

SUPPLEMENTARY INFORMATION

Functional traits help to explain half-century long shifts in pollinator distributions

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Table S1. Comparisons of areal range changes of pollinators across time. In "Comparisons", TP refers to the time periods between which areal range changes are compared (TP 1 = 1951–1970; TP 2 = 1998–2014). "Group" represents the pollinator group, bees (B), butterflies (BU) and hoverflies (H). The first three rows test if there was a significant change between the areal range size of TP1 and TP2 for each pollinator group. The last three rows test whether the areal range changes significantly differ among pollinator groups. The coefficients from the linear models are presented.

Comparisons	Group	Coefficient	Std. Error	z-value	P-value
TP 1 to 2	B	0.55	0.05	11.28	<0.001
TP 1 to 2	BU	0.42	0.09	4.67	<0.001
TP 1 to 2	H	0.8	0.05	16.09	<0.001
Range Δ TP 1 vs 2	B vs BU	0.13	0.1	1.28	0.54
Range Δ TP 1 vs 2	B vs H	-0.25	0.07	-3.52	0.002
Range Δ TP 1 vs 2	BU vs H	-0.38	0.1	-3.65	0.001

Adjusted Tukey's *P-values* reported; Δ : Change.

Table S2. Results of the comparison of shifts in the midpoints of species distributions per pollinator group for the whole study period, TP1–TP2 (TP 1 = 1951–1970; TP 2 = 1998–2014).

A Student *t*-test was used to investigate if the overall changes in the centroids of the species geographic ranges differed significantly from zero (no change) within each pollinator group.

Group	Latitude <i>t</i>	P- value	Longitude <i>t</i>	P- value
Bees	4.99	<0.001	-4.99	<0.001
Butterflies	2.01	0.04	2.21	0.03
Hoverflies	4.46	<0.001	0.79	0.43

Table S3. Detailed results of best models to explain the relation between species functional traits of three pollinator groups (bees, butterflies, hoverflies) and areal range changes, latitudinal and longitudinal shifts, respectively. The starting model contained areal range change, latitudinal or longitudinal shift values as response variable and single terms and all two-way interactions between functional traits as predictors (including also the starting range size). After model selection, only models with BIC $\Delta < 2$ were kept. The three best models are shown. The level of the factorial variable to which the coefficient refers to is shown in parenthesis. Coefficients and (-/+) 95% confidence intervals are provided for each model.

		Model 1		Model 2		Model 3		
Areal range change		Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	
Bees	Intercept	0.69	0.57 ; 0.81	0.56	0.50 ; 0.62			
	H (specialists)	-0.19	-0.33 ; -0.05					
	IR	-0.27	-0.33 ; -0.21	-0.25	-0.31 ; -0.19			
	<i>Adj. R</i> ²	0.23		0.21				
	Butterflies	Intercept	0.88	0.66 ; 1.10				
		H (specialists)	-1.06	-1.39 ; -0.73				
		<i>Adj. R</i> ²	0.39					
	Hoverflies	Intercept	0.72	0.60 ; 0.84	0.71	0.61 ; 0.81		
		S	0.15	0.09 ; 0.21	0.17	0.11 ; 0.23		
F		0.31	0.19 ; 0.43	0.32	0.20 ; 0.44			
LDP (herbivorous and detritivorous)		0.21	0.07 ; 0.35	0.23	0.09 ; 0.37			
IR		-0.3	-0.38 ; -0.22	-0.33	-0.41 ; -0.25			
H (specialists)		-0.48	-0.79 ; -0.17	-0.12	-0.34 ; 0.10			
F × LDP (herbivorous and detritivorous)		-0.22	-0.36 ; -0.08	-0.25	-0.39 ; -0.11			
H (specialists) × IR		-0.58	-0.95 ; -0.21					
<i>Adj. R</i> ²		0.37		0.34				
Latitudinal shifts	Bees	Intercept	0.05	0.04 ; 0.06	0.05	0.04 ; 0.06		
		IR	-0.01	-0.02 ; 0.00	-0.01	-0.02 ; -0.0002		
		S			-0.01	-0.02 ; -0.0002		
		<i>Adj. R</i> ²	0.05		0.07			

Longitudinal shifts

Butterflies	Intercept	0.03	0.01 ; 0.05	0.04	0.02 ; 0.06		
	F	0.03	0.01 ; 0.05				
	ND	0.05	0.03 ; 0.07	0.03	0.01 ; 0.05		
	H (specialists)	0.01	-0.03 ; 0.05	-0.01	-0.05 ; 0.03		
	IR	-0.005	-0.02 ; 0.01	-0.005	-0.02 ; 0.01		
	F × ND	-0.03	-0.05 ; -0.01				
	H (specialists) × ND	-0.08	-0.12 ; -0.04	-0.05	-0.09 ; -0.01		
	H (specialists) × IR	0.04	0.02 ; 0.06	0.04	0.02 ; 0.06		
	<i>Adj. R</i> ²	0.37		0.31			
Hoverflies	Intercept	0.04	0.02 ; 0.06				
	LDP (herbivorous and detritivorous)	0.0001	-0.02 ; 0.02				
	V (univoltine)	-0.003	-0.02 ; 0.02				
	IR	-0.02	-0.03 ; -0.01				
	LDP (herbivorous and detritivorous.) × V (univoltine)	0.05	0.01 ; 0.09				
		<i>Adj. R</i> ²	0.21				
Bees	Intercept	-0.07	-0.09 ; -0.05	-0.07	-0.09 ; -0.05	-0.13	-0.19 ; -0.07
	F			-0.02	-0.04 ; -0.0004		
	V (univoltine)					0.06	0.001 ; 0.12
		<i>Adj. R</i> ²	0		0.02		0.02
Butterflies	Intercept	0.05	0.03 ; 0.07				
	F	-0.04	-0.06 ; -0.02				
	H (specialists)	0.03	-0.03 ; 0.09				
	IR	0.04	0.02 ; 0.06				
	H (specialists) × F	0.16	0.08 ; 0.24				
	F × IR	0.07	0.03 ; 0.11				
		<i>Adj. R</i> ²	0.31				
Hoverflies	Intercept	-0.01	-0.03 ; 0.01				

LDP (herbivorous and detritivorous)	0.06	0.02 ; 0.10
IR	0.03	0.01 ; 0.05
Adj. R^2	0.08	

F: Flight period; LDP: Larval diet preference; H: Habitat; ND: Larval diet preference related to Ellenberg nitrogen value of food plants; S: Size; V: Voltinism; IR: Initial range.

M1–M4: Coefficients of the best models obtained; SE: standard error.

Table S4. The environmental variables included in the analyses and their changes over time in the Netherlands. Comparisons were performed with a Student *t*-tests for environmental changes between time period 1 (1951–1970) and time period 2 (1998–2014).

Environmental variable	Average value		Standard deviation		TP1 vs TP2	<i>P</i> -value
	TP1	TP2	TP1	TP2	<i>t</i>	
Mean diurnal range	7.05	7.25	0.67	0.75	8.02	<0.001
Temperature seasonality	5.79	5.66	0.13	0.14	-27.66	<0.001
Mean temp. of wettest quarter	15.45	15.85	0.68	2.06	7.54	<0.001
Mean temp. of driest quarter	5.79	9.6	1.78	1.97	58.76	<0.001
Mean temp. of warmest quarter	15.92	17.16	0.36	0.45	88.32	<0.001
Annual precipitation	803.9	828.2	25.14	21.82	29.84	<0.001
Precipitation of wettest month	102.28	91.18	5.96	4.86	-59.09	<0.001
Precipitation of driest month	44.84	41.13	2.91	3.45	-33.65	<0.001
Precipitation of warmest quarter	253.4	238.78	11.7	11.48	-36.46	<0.001
Average patch area of suitable habitat	104.97	16.61	354.79	113.3	-9.43	<0.001
Total edge density	0.019	0.023	0.008	0.011	11.73	<0.001
Edge density managed-natural systems	0.007	0.011	0.004	0.005	18.37	<0.001
Number of land use classes	6.28	7.72	1.21	0.75	40.36	<0.001
Grassland	42.23	40	26.26	20.35	-2.67	<0.01
Agriculture	31.41	27.46	25.01	22.31	-4.68	<0.001
Moors/peat	2.04	1.34	6.32	4.68	-3.53	<0.001
Forest	8.53	11.14	13.92	14.23	5.2	<0.001
Urban	6.94	10.9	7.69	10.13	12.39	<0.001
Water	6.97	6.42	15.46	10.7	-1.16	0.25
Swamps	0.2	1.43	0.7	5.8	8.37	<0.001
Sandy soils	1.68	1.31	9.1	7.23	-1.26	0.21

Table S5. List of included species from three pollinator groups. The Red List status is given to show the threat level of the included species. For bees, the conservation status was obtained from Peeters and Reemer ¹ (pages 17-21). For butterflies, the red list status was obtained from the Dutch red list of butterflies (www.vlindernet.nl/doc/De_nieuwe_Rode_Lijst_Dagvlinders.pdf). For hoverflies, the red list status was obtained from Reemer *et al.* ² (page 86). The number of records available in each time periods (TP1, TP2) used during the MaxEnt modelling is provided. The area under the curve value (AUC) value represents the model accuracy (see methods) for each species and time period. The number of presence records represents the number of 5 x 5 km grid cells for which the species was reported at least once during the period analysed.

