001	-5.09 (1.59)	114	-3.2	0.002

7 m	-0.26 (0.36)	54	-0.7	0.465	0.92 (1.92)	54	0.5	0.633	0.66 (0.15)	114	4.3	<0.001	-5.5 (1.59)	114	-3.5	<0.001
24 m	0.11 (0.38)	54	0.3	0.765	0.42 (1.97)	54	0.2	0.832	0.9 (0.15)	114	5.8	<0.001	-5.71 (1.59)	114	-3.6	<0.001
open cropland	0.12 (0.38)	54	039	0.747	0.39 (1.93)	54	0.2	0.842	0.75 (0.15)	114	4.9	<0.001	-6.85 (1.59)	114	-4.3	<0.001
mR^2/cR^2	0.01 / 0.43				0.01 / 0.07				0.03 / 0.06				0.04 / 0.05			
Period 4: May 21 - June 16																
	Emergence traps								Pitfall traps							
Response/Predictor	Abundance				Species richness (q = 0)				Activity-density				Species richness (q = 0)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P
Intercept	2.76 (0.39)	64	7.0	<0.001	4.16 (1.36)	64	3.1	0.003	3.89 (0.16)	109	24.5	<0.001	6.99 (1.12)	109	6.3	<0.001
1 m	0.14 (0.41)	64	0.3	0.738	2.27 (1.39)	64	1.6	0.108	0.99 (0.21)	109	4.8	<0.001	0.84 (0.64)	109	1.3	0.189
7 m	0.27 (0.38)	64	0.7	0.483	0.59 (1.39)	64	0.4	0.675	0.94 (0.21)	109	4.6	<0.001	0.43 (0.63)	109	0.7	0.502
24 m	0.52 (0.37)	64	1.4	0.162	-0.89 (1.33)	64	-0.7	0.506	0.93 (0.21)	109	4.5	<0.001	-0.33 (0.63)	109	-0.5	0.595
open cropland	1.43 (0.4)	64	0.4	<0.001	-0.28 (1.42)	64	-0.2	0.842	1.59 (0.23)	109	7.1	<0.001	-1.58 (0.65)	109	-2.5	0.016
mR^2/cR^2	0.07 / 0.53				0.05 / 0.29				0.04 / 0.19				0.03 / 0.07			
Period 5: June 9 - July 7																
	Emergence traps								Pitfall traps							
Response/Predictor	Abundance				Species richness (q = 0)				Activity-density				Species richness (q = 0)			
	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P	Est.(±SE)	DF	z	P	Est.(±SE)	DF	t	P
Intercept	2.76 (0.2)	72	11.4	<0.001	2.5 (0.65)	72	3.9	<0.001	3.69 (0.2)	104	19.0	<0.001	6.9 (0.89)	104	7.8	<0.001
1 m	0.31 (0.3)	72	1.0	0.310	2.26 (0.68)	72	3.3	0.0013	0.54 (0.19)	104	2.8	0.005	0.57 (0.92)	104	0.6	0.539
7 m	0.27 (0.3)	72	0.9	0.369	0.65 (0.68)	72	1.0	0.337	0.18 (0.2)	104	0.9	0.372	-0.72 (0.93)	104	-0.8	0.438
24 m	0.35 (0.3)	72	1.2	0.248	1.0 (0.69)	72	1.5	0.150	0.39 (0.2)	104	2.0	0.048	-0.46 (0.94)	104	-0.5	0.621
open cropland	1.26 (0.32)	72	4.0	<0.001	-0.04 (0.69)	72	0.1	0.959	0.43 (0.21)	104	2.1	0.038	-1.52 (0.96)	104	-1.6	0.116
mR^2/cR^2	0.12 / 0.22				0.12 / 0.33				0.09 / 0.28				0.07 / 0.20			

Table S24: Output of post-hoc pairwise t-tests of estimated marginal means with p-values adjusted with Holm's sequential Bonferroni method for significant differences in abundance and α Hill numbers (0 = species richness, 1 = common species diversity, 2 = dominant species diversity) of overwintering (emergence traps) and active (pitfall traps) carabid beetle species separated by different trapping periods among different distance categories (tree row, 1 m, 7 m, 24 m, open cropland). Results show pairwise comparison of differences between distance categories.

