Ecography

E6458
Vandewoestijne, S. and Van Dyck, H. 2011. Flight morphology along a latitudinal gradient in a butterfly: do geographic clines differ between agricultural and woodland landscapes? – Ecography 34: xxx–xxx.

Supplementary material

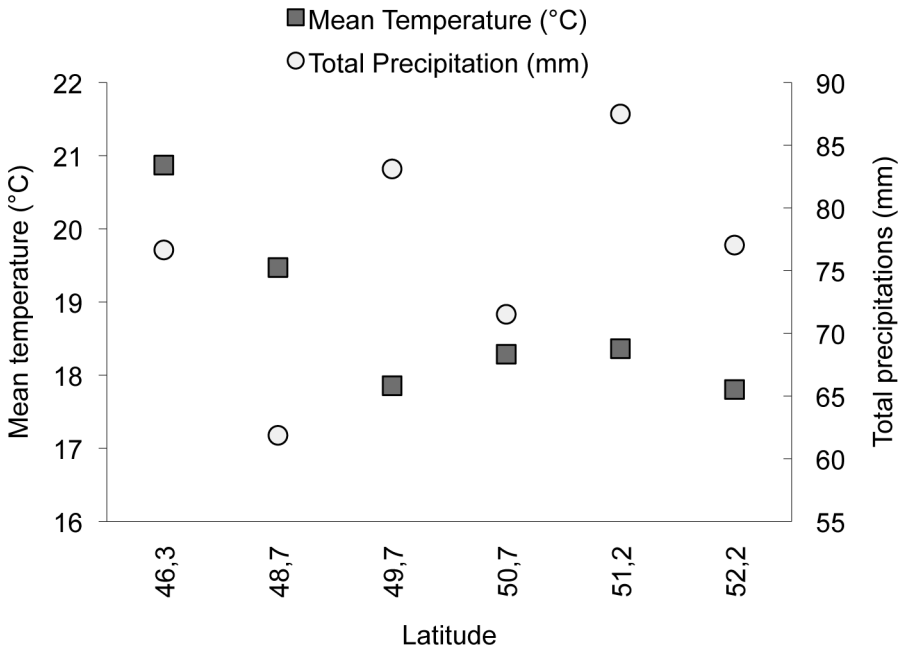
Appendix 1

Sample locality, landscape (A: agricultural, W: woodland), sample size and latitudinal and longitudinal coordinates.

Country	Population	Landscape	Sample size	Latitude	Longitude
The Netherlands	Nijkerk	A	24	52°13′36.90″N	5°26′35.19″E
	Grote Voorn	A	23	52°21′29.36″N	6° 5′28.28″E
	Wiblinksbosch	W	28	52°11′34.42″N	5°37′39.98″E
	Heldeheuvel	W	25	52° 8′45.44″N	6° 0′26.65″E
North of Belgium	Morkhoven	A	21	51° 6′53.26″N	4°49′47.61″E
	Geel Ten Aert	A	19	51°11′47.00″N	4°57′12.37″E
	Merodebos	W	20	51° 8′24.68″N	4°43′35.55″E
	Hoge Mouw	W	25	51°13′59.93″N	4°57′2.67″E
Central Belgium	Sint-Katarina-Houtem	A	22	50°46′52.96″N	4°52′56.16″E
	Gerompont	A	20	50°39′7.75″N	4°53′32.80″E
	Meerdaal	W	20	50°48′44.35″N	4°43′51.52″E
	Lauzelle	W	20	50°40′29.31″N	4°36′5.63″E
South of Belgium	Villers s/Semois	A	16	49°42′53.86″N	5°33′3.95″E
	Geisert	W	20	49°37′20.54″N	5°47′27.39″E
	Haie devant la Ville	W	21	49°42′13.57″N	5°36′12.57″E
North of France	Courdemanges	A	19	48°41′39.25″N	4°29′54.69″E
	Fontaine s/Coole	A	21	48°47′54.02″N	4°23′12.74″E
	Bois de Riémontet	W	16	48°49′35.25″N	4°46′13.57″E
	Bois de l'Argentolle	W	19	48°35′5.27″N	4°41′20.39″E
Central France	Laiz	A	24	46°14′18.01″N	4°54′6.94″E
	Corgens	A	24	46°22′37.38″N	5°6′24.20″E
	Bois Fevrier	W	20	46°11′8.96″N	4°56′16.18″E
	Forêt de Villard	W	25	46°25′29.06″N	5°11′23.66″E

Appendix 2

Average temperature and total precipitation per latitudinal zone averaged over 20 yr (1986–2006) during the developmental stage (July) of the late summer cohort.



Appendix 3

Principal components based on the combination of age-adjusted morphological variables (total mass and thorax mass, and forewing area and length). Loadings of the principal component axes for each variable are indicated, as well as the proportion of the total variance explained by each PC axis. The biological meaning is added to facilitate interpretation (PC1 to PC4: principal component axis 1 to 4). (+) and (–) indicate, respectively, a positive and negative correlation between PC axis and biological variable.

	PC1	PC2	PC3	PC4
Proportion	85.20%	9.71%	4.25%	0.84%
Total mass	0.663	–0.242	0.707	0.0055
Thorax mass	0.677	–0.205	–0.705	–0.038
Forewing length	0.125	0.307	–0.019	0.943
Forewing area	0.291	0.897	0.036	–0.330
Functional significance	(+) Size	(–) Wing loading	(–) Relative thorax	(+) Aspect ratio

Appendix 4

Correlations among population Mahalanbolis distance and P_{st} of morphological variables and average latitude for the three landscape pairs. Average latitude is mean of the two pairwise population latitudes. P-values shown are those from resampling procedure. P_{st}: proportion of among population phenotypic variance. AA: agricultural–agricultural landscape pairwise comparisons, WW: woodland–woodland landscape pairwise comparisons, AW: inter-landscape pairwise comparisons. PC1 to PC4: principal component axis 1 to 4.

		AA		WW		AW	
		r	p	r	p	r	p
Size	Size (PC1)						
	Latitude	0.21	0.133	–0.24	*0.056*	0.11	0.22
	Total mass Pst						
	Latitude	0.18	0.186	0.12	0.315	0.27	**0.001**
Shape	Melanisation Pst						
	Latitude	–0.14	0.302	0.02	0.892	–0.03	0.771
	Shape (PC2–4)						
	Latitude	0.35	**0.001**	0.11	0.384	0.15	*0.093*
	Wing loading (PC2)						
	Latitude	–0.12	0.38	–0.08	0.565	–0.08	0.312
	Wing loading Pst						
	Latitude	0.12	0.382	0.11	0.384	0.13	0.15
	Relative thorax (PC3)						
	Latitude	0.42	**0.001**	–0.07	0.579	0.27	**0.002**
	Relative thorax Pst						
	Latitude	0.36	**0.004**	–0.04	0.747	0.2	**0.018**
	Aspect ratio (PC4)						
	Latitude	0.37	**0.006**	0.18	0.152	0.15	*0.084*
	Aspect ratio Pst						
	Latitude	0.41	**0.002**	0.15	0.223	0.24	**0.003**