Group	Species name	Red List status Netherlands*	Number of presence records		MaxEnt model AUC		Areal range changes (%)	Latitudinal change (km)	Longitudinal change (km)
			TP1	TP2	TP1	TP2	TP1-TP2		
Bees	<i>Andrena angustior</i>	NL	53	72	0.86	0.8	168.29	73.99	12.9
Bees	<i>Andrena apicata</i>	VU	30	29	0.78	0.9	-2.63	15.54	-20.17
Bees	<i>Andrena argentata</i>	T	28	19	0.88	0.85	-47.69	41.27	-21.22
Bees	<i>Andrena barbilabris</i>	NL	136	249	0.76	0.72	114.55	1.3	-14.5
Bees	<i>Andrena bicolor</i>	NL	30	169	0.84	0.8	340	63.41	-62.62
Bees	<i>Andrena bimaculata</i>	T	13	28	0.7	0.86	4.35	16.71	4.93
Bees	<i>Andrena carantonica</i>	NL	91	241	0.76	0.73	120.51	25.02	-19.78
Bees	<i>Andrena chrysoseles</i>	NL	36	185	0.86	0.8	164.29	23.77	-32.72
Bees	<i>Andrena cineraria</i>	NL	47	151	0.81	0.78	103.03	37.26	0.51
Bees	<i>Andrena clarkella</i>	NL	47	146	0.82	0.78	31.92	14.21	0.32
Bees	<i>Andrena dorsata</i>	NL	37	167	0.84	0.81	59.84	-1.62	-22.79
Bees	<i>Andrena falsifica</i>	NL	10	6	0.8	0.9	-57.14	31.18	3.58
Bees	<i>Andrena flavipes</i>	NL	74	381	0.8	0.73	124.53	20.06	-32.63
Bees	<i>Andrena florea</i>	NL	23	81	0.96	0.92	255.56	33.73	-91.54
Bees	<i>Andrena fucata</i>	NL	43	80	0.75	0.78	230.36	56.21	-2.69
Bees	<i>Andrena fulva</i>	NL	81	268	0.78	0.86	285.19	63.25	21.98
Bees	<i>Andrena fulvago</i>	T	12	17	0.95	0.95	28.21	-3.28	5.17
Bees	<i>Andrena fulvida</i>	T	21	23	0.8	0.71	147.42	9.98	-23.22
Bees	<i>Andrena fuscipes</i>	VU	120	132	0.81	0.87	32.67	31.03	5.49
Bees	<i>Andrena gravida</i>	T	36	57	0.83	0.87	83.56	21.45	-13.2
Bees	<i>Andrena haemorrhoa</i>	NL	118	442	0.75	0.64	192.17	15.49	-24.11
Bees	<i>Andrena hattorfiana</i>	T	26	22	0.93	0.94	-14.29	9.36	-0.33
Bees	<i>Andrena helvola</i>	NL	13	58	0.94	0.83	825	109.38	-61.86

Bees	<i>Andrena humilis</i>	VU	39	40	0.88	0.89	45.78	31.99	8.56
Bees	<i>Andrena labialis</i>	T	26	49	0.92	0.88	159.57	3.29	-70.65
Bees	<i>Andrena labiata</i>	NL	22	66	0.85	0.81	247.27	39.54	-21.78
Bees	<i>Andrena lapponica</i>	NL	29	38	0.81	0.9	192.59	-9.67	-16.29
Bees	<i>Andrena lathyri</i>	NL	9	12	0.97	0.95	67.44	55.93	0.64
Bees	<i>Andrena minutula</i>	NL	42	117	0.87	0.82	52.56	47.24	-23.98
Bees	<i>Andrena minutuloides</i>	NL	6	13	0.9	0.93	625	15.17	8.28
Bees	<i>Andrena mitis</i>	NL	19	46	0.88	0.89	247.22	71.7	-35.84
Bees	<i>Andrena nigriceps</i>	VU	23	23	0.86	0.88	-8.93	-5.12	-21.21
Bees	<i>Andrena nigroaenea</i>	NL	75	127	0.77	0.78	-3.68	36.93	-4.02
Bees	<i>Andrena nitida</i>	NL	77	219	0.82	0.72	31.03	15.15	18.47
Bees	<i>Andrena ovatula</i>	VU	56	71	0.86	0.85	6.67	26.26	9.86
Bees	<i>Andrena pilipes</i>	T	39	13	0.82	0.95	18.18	10.9	3.59
Bees	<i>Andrena praecox</i>	NL	64	157	0.73	0.75	45.58	15.72	7.36
Bees	<i>Andrena proxima</i>	NL	15	88	0.87	0.84	153.85	54.16	-63.93
Bees	<i>Andrena ruficrus</i>	NL	40	35	0.84	0.88	-16.91	-51.44	-23.01
Bees	<i>Andrena semilaevis</i>	NL	31	29	0.82	0.94	-8.24	33.83	12.43
Bees	<i>Andrena subopaca</i>	NL	79	219	0.76	0.73	100	20.93	-31.74
Bees	<i>Andrena synadelpha</i>	NL	7	40	0.98	0.85	566.67	131.52	-2.65
Bees	<i>Andrena tibialis</i>	VU	55	95	0.81	0.78	31.77	40.14	-12.35
Bees	<i>Andrena vaga</i>	NL	41	245	0.82	0.75	110	32.78	6.92
Bees	<i>Andrena varians</i>	VU	53	36	0.78	0.71	-18.94	54.38	-11.26
Bees	<i>Andrena ventralis</i>	NL	21	119	0.87	0.8	218.46	11.83	-9.73
Bees	<i>Andrena wilkella</i>	VU	51	78	0.79	0.79	105.22	24.31	-20.9
Bees	<i>Anthidium manicatum</i>	NL	31	171	0.89	0.77	256.45	45.25	-35.71
Bees	<i>Anthidium punctatum</i>	VU	12	25	0.84	0.94	29.17	63.85	-29.19
Bees	<i>Anthidium strigatum</i>	NL	22	81	0.9	0.88	262.16	10.5	13.84
Bees	<i>Anthophora furcata</i>	VU	23	46	0.89	0.85	152.08	43.13	-60.22
Bees	<i>Anthophora plumipes</i>	NL	39	151	0.84	0.82	135.71	10.25	-40.2
Bees	<i>Anthophora quadrimaculata</i>	VU	15	20	0.89	0.98	20	-18.52	24.73
Bees	<i>Anthophora retusa</i>	T	22	12	0.83	0.75	94.74	18.7	16.22
Bees	<i>Bombus bohemicus</i>	NL	70	90	0.8	0.73	0	-8.38	-32.47
Bees	<i>Bombus campestris</i>	NL	90	196	0.78	0.77	58.59	-1.56	-55.38
Bees	<i>Bombus cryptarum</i>	NL	20	16	0.81	0.66	278.18	17.44	53.2
Bees	<i>Bombus hortorum</i>	NL	76	232	0.78	0.74	118.49	18.49	-22.19