Period 1: February 17 - March 24												
Distance category	Emergence traps						Pitfall traps					
	Abundance			Species richness (q = 0)			Activity-density			Species richness (q = 0)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	z	P	Est.(±SE)	t	P
1 m - tree row	0.2 (0.31)	0.7	1	-2.37 (1.09)	-2.2	0.294	0.5 (0.15)	3.4	0.005	1.4 (0.67)	2.1	0.228
7 m - tree row	0.09 (0.37)	0.2	1	-3.01 (1.23)	-2.4	0.176	-0.14 (0.15)	-0.9	0.853	-1.03 (0.66)	-1.6	0.487
24 m - tree row	-0.54 (0.36)	-1.5	0.935	-3.76 (1.20)	-3.1	0.035	-0.31 (0.16)	-2.0	0.257	-1.65 (0.66)	-2.5	0.101
open cropland - tree row	-0.39 (0.34)	-1.1	1	-2.29 (1.08)	-2.1	0.294	0.11 (0.15)	0.8	0.853	-0.48 (0.66)	-0.7	1
7 m - 1 m	-0.12 (0.35)	-0.4	1	-0.64 (1.18)	-0.5	1	-0.63 (0.15)	-4.3	<0.001	-2.44 (0.67)	-3.6	0.004
24 m - 1 m	-0.75 (0.34)	-2.2	0.258	-1.39 (1.15)	-1.2	1	-0.8 (0.15)	-5.3	<0.001	-3.05 (0.67)	-4.6	<0.001
open cropland - 1 m	-0.59 (0.33)	-1.8	0.637	0.07 (1.04)	0.1	1	-0.38 (0.14)	-2.7	0.049	-1.88 (0.66)	-2.8	0.043
24 m -7 m	-0.63 (0.39)	-1.6	0.845	-0.75 (1.28)	-0.6	1	-0.17 (0.16)	-1.1	0.853	-0.61 (0.66)	-0.9	1
open cropland - 7 m	-0.47 (0.37)	-1.3	1	0.71 (1.19)	0.6	1	0.25 (0.15)	1.6	0.405	0.56 (0.66)	0.9	1
open cropland - 24 m	0.16 (0.38)	0.4	1	1.47 (1.16)	1.3	1	0.42 (0.16)	2.7	0.049	1.17 (0.66)	1.8	0.390
Period 2: March 17 - April 28												
Distance category	Emergence traps						Pitfall traps					
	Abundance			Species richness (q = 0)			Activity-density			Species richness (q = 0)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	z	P	Est.(±SE)	t	P
1 m - tree row	0.36 (0.34)	1.1	1	-0.001 (1.28)	-0.001	1	0.66 (0.13)	4.9	<0.001	-3.03 (1.06)	-2.9	0.036
7 m - tree row	0.14 (0.35)	0.4	1	-0.89 (1.33)	-0.7	1	0.52 (0.14)	3.8	0.001	-3.94 (1.07)	-3.7	0.003
24 m - tree row	-0.13 (0.35)	-0.4	1	-1.51 (1.35)	-1.1	1	0.36 (0.14)	2.7	0.057	-3.99 (1.07)	-3.7	0.003
open cropland - tree row	-0.23 (0.34)	-0.7	1	-1.97 (1.26)	-1.6	1	0.59 (0.14)	4.4	<0.001	-5.49 (1.07)	-5.1	<0.001
7 m - 1 m	-0.22 (0.37)	-0.6	1	-0.89 (1.37)	-0.7	1	-0.14 (0.13)	-1.0	0.912	-0.91 (1.06)	-0.9	1