Bees	<i>Bombus humilis</i>	T	33	10	0.87	0.81	-48.81	41.11	21.58
Bees	<i>Bombus hypnorum</i>	NL	46	295	0.81	0.74	67.83	-45.09	-50.32
Bees	<i>Bombus jonellus</i>	VU	35	93	0.77	0.82	198.33	-63.88	-26.07
Bees	<i>Bombus lapidarius</i>	NL	115	511	0.79	0.66	126.09	-17.12	-17.94
Bees	<i>Bombus lucorum</i>	NL	82	305	0.79	0.69	154.84	-2.07	-36.03
Bees	<i>Bombus magnus</i>	T	30	46	0.79	0.9	248.89	-13.6	-12.58
Bees	<i>Bombus muscorum</i>	T	66	38	0.73	0.92	20	28.85	-6.29
Bees	<i>Bombus norvegicus</i>	NL	20	26	0.82	0.77	119.51	18.79	-50.28
Bees	<i>Bombus pascuorum</i>	NL	165	657	0.7	0.59	125	-3.83	-21.34
Bees	<i>Bombus pratorum</i>	NL	89	436	0.76	0.66	157.72	30.67	-44.32
Bees	<i>Bombus ruderarius</i>	VU	57	89	0.79	0.94	-5.56	-65.47	-141.69
Bees	<i>Bombus sylvestris</i>	NL	62	170	0.75	0.74	111.11	21.88	-33.21
Bees	<i>Bombus terrestris</i>	NL	97	490	0.75	0.65	140.67	1.33	-2.67
Bees	<i>Bombus vestalis</i>	NL	36	115	0.88	0.75	220	56.94	-0.15
Bees	<i>Bombus veteranus</i>	T	44	6	0.77	0.95	-63.03	-83.93	-113.42
Bees	<i>Ceratina cyanea</i>	NL	12	18	0.86	0.94	-34.69	5.66	13.82
Bees	<i>Chelostoma campanularum</i>	VU	36	53	0.9	0.87	110.61	35.24	-13.65
Bees	<i>Chelostoma distinctum</i>	VU	19	6	0.97	0.97	-35.71	8.73	2.86
Bees	<i>Chelostoma florissomme</i>	VU	50	76	0.86	0.81	91.3	30.42	-20.99
Bees	<i>Chelostoma rapunculi</i>	NL	55	106	0.86	0.81	96.7	43.16	-4.47
Bees	<i>Coelioxys elongata</i>	T	10	11	0.78	0.68	-25.27	-26.52	-101.5
Bees	<i>Coelioxys inermis</i>	T	30	52	0.8	0.83	126.09	20.8	-72.77
Bees	<i>Coelioxys mandibularis</i>	VU	29	46	0.86	0.94	83.33	-8.72	-32.87
Bees	<i>Coelioxys quadridentata</i>	T	23	11	0.81	0.9	-29.49	133.5	41.85
Bees	<i>Colletes cunicularius</i>	NL	42	188	0.79	0.74	234.85	-24.22	42.01
Bees	<i>Colletes daviesanus</i>	NL	72	193	0.8	0.74	61.15	48.77	-9.06
Bees	<i>Colletes fodiens</i>	NL	31	142	0.84	0.8	190.2	-9.36	-30.68
Bees	<i>Colletes halophilus</i>	NL	7	57	0.97	0.95	125.93	-10.11	14.76
Bees	<i>Colletes impunctatus</i>	SE	5	5	0.91	0.9	242.86	-44.67	-57.2
Bees	<i>Colletes marginatus</i>	NL	16	35	0.7	0.84	1.16	2.08	47.67
Bees	<i>Colletes succinctus</i>	NL	46	100	0.82	0.89	44.44	60.6	27.24
Bees	<i>Dasypoda hirtipes</i>	NL	89	277	0.79	0.76	87.01	30.22	-2.86
Bees	<i>Epeoloides coecutiens</i>	NL	14	82	0.89	0.87	-15.73	46.38	15.98
Bees	<i>Epeolus cruciger</i>	NL	44	129	0.78	0.86	182.09	18.57	8.7
Bees	<i>Epeolus variegatus</i>	NL	18	117	0.79	0.82	142.62	10.04	-17.75

Bees	<i>Eucera longicornis</i>	T	25	8	0.94	0.76	89.13	6.07	11.3
Bees	<i>Halictus confusus</i>	NL	61	111	0.83	0.81	57.14	27.05	15.88
Bees	<i>Halictus rubicundus</i>	NL	102	204	0.75	0.76	107	56.38	-10.11
Bees	<i>Halictus tumulorum</i>	NL	73	290	0.74	0.71	125	15.04	-48.92
Bees	<i>Heriades truncorum</i>	NL	61	135	0.83	0.78	32.76	47.02	-9.13
Bees	<i>Hylaeus annularis</i>	NL	44	58	0.82	0.85	11.97	-26.29	13.43
Bees	<i>Hylaeus brevicornis</i>	NL	61	76	0.81	0.8	46.34	-11.42	22.97
Bees	<i>Hylaeus communis</i>	NL	92	236	0.75	0.76	19.07	22.15	-8.42
Bees	<i>Hylaeus confusus</i>	NL	65	166	0.81	0.78	52.25	34.28	-0.36
Bees	<i>Hylaeus gibbus</i>	NL	63	83	0.75	0.78	125.96	30.25	-5.04
Bees	<i>Hylaeus hyalinatus</i>	NL	64	142	0.8	0.81	73.5	2.53	1.19
Bees	<i>Hylaeus pectoralis</i>	VU	17	21	0.81	0.93	-74.71	-17.39	-35.6
Bees	<i>Hylaeus pictipes</i>	NL	20	24	0.9	0.83	29.11	32.67	11.17
Bees	<i>Hylaeus punctulatissimus</i>	NL	10	17	0.88	0.88	91.58	6.18	-6.65
Bees	<i>Hylaeus rinki</i>	NL	12	13	0.79	0.9	-66.14	123.57	46.68
Bees	<i>Hylaeus signatus</i>	NL	22	60	0.86	0.83	172	14.36	21.01
Bees	<i>Lasioglossum albipes</i>	NL	91	91	0.69	0.79	-31.22	66.44	28.12
Bees	<i>Lasioglossum brevicorne</i>	VU	19	18	0.8	0.89	-41.94	51.78	-3.66
Bees	<i>Lasioglossum calceatum</i>	NL	179	394	0.68	0.7	127.97	2.45	-34.57
Bees	<i>Lasioglossum fratellum</i>	NL	8	18	0.98	0.91	88.89	32.21	24.14
Bees	<i>Lasioglossum fulvicorne</i>	NL	51	67	0.87	0.84	150.62	34.63	-8.67
Bees	<i>Lasioglossum laticeps</i>	NL	14	32	0.94	0.88	571.43	70.8	10.54
Bees	<i>Lasioglossum lativentre</i>	T	25	12	0.87	0.96	-8.93	-26.98	8.66
Bees	<i>Lasioglossum leucopus</i>	NL	62	130	0.8	0.77	43.75	36.86	35.84
Bees	<i>Lasioglossum leucozonium</i>	NL	138	313	0.74	0.7	138.28	42.64	-11.59
Bees	<i>Lasioglossum lucidulum</i>	NL	21	77	0.87	0.76	157.14	37.69	-8.94
Bees	<i>Lasioglossum malachurum</i>	VU	22	41	0.95	0.89	90.32	30.11	-18.77
Bees	<i>Lasioglossum minutissimum</i>	NL	24	80	0.86	0.74	271.8	-27.91	28.3
Bees	<i>Lasioglossum morio</i>	NL	37	206	0.91	0.78	329.03	58.22	-72.44
Bees	<i>Lasioglossum nitidiusculum</i>	T	30	8	0.89	0.78	55.81	68.3	-46.56
Bees	<i>Lasioglossum nitidulum</i>	NL	20	33	0.91	0.89	86.05	38.6	-13.12
Bees	<i>Lasioglossum parvulum</i>	VU	28	19	0.88	0.87	-11.32	-7.32	20.87
Bees	<i>Lasioglossum pauxillum</i>	NL	17	74	0.87	0.86	506.67	72.11	-56.23
Bees	<i>Lasioglossum prasinum</i>	NL	49	28	0.78	0.9	-30.82	20.35	8.61
Bees	<i>Lasioglossum punctatissimum</i>	NL	81	103	0.77	0.84	5.1	16.26	-10.91

Bees	<i>Lasioglossum quadrinotatum</i>	NL	47	46	0.86	0.84	18.56	35.64	-14.46
Bees	<i>Lasioglossum quadrinotatum</i>	T	13	12	0.77	0.81	20.37	27.97	0.65
Bees	<i>Lasioglossum rufitarse</i>	NL	49	12	0.81	0.8	-19.6	-50.63	-22.89
Bees	<i>Lasioglossum sabulosum</i>	NL	14	49	0.74	0.89	25.95	10.09	14.14
Bees	<i>Lasioglossum semilucens</i>	NL	27	56	0.88	0.78	71.83	24.5	-47.26
Bees	<i>Lasioglossum sexnotatum</i>	VU	40	87	0.92	0.82	102.44	39.81	-11.41
Bees	<i>Lasioglossum sexstrigatum</i>	NL	132	226	0.71	0.72	65.81	11.57	-11.28
Bees	<i>Lasioglossum tarsatum</i>	NL	21	15	0.81	0.96	41.18	8.53	-56.87
Bees	<i>Lasioglossum villosulum</i>	NL	103	176	0.76	0.76	60.19	29.07	-17.19
Bees	<i>Lasioglossum xanthopus</i>	VU	17	26	0.92	0.93	75.68	108.49	-43.36
Bees	<i>Lasioglossum zonulum</i>	NL	75	132	0.83	0.77	28.67	59.07	-12.59
Bees	<i>Macropis europaea</i>	NL	61	196	0.81	0.76	-6.56	16.59	2.63
Bees	<i>Megachile analis</i>	VU	5	10	0.62	0.89	196.55	-14.94	-6.98
Bees	<i>Megachile centuncularis</i>	VU	74	173	0.77	0.81	35.66	-10.9	-66.84
Bees	<i>Megachile circumcincta</i>	T	48	27	0.73	0.85	-16.28	14.38	-24.09
Bees	<i>Megachile ericetorum</i>	VU	21	83	0.94	0.85	459.38	-16.94	-72.56
Bees	<i>Megachile lapponica</i>	NL	43	25	0.82	0.74	-42.57	34.19	-12.99
Bees	<i>Megachile leachella</i>	VU	39	57	0.9	0.92	56.92	-7.13	-34.54
Bees	<i>Megachile ligniseca</i>	T	16	46	0.82	0.88	-8.49	-8.57	-24.1
Bees	<i>Megachile maritima</i>	T	29	20	0.89	0.99	-52.38	40.93	-5.4
Bees	<i>Megachile versicolor</i>	NL	34	105	0.84	0.79	133.33	12.25	-5.53
Bees	<i>Megachile willughbiella</i>	NL	49	226	0.73	0.72	221.25	21.45	2.52
Bees	<i>Melecta albifrons</i>	T	22	38	0.86	0.8	173.53	86.87	-16.65
Bees	<i>Melitta haemorrhoidalis</i>	NL	32	63	0.85	0.86	240	91.77	1.34
Bees	<i>Melitta leporina</i>	VU	21	67	0.77	0.89	262.5	6.52	-120.04
Bees	<i>Melitta nigricans</i>	NL	15	72	0.81	0.84	92.31	43.13	-14.69
Bees	<i>Melitta tricincta</i>	VU	12	19	0.96	0.86	4.55	32.97	-57.4
Bees	<i>Nomada alboguttata</i>	NL	69	167	0.8	0.77	14.71	14.08	-11.48
Bees	<i>Nomada bifasciata</i>	VU	27	31	0.91	0.91	-28.41	36.74	0.11
Bees	<i>Nomada fabriciana</i>	NL	44	148	0.84	0.82	60.61	24.04	-30.5
Bees	<i>Nomada ferruginata</i>	VU	20	88	0.83	0.8	155.26	-3.87	-20.89
Bees	<i>Nomada flava</i>	NL	115	272	0.79	0.7	161.61	18.92	-19.73
Bees	<i>Nomada flavoguttata</i>	NL	49	156	0.82	0.78	37.39	14.32	-36.42
Bees	<i>Nomada flavopicta</i>	VU	31	67	0.87	0.83	135.39	17.65	-75.25
Bees	<i>Nomada fucata</i>	NL	36	160	0.88	0.82	125.3	28.4	-34.43

Bees	<i>Nomada fulvicornis</i>	T	45	48	0.87	0.77	27.42	80.85	-53.1
Bees	<i>Nomada fuscicornis</i>	T	24	23	0.9	0.91	17.31	70.9	-18.02
Bees	<i>Nomada goodeniana</i>	VU	52	140	0.81	0.78	34.33	52.39	8.13
Bees	<i>Nomada integra</i>	T	23	10	0.79	0.68	51.35	5.94	7.33
Bees	<i>Nomada lathburiana</i>	VU	47	181	0.8	0.81	61.72	30.39	3.23
Bees	<i>Nomada leucophthalma</i>	VU	25	72	0.78	0.82	300	46.25	0.99
Bees	<i>Nomada marshamella</i>	NL	62	159	0.74	0.76	81.58	34.23	-38.58
Bees	<i>Nomada obscura</i>	VU	5	6	0.84	0.96	150	-96.62	-9.15
Bees	<i>Nomada panzeri</i>	NL	59	124	0.77	0.78	0	12.21	-30.16
Bees	<i>Nomada ruficornis</i>	NL	85	248	0.8	0.75	176.09	32.59	-3.85
Bees	<i>Nomada rufipes</i>	NL	137	138	0.79	0.86	14.89	44.08	10.16
Bees	<i>Nomada sheppardana</i>	NL	66	154	0.82	0.79	92.86	16.71	12.5
Bees	<i>Nomada signata</i>	NL	49	98	0.86	0.79	197.59	5.16	-31.28
Bees	<i>Nomada similis</i>	VU	15	19	0.91	0.9	-5.26	52.88	-5.63
Bees	<i>Nomada striata</i>	T	39	38	0.83	0.83	54	19.44	8.53
Bees	<i>Nomada succincta</i>	NL	76	145	0.81	0.8	-9.14	26.01	-11.39
Bees	<i>Osmia aurulenta</i>	VU	10	16	0.9	0.96	15.56	-73.35	0.74
Bees	<i>Osmia caerulea</i>	VU	52	65	0.82	0.8	106.93	17.15	-6.51
Bees	<i>Osmia claviventris</i>	NL	28	40	0.86	0.85	90	28.33	6.6
Bees	<i>Osmia cornuta</i>	VU	27	66	0.9	0.78	100	-0.11	-40.11
Bees	<i>Osmia leaiana</i>	T	19	15	0.89	0.67	168.75	24.07	22.1
Bees	<i>Osmia leucomelana</i>	NL	28	45	0.89	0.79	90.91	27.53	-8.42
Bees	<i>Osmia niveata</i>	T	36	28	0.92	0.85	51.28	1.2	1.3
Bees	<i>Osmia rufa</i>	NL	81	337	0.78	0.68	152.54	23.72	-22.03
Bees	<i>Osmia uncinata</i>	NL	6	34	0.82	0.9	281.82	69.42	9.07
Bees	<i>Panurgus banksianus</i>	NL	64	72	0.83	0.82	1.17	47.42	8.91
Bees	<i>Panurgus calcaratus</i>	NL	68	147	0.8	0.83	73.04	40.89	25.2
Bees	<i>Sphecodes albilabris</i>	NL	21	174	0.92	0.8	294	-37.36	61.02
Bees	<i>Sphecodes crassus</i>	NL	37	114	0.78	0.74	55.91	-39.61	-52.29
Bees	<i>Sphecodes ephippius</i>	VU	53	120	0.78	0.81	9.09	-3.62	5.95
Bees	<i>Sphecodes ferruginatus</i>	VU	12	11	0.98	0.9	172	20.06	3.29
Bees	<i>Sphecodes geoffrellus</i>	NL	41	92	0.81	0.76	61.39	-7.36	-24.52
Bees	<i>Sphecodes gibbus</i>	NL	46	107	0.85	0.79	106.32	58.27	21.75
Bees	<i>Sphecodes hyalinatus</i>	NL	12	7	0.98	0.97	26.32	27.3	9.19
Bees	<i>Sphecodes longulus</i>	NL	29	94	0.77	0.78	408.57	31	-14.04

Bees	<i>Sphecodes marginatus</i>	NL	25	52	0.75	0.79	404.76	-29.33	-21.75
Bees	<i>Sphecodes miniatus</i>	NL	39	142	0.8	0.76	47.13	10.04	-40.05
Bees	<i>Sphecodes monilicornis</i>	NL	95	234	0.72	0.75	40	18.57	-34.36
Bees	<i>Sphecodes pellucidus</i>	NL	63	184	0.77	0.77	107.08	9.13	-7.93
Bees	<i>Sphecodes puncticeps</i>	NL	33	67	0.82	0.78	42.73	7.66	-46.92
Bees	<i>Sphecodes reticulatus</i>	NL	25	97	0.85	0.78	157.35	54.59	-27.12
Bees	<i>Sphecodes rubicundus</i>	T	7	30	0.94	0.85	227.27	66.11	-12.26
Bees	<i>Stelis breviscula</i>	VU	25	27	0.9	0.79	25	40.55	-7.52
Bees	<i>Stelis ornatula</i>	VU	19	11	0.82	0.83	115.49	-0.85	25.45
Butterflies	<i>Aglais urticae</i>	NL	237	1518	0.67	0.5	213.22	44.71	38.15
Butterflies	<i>Anthocharis cardamines</i>	NL	174	1226	0.73	0.58	422.22	39.31	12.78
Butterflies	<i>Apatura iris</i>	CR	19	58	0.9	0.88	59.74	40.07	17.72
Butterflies	<i>Aphantopus hyperantus</i>	NL	182	845	0.74	0.68	231.8	21.37	29.65
Butterflies	<i>Araschnia levana</i>	NL	240	1340	0.76	0.55	230.32	57.51	2.85
Butterflies	<i>Argynnis aglaja</i>	CR	51	44	0.8	0.91	71.13	9.56	23.87
Butterflies	<i>Argynnis niobe</i>	EN	54	53	0.86	0.97	-28.09	24.4	-2.98
Butterflies	<i>Argynnis paphia</i>	EX	46	95	0.87	0.77	265.71	47.05	0.77
Butterflies	<i>Boloria aquilonaris</i>	CR	9	10	0.98	0.98	4.76	-6.75	0.11
Butterflies	<i>Boloria selene</i>	EN	125	61	0.74	0.88	11.94	32.61	-0.42
Butterflies	<i>Callophrys rubi</i>	NL	154	421	0.81	0.81	122.77	3.74	0.47
Butterflies	<i>Carterocephalus palaemon</i>	VU	46	116	0.88	0.94	11.69	9.73	-1.7
Butterflies	<i>Celastrina argiolus</i>	NL	239	1418	0.71	0.53	241.36	40.77	0.23
Butterflies	<i>Coenonympha pamphilus</i>	NL	319	1058	0.63	0.61	141	57.59	30.26
Butterflies	<i>Coenonympha tullia</i>	CR	66	12	0.88	0.98	-81.58	56.88	3.65
Butterflies	<i>Colias croceus</i>	NA	268	864	0.71	0.62	57.88	-16.59	-1.88
Butterflies	<i>Colias hyale</i>	NA	188	401	0.75	0.66	74.31	17.1	20.13
Butterflies	<i>Cupido minimus</i>	EX	5	5	0.98	0.88	-60	20.98	0.41
Butterflies	<i>Erynnis tages</i>	CR	26	8	0.92	0.95	118.75	-46.54	-51.31
Butterflies	<i>Gonepteryx rhamni</i>	NL	238	1389	0.7	0.54	140.85	36.71	17.9
Butterflies	<i>Hesperia comma</i>	EN	106	116	0.78	0.91	23.13	58.13	23.71
Butterflies	<i>Heteropterus morpheus</i>	EN	10	26	0.88	0.97	-69.03	-35.53	-3.38
Butterflies	<i>Hipparchia semele</i>	SU	195	347	0.71	0.83	30.8	9.87	-9.59
Butterflies	<i>Hipparchia statilinus</i>	CR	8	8	0.98	0.99	-86.96	-18.15	-2.07
Butterflies	<i>Inachis io</i>	NL	206	1552	0.68	0.51	125.23	12.28	16.13
Butterflies	<i>Issoria lathonia</i>	VU	195	299	0.7	0.78	43.89	-5.89	-3.65