24 m - 1 m	-0.49 (0.35)	-1.4	1	-1.51 (1.38)	-1.1	1	-0.3 (0.13)	-2.2	0.152	-0.96 (1.06)	-0.9	1
open cropland - 1 m	-0.58 (0.35)	-1.7	0.924	-1.97 (1.30)	-1.5	1	-0.07 (0.13)	-0.5	1	-2.46 (1.06)	-2.3	0.133
24 m -7 m	-0.27 (0.38)	-0.7	1	-0.62 (1.41)	-0.4	1	-0.16 (0.13)	-1.2	0.912	-0.05 (1.07)	0.1	1

open cropland - 7 m	-0.37 (0.37)	-1.0	1	-1.08 (1.36)	-0.8	1	0.07 (0.13)	0.5	1	-1.55 (1.07)	-1.5	0.753
open cropland - 24 m	-0.09 (0.35)	-0.3	1	-0.46 (1.35)	-0.3	1	0.23 (0.14)	1.7	0.435	-1.5 (1.07)	-1.4	0.753
Period 3: April 21 - May 19												
	Emergence traps						Pitfall traps					
Distance category	Abundance			Species richness (q = 0)			Activity-density			Species richness (q = 0)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	z	P	Est.(±SE)	t	P
1 m - tree row	0.09 (0.36)	4.1	1	1.75 (1.93)	0.9	1	0.63 (0.16)	4.1	<0.001	-5.09 (1.59)	-3.2	0.012
7 m - tree row	-0.26 (0.36)	4.3	1	0.92 (1.92)	0.5	1	0.66 (0.15)	4.3	<0.001	-5.5 (1.59)	-3.5	0.006
24 m - tree row	0.11 (0.38)	5.8	1	0.42 (1.97)	0.2	1	0.9 (0.15)	5.8	<0.001	-5.71 (1.59)	-3.6	0.004
open cropland - tree row	0.12 (0.38)	4.9	1	0.39 (1.93)	0.2	1	0.75 (0.15)	4.9	<0.001	-6.85 (1.59)	-4.3	<0.001
7 m - 1 m	-0.36 (0.38)	0.2	1	-0.83 (2.04)	-0.4	1	0.03 (0.15)	0.2	1	-0.41 (1.56)	-0.3	1
24 m - 1 m	0.02 (0.38)	1.8	1	-1.33 (2.07)	-0.6	1	0.27 (0.15)	1.8	0.43	-0.62 (1.56)	-0.4	1
open cropland - 1 m	0.03 (0.39)	0.8	1	-1.37 (2.04)	-0.7	1	0.12 (0.15)	0.8	1	-1.76 (1.56)	-1.1	1
24 m - 7 m	0.38 (0.39)	1.6	1	-0.50 (2.07)	-0.2	1	0.24 (0.15)	1.6	0.517	-0.22 (1.56)	-0.1	1
open cropland - 7 m	0.39 (0.39)	0.6	1	-0.54 (2.04)	-0.3	1	0.09 (0.15)	0.6	1	-1.35 (1.56)	-0.9	1
open cropland - 24 m	0.01 (0.39)	-1.0	1	-0.03 (2.07)	-0.02	1	-0.15 (0.15)	-1.0	1	-1.14 (1.56)	-0.7	1
Period 4: May 21 - June 16												
	Emergence traps						Pitfall traps					
Distance category	Abundance			Species richness (q = 0)			Activity-density			Species richness (q = 0)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	z	P	Est.(±SE)	t	P
1 m - tree row	0.14 (0.41)	0.3	1	2.27 (1.39)	1.6	0.865	0.99 (0.21)	4.8	<0.001	0.84 (0.64)	1.3	0.945
7 m - tree row	0.27 (0.39)	0.7	1	0.59 (1.39)	0.4	1	0.94 (0.21)	4.6	<0.001	0.43 (0.63)	0.7	1