Butterflies	<i>Lasiommata megera</i>	NL	250	1346	0.67	0.55	364.07	58.4	28.17
Butterflies	<i>Leptidea sinapis</i>	SU	17	30	0.81	0.89	-5.46	-1.75	-1.29
Butterflies	<i>Limenitis camilla</i>	EN	83	109	0.81	0.89	-22.42	18.13	24.32
Butterflies	<i>Lycaena dispar</i>	CR	24	18	0.98	0.93	-35.42	-9.41	1.76
Butterflies	<i>Lycaena phlaeas</i>	NL	309	1380	0.66	0.53	131.82	1.64	14.13
Butterflies	<i>Lycaena tityrus</i>	VU	166	263	0.78	0.87	40.39	29.68	12.23
Butterflies	<i>Maculineaalcon</i>	EN	93	100	0.82	0.92	-16.13	1.67	-0.74
Butterflies	<i>Maniola jurtina</i>	NL	296	1356	0.66	0.56	228.22	16.13	34.73
Butterflies	<i>Melanargia galathea</i>	NA	14	11	0.85	0.87	8.16	-29.8	9.75
Butterflies	<i>Melitaea athalia</i>	CR	49	24	0.85	0.98	-70.27	11.56	-15
Butterflies	<i>Neozephyrus quercus</i>	NL	128	686	0.76	0.72	301.26	-6.78	6.66
Butterflies	<i>Nymphalis antiopa</i>	EX	61	374	0.83	0.72	161.49	50.77	-26.14
Butterflies	<i>Nymphalis polychloros</i>	CR	64	43	0.76	0.78	-38.13	8.03	-7.68
Butterflies	<i>Ochlodesfaunus</i>	SU	224	927	0.7	0.65	184.02	12.21	15.6
Butterflies	<i>Papilio machaon</i>	NL	129	882	0.77	0.66	350.71	6.9	9.01
Butterflies	<i>Pararge aegeria</i>	NL	183	1433	0.72	0.52	361.41	31.82	18.28
Butterflies	<i>Pieris brassicae</i>	NL	223	1524	0.69	0.51	224.35	28.66	5.31
Butterflies	<i>Pieris napi</i>	NL	249	1542	0.69	0.51	107.79	18.33	27.21
Butterflies	<i>Pieris rapae</i>	NL	255	1555	0.67	0.5	144.98	29.86	33.74
Butterflies	<i>Plebeius agestis</i>	SU	121	532	0.8	0.74	120.83	-6.65	19.49
Butterflies	<i>Plebeius argus</i>	SU	164	333	0.78	0.85	44.24	13.25	0.57
Butterflies	<i>Plebeius optilete</i>	CR	7	5	0.93	0.96	-75	-0.71	9.64
Butterflies	<i>Polygonia c-album</i>	NL	166	1444	0.8	0.53	160.91	32.75	-9.03
Butterflies	<i>Polyommatus coridon</i>	NA	28	6	0.95	0.92	-15.39	-12.03	15.51
Butterflies	<i>Polyommatus icarus</i>	NL	261	1359	0.71	0.53	145.02	7.19	3
Butterflies	<i>Polyommatus semiargus</i>	EX	19	10	0.94	0.96	-62.07	-39.26	-10.74
Butterflies	<i>Pontia daplidice</i>	NA	36	48	0.78	0.7	92.06	30.22	87.25
Butterflies	<i>Pyrgus malvae</i>	EN	86	64	0.76	0.87	12.34	17.46	17.17
Butterflies	<i>Pyronia tithonus</i>	NL	177	823	0.77	0.7	150	26.96	20.62
Butterflies	<i>Satyrrium ilicis</i>	EN	114	108	0.8	0.9	8.43	12.91	-1.51
Butterflies	<i>Thecla betulae</i>	EN	41	77	0.87	0.94	144.44	35.3	-0.8
Butterflies	<i>Thymelicus lineola</i>	NL	179	1316	0.74	0.55	236.32	40.8	70.44
Butterflies	<i>Thymelicus sylvestris</i>	NL	125	551	0.79	0.7	352.38	29.62	7.38
Butterflies	<i>Vanessa atalanta</i>	NA	342	1558	0.66	0.51	15.54	52.61	59.1
Butterflies	<i>Vanessa cardui</i>	NA	265	1539	0.66	0.5	37.5	39.34	23.11

Hoverflies	<i>Anasimyia contracta</i>	SE	20	43	0.87	0.73	27.03	23.96	-25.13
Hoverflies	<i>Anasimyia interpuncta</i>	NL	45	175	0.82	0.76	65.94	35.87	17.22
Hoverflies	<i>Anasimyia lineata</i>	NL	148	312	0.74	0.72	85.07	9.98	13.97
Hoverflies	<i>Anasimyia transfuga</i>	NL	53	101	0.81	0.79	19.73	19.5	6.31
Hoverflies	<i>Baccha elongata</i>	NL	98	269	0.8	0.75	81.88	2.55	-20.2
Hoverflies	<i>Brachyopa insensilis</i>	NL	5	10	0.95	0.87	335.71	121.21	-28.55
Hoverflies	<i>Brachyopa pilosa</i>	NL	12	70	0.95	0.84	473.91	51.57	-9.09
Hoverflies	<i>Brachyopa scutellaris</i>	NL	22	64	0.85	0.89	376.74	23.88	3.92
Hoverflies	<i>Brachypalpoides lentus</i>	NL	25	134	0.88	0.81	300	45.83	-8.23
Hoverflies	<i>Brachypalpus laphriformis</i>	SE	7	54	0.92	0.89	573.91	109.28	-1.89
Hoverflies	<i>Ceriana conopsoides</i>	NL	11	49	0.76	0.87	124.74	63.72	-20.03
Hoverflies	<i>Chalcosyrphus nemorum</i>	NL	32	223	0.9	0.79	224.64	52.67	-16.16
Hoverflies	<i>Chamaesyrrhus lusitanicus</i>	NL	8	8	0.97	0.87	134.78	-93.76	51.72
Hoverflies	<i>Cheilosia albipila</i>	NL	30	189	0.86	0.76	215.71	42.72	-14.35
Hoverflies	<i>Cheilosia barbata</i>	NL	13	7	0.95	0.96	37.5	5.88	8.78
Hoverflies	<i>Cheilosia bergenstammi</i>	NL	37	183	0.86	0.8	386.96	-20.02	24.59
Hoverflies	<i>Cheilosia canicularis</i>	NL	6	24	0.96	0.96	412.5	35.98	7.79
Hoverflies	<i>Cheilosia carbonaria</i>	NL	10	36	0.88	0.85	17.86	29.93	-27.01
Hoverflies	<i>Cheilosia chrysocoma</i>	SE	14	39	0.9	0.85	-26.39	85.68	14.36
Hoverflies	<i>Cheilosia cynocephala</i>	NL	11	56	0.92	0.78	75	36.38	-12.35
Hoverflies	<i>Cheilosia fraterna</i>	NL	46	111	0.77	0.77	73.68	22.37	16.64
Hoverflies	<i>Cheilosia grossa</i>	NL	24	85	0.89	0.81	287.69	0.86	33.46
Hoverflies	<i>Cheilosia illustrata</i>	NL	19	324	0.88	0.78	978.95	13.32	-47.33
Hoverflies	<i>Cheilosia impressa</i>	NL	61	208	0.82	0.76	132.74	37.13	-18.2
Hoverflies	<i>Cheilosia latifrons</i>	NL	32	44	0.74	0.8	61.18	0.33	-7.57
Hoverflies	<i>Cheilosia lenis</i>	NL	6	9	0.92	0.99	225	4.42	2.31
Hoverflies	<i>Cheilosia longula</i>	NL	26	19	0.87	0.89	-47.87	-23.92	20.8
Hoverflies	<i>Cheilosia mutabilis</i>	NL	28	27	0.82	0.8	6.25	25.88	-10.37
Hoverflies	<i>Cheilosia pagana</i>	NL	154	679	0.73	0.63	236.05	30.86	5.02
Hoverflies	<i>Cheilosia proxima</i>	NL	19	130	0.88	0.87	438.89	31.15	-16.24
Hoverflies	<i>Cheilosia ranunculi</i>	T	147	586	0.75	0.63	175.57	26.96	1.18
Hoverflies	<i>Cheilosia scutellata</i>	NL	63	83	0.85	0.88	46.46	-14.06	-20.84
Hoverflies	<i>Cheilosia semifasciata</i>	NL	12	65	0.95	0.87	275.61	63.09	0.59
Hoverflies	<i>Cheilosia urbana</i>	NL	29	33	0.84	0.82	-1.02	20.69	24.22
Hoverflies	<i>Cheilosia uviformis</i>	NL	19	14	0.91	0.77	159.18	81.84	-5.35

Hoverflies	<i>Cheilosia variabilis</i>	NL	45	199	0.89	0.81	281.43	47.65	-39.36
Hoverflies	<i>Cheilosia velutina</i>	NL	14	24	0.93	0.88	68.63	44.4	60.18
Hoverflies	<i>Cheilosia vernalis</i>	NL	94	209	0.74	0.75	88.74	9.25	-10.32
Hoverflies	<i>Chrysogaster cemiteriorum</i>	NL	22	14	0.91	0.99	-42.42	-4.52	0.96
Hoverflies	<i>Chrysogaster solstitialis</i>	NL	29	152	0.83	0.83	497.73	63.51	-11.85
Hoverflies	<i>Chrysogaster virescens</i>	NL	7	37	0.95	0.87	500	69.03	42.99
Hoverflies	<i>Chrysotoxum arcuatum</i>	VU	33	36	0.86	0.92	17.44	5.72	-5.94
Hoverflies	<i>Chrysotoxum bicinctum</i>	NL	66	209	0.84	0.81	62.07	22.43	6.83
Hoverflies	<i>Chrysotoxum cautum</i>	NL	70	261	0.85	0.79	133.57	35.07	3.41
Hoverflies	<i>Chrysotoxum festivum</i>	NL	56	108	0.83	0.8	65.19	24.34	11.24
Hoverflies	<i>Chrysotoxum octomaculatum</i>	VU	19	6	0.91	0.98	-79.17	-10.44	-0.69
Hoverflies	<i>Chrysotoxum vernale</i>	NL	55	63	0.86	0.88	-14.1	25.91	6.01
Hoverflies	<i>Chrysotoxum verralli</i>	NL	6	22	0.96	0.88	232.43	47.7	10.63
Hoverflies	<i>Criorhina asilica</i>	NL	17	25	0.83	0.89	160.42	79.81	14.3
Hoverflies	<i>Criorhina berberina</i>	NL	46	200	0.86	0.79	187.32	34.17	1.12
Hoverflies	<i>Criorhina floccosa</i>	NL	6	51	0.9	0.84	1109.09	89.07	-14.36
Hoverflies	<i>Criorhina pachymera</i>	NL	5	32	0.78	0.92	566.67	68.22	-10.47
Hoverflies	<i>Criorhina ranunculi</i>	NL	5	19	0.88	0.91	500	35.42	12.5
Hoverflies	<i>Dasysyrphus albostriatus</i>	NL	112	344	0.82	0.74	250	21.1	-6.58
Hoverflies	<i>Dasysyrphus hilaris</i>	VU	55	31	0.8	0.9	-45.69	9.75	6.24
Hoverflies	<i>Dasysyrphus pauxillus</i>	SE	5	15	0.91	0.83	2225	-25.74	99.07
Hoverflies	<i>Dasysyrphus pinastri</i>	VU	29	22	0.88	0.8	-34.78	-8.89	11.84
Hoverflies	<i>Dasysyrphus tricinctus</i>	NL	106	204	0.79	0.82	104.05	19.46	-6.91
Hoverflies	<i>Dasysyrphus venustus</i>	NL	89	255	0.76	0.77	58.46	7.49	12.91
Hoverflies	<i>Didea alneti</i>	SE	11	34	0.89	0.81	-5.1	8.55	-8.16
Hoverflies	<i>Didea fasciata</i>	NL	51	173	0.82	0.84	135.92	-12.61	-28.02
Hoverflies	<i>Didea intermedia</i>	NL	35	89	0.86	0.82	132.05	-5.51	5.49
Hoverflies	<i>Epistrophe eligans</i>	NL	80	370	0.81	0.73	150	8.87	-20.52
Hoverflies	<i>Epistrophe flava</i>	VU	10	16	0.87	0.83	40.98	-13.55	-8.08
Hoverflies	<i>Epistrophe grossulariae</i>	NL	40	130	0.83	0.83	308.7	40.11	-21.09
Hoverflies	<i>Epistrophe nitidicollis</i>	NL	72	243	0.8	0.75	40.1	11.15	-4.49
Hoverflies	<i>Episyrrhus balteatus</i>	NL	260	1173	0.65	0.54	152.09	-17.74	16
Hoverflies	<i>Eriozona syrphoides</i>	NL	8	7	0.86	0.91	-36.36	30.18	2.69
Hoverflies	<i>Eristalinus aeneus</i>	NL	30	99	0.95	0.9	107.32	34.94	28.57
Hoverflies	<i>Eristalinus sepulchralis</i>	NL	201	726	0.7	0.6	107.08	41.17	16.93

Hoverflies	<i>Eristalis abusiva</i>	NL	139	443	0.76	0.66	146.63	17.78	29.61
Hoverflies	<i>Eristalis anthophorina</i>	NL	28	20	0.89	0.92	-58.28	-9.21	11.54
Hoverflies	<i>Eristalis arbustorum</i>	NL	315	994	0.65	0.55	87.16	-9.29	13.95
Hoverflies	<i>Eristalis horticola</i>	NL	142	687	0.78	0.65	202.78	1.66	-13.87
Hoverflies	<i>Eristalis intricaria</i>	NL	248	655	0.68	0.63	148.52	16.76	21.16
Hoverflies	<i>Eristalis nemorum</i>	NL	208	872	0.71	0.58	400	23.62	14.46
Hoverflies	<i>Eristalis pertinax</i>	NL	199	1073	0.72	0.55	252.69	-6.34	-8.62
Hoverflies	<i>Eristalis similis</i>	NL	22	74	0.82	0.76	325	23.49	21.3
Hoverflies	<i>Eristalis tenax</i>	NL	217	1135	0.7	0.55	208.43	5.29	17.32
Hoverflies	<i>Eumerus funeralis</i>	NL	34	101	0.86	0.86	169.51	-24.79	20.65
Hoverflies	<i>Eumerus ornatus</i>	NL	11	8	0.97	0.93	177.27	41.77	6.83
Hoverflies	<i>Eumerus sogdianus</i>	VU	15	18	0.94	0.86	-41.73	17.02	-8.36
Hoverflies	<i>Eumerus strigatus</i>	NL	71	185	0.7	0.79	51.35	82.94	55.63
Hoverflies	<i>Eupeodes corollae</i>	NL	254	816	0.67	0.59	86.43	-0.44	14.49
Hoverflies	<i>Eupeodes goeldini</i>	NL	12	24	0.81	0.84	117.31	-85.64	27.39
Hoverflies	<i>Eupeodes lapponicus</i>	NL	21	79	0.83	0.84	489.47	50.46	-25.64
Hoverflies	<i>Eupeodes latifasciatus</i>	NL	66	301	0.75	0.72	147.75	38.08	-5.33
Hoverflies	<i>Eupeodes luniger</i>	NL	70	387	0.78	0.73	191.91	-7.05	-0.13
Hoverflies	<i>Eupeodes nielsenii</i>	NL	5	21	0.76	0.86	239.39	-9.61	-37.49
Hoverflies	<i>Ferdinandea cuprea</i>	NL	37	175	0.9	0.76	247.62	25.31	-29.74
Hoverflies	<i>Helophilus hybridus</i>	NL	80	370	0.76	0.67	115.85	-14.26	-4.4
Hoverflies	<i>Helophilus pendulus</i>	NL	321	1123	0.65	0.53	90.78	15.68	15.92
Hoverflies	<i>Helophilus trivittatus</i>	NL	202	959	0.69	0.56	144.19	-2.51	19.54
Hoverflies	<i>Heringia brevidens</i>	NL	5	15	0.89	0.67	2937.5	87.85	-41.81
Hoverflies	<i>Heringia heringi</i>	NL	17	36	0.76	0.82	164	65.97	-34.34
Hoverflies	<i>Heringia pubescens</i>	VU	19	24	0.89	0.87	19.67	-10.13	-25.34
Hoverflies	<i>Heringia vitripennis</i>	NL	71	49	0.78	0.75	-4.62	12.7	-5.06
Hoverflies	<i>Lejogaster metallina</i>	NL	149	288	0.76	0.71	132.02	42.47	3.3
Hoverflies	<i>Lejogaster tarsata</i>	NL	39	75	0.85	0.85	94.95	-17.37	-2.23
Hoverflies	<i>Lejops vittata</i>	NL	11	7	0.84	0.99	-92.05	88.47	58.59
Hoverflies	<i>Leucozona laternaria</i>	SE	31	16	0.82	0.86	252.83	-4.79	18.11
Hoverflies	<i>Leucozona lucorum</i>	NL	33	80	0.91	0.82	157.9	40.11	-5.48
Hoverflies	<i>Megasyrphus erratica</i>	NL	18	58	0.85	0.87	232.08	-79.58	-19.11
Hoverflies	<i>Melangyna cincta</i>	NL	52	207	0.83	0.79	105.51	11.72	-5.69
Hoverflies	<i>Melangyna lasiophthalma</i>	NL	18	70	0.82	0.82	471.43	40.23	-22.5