24 m - tree row	0.52 (0.37)	1.4	0.969	-0.89 (1.33)	-0.7	1	0.93 (0.21)	4.5	<0.001	-0.33 (0.63)	-0.5	1
open cropland - tree row	1.43 (0.4)	3.6	0.004	-0.28 (1.42)	-0.2	1	1.59 (0.23)	7.1	<0.001	-1.58 (0.65)	-2.5	0.126
7 m - 1 m	0.13 (0.39)	0.4	1	-1.68 (1.42)	-1.2	1	-0.05 (0.2)	-0.3	1	-0.42 (0.64)	-0.7	1
24 m - 1 m	0.38 (0.38)	1.0	1	-3.16 (1.36)	-2.3	0.228	-0.06 (0.2)	-0.3	1	-1.8 (0.63)	-1.9	0.391
open cropland - 1 m	1.29 (0.39)	3.4	0.007	-2.55 (1.44)	-1.8	0.728	0.6 (0.21)	2.9	0.016	-2.43 (0.65)	-3.7	0.003
24 m - 7 m	0.25 (0.35)	0.7	1	-1.48 (1.36)	-1.1	1	-0.01 (0.2)	-0.1	1	-0.76 (0.63)	-1.2	0.945
open cropland - 7 m	1.16 (0.37)	3.1	0.014	-0.87 (1.43)	-0.6	1	0.65 (0.21)	3.1	0.009	-2.01 (0.65)	-3.1	0.021
open cropland - 24 m	0.91 (0.37)	2.4	0.105	0.61 (1.38)	0.4	1	0.66 (0.21)	3.2	0.008	-1.25 (0.64)	-2.0	0.373

Period 5: June 9 - July 7												
	Emergence traps						Pitfall traps					
Distance category	Abundance			Species richness (q = 0)			Activity-density			Species richness (q = 0)		
	Est.(±SE)	z	P	Est.(±SE)	t	P	Est.(±SE)	z	P	Est.(±SE)	t	P
1 m - tree row	0.31 (0.3)	1.0	1	2.26 (0.68)	3.3	0.013	0.54 (0.19)	2.8	0.05	0.57 (0.9)	0.6	1
7 m - tree row	0.27 (0.3)	0.9	1	0.65 (0.68)	1.0	1	0.18 (0.2)	0.9	1	-0.72 (0.92)	-0.8	1
24 m - tree row	0.35 (0.3)	1.2	1	1.0 (0.69)	1.5	0.902	0.39 (0.2)	2.0	0.385	-0.46 (0.93)	-0.5	1
open cropland - tree row	1.26 (0.32)	4.0	0.001	0.04 (0.69)	0.1	1	0.43 (0.21)	2.1	0.338	-1.52 (0.94)	-1.6	1
7 m - 1 m	-0.03 (0.3)	-0.1	1	-1.6 (0.66)	-2.4	0.136	-0.37 (0.19)	-1.9	0.385	-1.29 (0.93)	-1.4	1
24 m - 1 m	0.04 (0.29)	0.2	1	-1.26 (0.67)	-1.9	0.436	-0.15 (0.19)	-0.8	1	-1.03 (0.94)	-1.1	1
open cropland - 1 m	0.95 (0.3)	3.2	0.012	-2.22 (0.67)	-3.3	0.013	-0.11 (0.2)	-0.6	1	-2.09 (0.96)	-2.2	0.318
24 m -7 m	0.08 (0.3)	0.3	1	0.34 (0.67)	0.5	1	0.22 (0.19)	1.1	1	0.26 (0.95)	0.3	1
open cropland - 7 m	0.98 (0.3)	3.3	0.009	-0.62 (0.67)	-0.9	1	0.25 (0.2)	1.3	1	-0.8 (0.97)	-0.8	1
open cropland - 24 m	0.91 (0.31)	3.0	0.020	-1.0 (0.68)	-1.4	0.902	0.04 (0.21)	0.2	1	-1.06 (0.98)	-1.1	1

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