Hoverflies	<i>Melangyna quadrimaculata</i>	NL	12	18	0.89	0.95	28.89	44.94	-13.39
Hoverflies	<i>Melangyna umbellatarum</i>	NL	41	121	0.86	0.81	113.95	28.16	7.25
Hoverflies	<i>Melanogaster aerea</i>	NL	12	13	0.92	0.91	296.77	-13.47	25.27
Hoverflies	<i>Melanogaster hirtella</i>	NL	136	454	0.73	0.68	170.55	11.84	22.97
Hoverflies	<i>Melanogaster nuda</i>	NL	43	97	0.85	0.77	93.1	9.97	8.3
Hoverflies	<i>Melanostoma mellinum</i>	NL	310	993	0.62	0.56	170.91	-4.93	15.85
Hoverflies	<i>Melanostoma scalare</i>	NL	134	702	0.71	0.64	317.65	0.92	13.87
Hoverflies	<i>Meligramma guttata</i>	NL	29	54	0.92	0.87	104.92	42.07	-8.93
Hoverflies	<i>Meligramma triangulifera</i>	NL	27	77	0.9	0.85	545.24	36.38	-26.34
Hoverflies	<i>Meliscaeva auricollis</i>	NL	99	307	0.78	0.72	143.36	-2.98	-8.79
Hoverflies	<i>Meliscaeva cinctella</i>	NL	99	147	0.84	0.82	18.61	24.14	5.52
Hoverflies	<i>Merodon equestris</i>	NL	63	307	0.82	0.75	128.77	8	24.4
Hoverflies	<i>Microdon analis</i>	NL	12	52	0.81	0.87	161.29	30.5	2.95
Hoverflies	<i>Microdon devius</i>	NL	5	5	0.94	0.7	250	-2.87	-0.81
Hoverflies	<i>Myathropa florea</i>	NL	165	978	0.73	0.58	216.67	2.49	-4.69
Hoverflies	<i>Neoascia geniculata</i>	NL	42	26	0.89	0.87	51.35	14.64	26.46
Hoverflies	<i>Neoascia interrupta</i>	NL	10	32	0.68	0.8	5.71	30.07	-30.48
Hoverflies	<i>Neoascia meticulosa</i>	NL	32	113	0.82	0.77	136.07	70.75	-1.26
Hoverflies	<i>Neoascia obliqua</i>	NL	5	45	0.93	0.87	1008.33	-22.64	11.95
Hoverflies	<i>Neoascia podagrica</i>	NL	249	502	0.67	0.67	120.86	10.6	10.56
Hoverflies	<i>Neoascia tenur</i>	NL	72	269	0.78	0.74	72.02	-8.28	6.23
Hoverflies	<i>Orthonevra brevicornis</i>	NL	10	26	0.91	0.81	127.5	47.93	16.3
Hoverflies	<i>Orthonevra geniculata</i>	NL	7	19	0.93	0.82	-20	-6.72	-2
Hoverflies	<i>Orthonevra intermedia</i>	NL	8	40	0.69	0.83	329.63	117.71	27.55
Hoverflies	<i>Orthonevra nobilis</i>	NL	14	11	0.97	0.96	229.41	19.45	3.34
Hoverflies	<i>Paragus haemorrhous</i>	NL	34	215	0.75	0.8	387.27	38.12	14.22
Hoverflies	<i>Paragus pecchiolii</i>	NL	6	18	0.93	0.97	273.68	8.95	-1.62
Hoverflies	<i>Parasyrphus annulatus</i>	NL	9	52	0.93	0.92	63.74	-1.99	2.16
Hoverflies	<i>Parasyrphus lineolus</i>	NL	34	31	0.8	0.87	74.29	-8.37	10.97
Hoverflies	<i>Parasyrphus malinellus</i>	SE	27	35	0.9	0.89	92.73	5.64	-4.24
Hoverflies	<i>Parasyrphus punctulatus</i>	NL	81	160	0.86	0.84	2.37	10.32	-1.15
Hoverflies	<i>Parasyrphus vittiger</i>	VU	60	10	0.84	0.88	-9.52	-8.5	29.66
Hoverflies	<i>Parhelophilus consimilis</i>	NL	10	11	0.81	0.87	1022.22	-2.44	36.09
Hoverflies	<i>Parhelophilus frutetorum</i>	NL	28	134	0.87	0.77	240.82	82.14	-10.96
Hoverflies	<i>Parhelophilus versicolor</i>	NL	67	225	0.82	0.75	95.75	-4.85	9.73

Hoverflies	<i>Pelecocera tricincta</i>	NL	13	39	0.94	0.96	-22.86	-15.59	11.6
Hoverflies	<i>Pipiza austriaca</i>	SE	35	14	0.87	0.9	-17.14	-28.22	7.92
Hoverflies	<i>Pipiza bimaculata</i>	NL	34	121	0.83	0.8	91.84	73.09	20.52
Hoverflies	<i>Pipiza fenestrata</i>	NL	24	12	0.82	0.84	92.16	14.97	37.03
Hoverflies	<i>Pipiza lugubris</i>	NL	19	68	0.8	0.83	178.67	34.28	-5.67
Hoverflies	<i>Pipiza luteitarsis</i>	VU	15	18	0.82	0.85	14.46	22.21	-19.36
Hoverflies	<i>Pipiza noctiluca</i>	NL	57	176	0.81	0.82	64.57	23.08	-23.89
Hoverflies	<i>Pipiza quadrimaculata</i>	VU	22	6	0.92	0.87	-82.2	-119.93	-5.69
Hoverflies	<i>Pipizella viduata</i>	NL	95	272	0.78	0.77	63.25	8.81	-27.25
Hoverflies	<i>Pipizella virens</i>	NL	8	7	0.97	0.97	77.78	-3.99	6.84
Hoverflies	<i>Platycheirus albimanus</i>	NL	194	726	0.76	0.62	156.48	11.37	8.12
Hoverflies	<i>Platycheirus ambiguus</i>	SE	12	9	0.86	0.85	38.89	72.34	-15.41
Hoverflies	<i>Platycheirus angustatus</i>	NL	117	319	0.8	0.68	64.87	47.24	34.74
Hoverflies	<i>Platycheirus clypeatus</i>	NL	244	670	0.7	0.61	84.85	16.94	19.35
Hoverflies	<i>Platycheirus discimanus</i>	VU	8	6	0.91	0.8	-52.5	-4.17	-18.56
Hoverflies	<i>Platycheirus fulviventris</i>	NL	81	148	0.78	0.8	22.3	-11.39	17.68
Hoverflies	<i>Platycheirus immarginatus</i>	NL	14	13	0.87	0.73	-39.41	-79.68	-55.25
Hoverflies	<i>Platycheirus manicatus</i>	NL	68	60	0.76	0.84	81.25	-19.87	-22.63
Hoverflies	<i>Platycheirus peltatus</i>	NL	223	329	0.69	0.7	44.04	12.93	26.62
Hoverflies	<i>Platycheirus scambus</i>	NL	151	202	0.73	0.77	97.89	10.21	7.7
Hoverflies	<i>Platycheirus scutatus</i>	NL	172	412	0.75	0.67	207.09	24.87	11.54
Hoverflies	<i>Pyrophaena granditarsa</i>	NL	156	295	0.73	0.74	113.46	7.5	-5.26
Hoverflies	<i>Pyrophaena rosarum</i>	NL	48	178	0.91	0.81	69.12	27.07	-11.55
Hoverflies	<i>Rhingia campestris</i>	NL	235	814	0.69	0.6	235.63	19.75	44.97
Hoverflies	<i>Riponnensia splendens</i>	NL	5	12	0.9	0.94	2150	27.52	8.05
Hoverflies	<i>Scaeva pyrastris</i>	NL	177	505	0.71	0.66	122.17	5.82	-13.44
Hoverflies	<i>Scaeva selenitica</i>	NL	69	416	0.77	0.69	245.08	15.37	0.29
Hoverflies	<i>Sericomyia lappona</i>	NL	6	13	0.81	0.88	1009.09	27.03	56.15
Hoverflies	<i>Sericomyia silentis</i>	NL	61	258	0.81	0.8	50.46	-2.85	-10.08
Hoverflies	<i>Sphaerophoria batava</i>	NL	37	149	0.81	0.86	163.27	-45.8	3.48
Hoverflies	<i>Sphaerophoria fatarum</i>	NL	23	15	0.82	0.88	105.81	-5	22.34
Hoverflies	<i>Sphaerophoria interrupta</i>	NL	21	37	0.83	0.94	165.39	6.85	-18.99
Hoverflies	<i>Sphaerophoria philanthus</i>	NL	17	40	0.82	0.91	-34.02	-2.03	18.63
Hoverflies	<i>Sphaerophoria rueppelli</i>	NL	27	105	0.83	0.83	127.63	39.76	19.3
Hoverflies	<i>Sphaerophoria scripta</i>	NL	189	931	0.7	0.57	133.95	-1.37	10.7

Hoverflies	<i>Sphaerophoria taeniata</i>	NL	26	46	0.82	0.78	159.21	48.54	43.82
Hoverflies	<i>Sphaerophoria virgata</i>	SE	6	18	0.85	0.95	-41.76	62.9	0.23
Hoverflies	<i>Sphegina clunipes</i>	NL	30	61	0.92	0.85	494.6	44.16	-26.37
Hoverflies	<i>Sphegina elegans</i>	NL	15	24	0.86	0.92	39.66	17.6	10.76
Hoverflies	<i>Syrpitta pipiens</i>	NL	277	1028	0.68	0.54	187.69	-0.43	31.98
Hoverflies	<i>Syrphus ribesii</i>	NL	231	866	0.69	0.58	139.52	-3.95	-3.07
Hoverflies	<i>Syrphus torvus</i>	NL	163	449	0.74	0.69	171.6	-8.33	-9.23
Hoverflies	<i>Syrphus vitripennis</i>	NL	239	596	0.69	0.64	102.36	-24.89	-1.58
Hoverflies	<i>Temnostoma bombylans</i>	NL	13	130	0.93	0.81	411.63	84.36	-33.19
Hoverflies	<i>Temnostoma vespiforme</i>	NL	14	78	0.87	0.86	348.39	71.79	-26.21
Hoverflies	<i>Trichopsomyia flavitarsis</i>	SE	11	21	0.7	0.75	73.13	32.84	-11.91
Hoverflies	<i>Trichopsomyia lucida</i>	NL	8	14	0.85	0.92	220	51.28	-25.71
Hoverflies	<i>Triglyphus primus</i>	SE	17	24	0.85	0.9	-21.77	43.3	-25.9
Hoverflies	<i>Tropidia scita</i>	NL	122	464	0.73	0.67	112.5	7.76	18.27
Hoverflies	<i>Volucella bombylans</i>	NL	131	461	0.75	0.71	255.56	30.31	-3.69
Hoverflies	<i>Volucella pellucens</i>	NL	109	514	0.78	0.7	186.67	0.79	-17.43
Hoverflies	<i>Volucella zonaria</i>	NL	12	374	0.87	0.76	694.44	48.99	-32.11
Hoverflies	<i>Xanthandrus comtus</i>	NL	33	120	0.73	0.74	75.26	10.28	-13.65
Hoverflies	<i>Xanthogramma citrofasciatum</i>	NL	14	25	0.93	0.95	39.68	45.14	-3.52
Hoverflies	<i>Xanthogramma pedissequum</i>	NL	39	258	0.89	0.8	198.29	23.89	-17.84
Hoverflies	<i>Xylota abiens</i>	SE	24	24	0.91	0.81	98.88	14.17	4.85
Hoverflies	<i>Xylota florum</i>	VU	36	8	0.87	0.73	71.88	-7.02	22.6
Hoverflies	<i>Xylota meigeniana</i>	VU	7	6	0.95	0.93	-24	-2.46	-5.81
Hoverflies	<i>Xylota segnis</i>	NL	153	700	0.74	0.64	164.07	11.78	-19.25
Hoverflies	<i>Xylota sylvarum</i>	NL	57	221	0.86	0.78	193.83	26.82	-17.88
Hoverflies	<i>Xylota tarda</i>	NL	18	34	0.94	0.8	211.63	28.46	-5.77
Hoverflies	<i>Xylota xanthocnema</i>	NL	10	31	0.93	0.91	240	57.8	-5.85

*Red list status – Bees and hoverflies: *T*, Threatened; *VU*, Vulnerable; *SE*, Sensitive; *NL*, Not considered threatened. – Butterflies: *EX*, Extinct (status in 2005); *CR*, Critically endangered; *EN*, endangered; *VU*, vulnerable; *SU*, Susceptible; *NL*, Not considered threatened; *NA*, Migrant or vagrant.

References

1. Peeters, T. M. & Reemer, M. *Bedreigde en verdwenen bijen in Nederland (Apidae sl) basisrapport met voorstel voor de rode lijst*. (2003).
2. Reemer, M., Renema, W., van Steenis, W., Zeegers, T. & Smit, J. in *De Nederlandse zweefvliegen Diptera: Syrphidae 444* (National Natuurhistorisch Museum, Leiden, 2009).

Table S6. Generalized variance inflation factor (GVIF) analysis used to detect highly collinear terms and applied to all species traits included in the linear models. All terms show GVIF values below 3.2, which suggest no high collinearity between terms.

Pollinator group	Predictor variable	GVIF
<i>Bees</i>		
	Body size	1.17
	Flight period	1.30
	Habitat specialisation	1.38
	Larval food preference	1.13
	Range size P1	1.43
	Voltinism	1.14
<i>Butterflies</i>		
	Body size	1.38
	Flight period	1.85
	Habitat specialisation	3.17
	Larval food dependence on nitrogen	2.59
	Larval food preference	1.15
	Range size P1	1.51
	Voltinism	1.64
<i>Hoverflies</i>		
	Body size	1.10
	Flight period	1.79
	Habitat specialisation	1.24
	Larval food preference	1.14
	Range size P1	1.78
	Voltinism	1.64

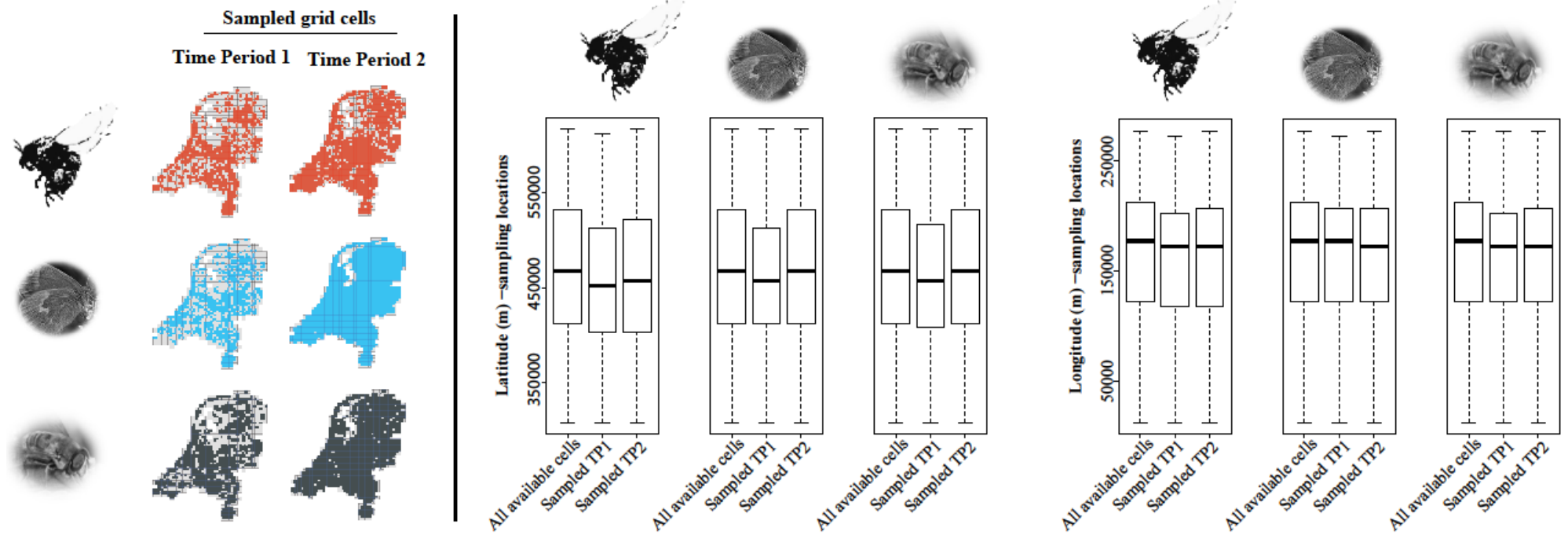


Figure S1. In the left panel: The maps of distribution of collection effort over time in the Netherlands (resolution: 5×5 km grid cells). Light grey: grid cells where no species were collected. Coloured (red, blue or dark grey): grid cells where species had been sampled. The information is given for each of the two time periods analysed (TP1 and TP2) and for the three pollinator groups (bees, butterflies, hoverflies)*. The maps were created using the R “raster” package (<https://cran.r-project.org/web/packages/raster/index.html>). In the right panel the boxplots of latitudinal and longitudinal geographic distribution of the sampled grid cells is shown in comparison to the distribution of all grid cells in the study area for each pollinator group. The sampled grid cells cover similar latitudinal and longitudinal extents across the study area and time periods suggesting a similar coverage of environmental conditions.

*The bumblebee image in Figure S1 was created by the authors of this publication. The butterfly and hoverfly images for Figure S1 were modified to the grey scale from en.wikipedia.org/wiki/Coenonympha_tullia and en.wikipedia.org/wiki/Hoverfly respectively. These images are licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.