Table 3. Density–area relationships for butterflies, estimated either from the total data set (DAR_{slope} 1) or from a reduced data set that excluded small patches with zero density (DAR_{slope} 2)

Family	**Species**	**Generalist or specialist***	**Wing span†**	**DAR_{slope} 1 (SE)‡**	**DAR_{slope} 2 (SE)‡**
Hesperidae	*Spialia sertorius*	S	24	0.59 (0.36)	0.08 (0.60)
Hesperidae	*Pyrgus malvae*	G	23	–0.01 (0.10)	–0.01 (0.10)
Hesperidae	*Erynnis tages*	S	27	0.08 (0.14)	–0.04 (0.13)
Hesperidae	*Carterocephalus palaemon*	G	27	–0.38 (0.14)	–0.38 (0.14)
Hesperidae	*Thymelicus sylvestris*	G	28	–0.50 (0.18)	–0.50 (0.18)
Hesperidae	*T. lineola*	G	25	0.05 (0.24)	–0.03 (0.25)
Hesperidae	*T. acteon*	S	24	–0.26 (0.11)	–0.29 (0.11)
Hesperidae	*Hesperia comma*	S	30.5	0.29 (0.37)	–0.61 (0.70)
Hesperidae	*Ochlodes silvanus*	G	30	–0.47 (0.20)	–0.47 (0.20)
Pieridae	*Leptidea sinapis*	S	38	0.56 (0.23)	0.53 (0.24)
Pieridae	*Colias hyale/alfacariensis*	S	45	0.62 (0.36)	0.56 (0.38)
Pieridae	*Gonepteryx rhamni*	G	56	–0.07 (0.12)	–0.07 (0.12)
Pieridae	*Pieris brassicae*	G	57	–0.19 (0.16)	–0.19 (0.16)
Pieridae	*Pieris rapae*	G	43.5	–0.29 (0.09)	–0.29 (0.09)
Pieridae	*Pieris napi*	G	38.5	–0.36 (0.08)	–0.36 (0.08)
Pieridae	*Anthocaris cardamines*	G	39	–0.24 (0.15)	–0.24 (0.15)
Lycaenidae	*Lycaena phlaeas*	G	26.5	–0.26 (0.23)	–0.32 (0.24)
Lycaenidae	*Callophrys rubi*	G	23	–0.00 (0.14)	–0.04 (0.14)
Lycaenidae	*Cupido minimus*	S	23	0.43 (0.33)	–0.19 (0.50)
Lycaenidae	*Celastrina argiolus*	G	27	0.55 (0.26)	0.15 (0.35)
Lycaenidae	*Plebeius argus*	G	22.5	0.43 (0.48)	0.20 (0.63)
Lycaenidae	*Polyommatus agestis*	S	25	0.01 (0.21)	–0.07 (0.22)
Lycaenidae	*Polyommatus coridon*	S	33	0.33 (0.15)	0.33 (0.15)
Lycaenidae	*Polyommatus icarus*	G	27.5	0.17 (0.09)	0.15 (0.09)
Lycaenidae	*Hamearis lucina*	G	31	–0.13 (0.26)	–0.48 (0.28)
Nymphalidae	*Argynnis paphia*	G	62	–0.36 (0.15)	–0.36 (0.15)

Family	Species	Generalist or specialist*	Wing span†	DAR_{slope} 1 (SE)‡	DAR_{slope} 2 (SE)‡
Nymphalidae	*A. aglaja*	S	51.5	–0.11 (0.31)	–0.15 (0.31)
Nymphalidae	*Issoria lathonia*	G	45	0.04 (0.14)	–0.08 (0.14)
Nymphalidae	*Vanessa atalanta*	G	59.5	0.07 (0.25)	–0.54 (0.52)
Nymphalidae	*V. cardui*	G	49	–0.21 (0.09)	–0.21 (0.09)
Nymphalidae	*Nymphalis io*	G	53.5	–0.13 (0.10)	–0.13 (0.10)
Nymphalidae	*Nymphalis urticae*	G	48	–0.15 (0.10)	–0.15 (0.10)
Nymphalidae	*Polygonia c-album*	G	46	–0.74 (0.38)	–0.74 (0.38)
Nymphalidae	*Melitaea aurelia*	S	30	0.47 (0.30)	–0.49 (0.48)
Nymphalidae	*Pararge aegeria*	G	41.5	–0.30 (0.17)	–0.30 (0.17)
Nymphalidae	*Lasiommata megera*	G	42.5	–0.60 (0.30)	–0.70 (0.30)
Nymphalidae	*Coenonympha pamphilus*	G	28	–0.23 (0.12)	–0.23 (0.12)
Nymphalidae	*C. arcania*	S	37	–0.11 (0.16)	–0.21 (0.17)
Nymphalidae	*Aphantopus hyperantus*	G	38.5	–0.42 (0.09)	–0.42 (0.09)
Nymphalidae	*Maniola jurtina*	G	41.5	–0.07 (0.07)	–0.07 (0.07)
Nymphalidae	*Erebia medusa*	S	38	0.48 (0.29)	0.17 (0.41)
Nymphalidae	*Melanargia galathea*	G	47.5	–0.12 (0.06)	–0.12 (0.06)
Zygaenidae	*Z. viciae*	S	26.5	–0.39 (0.21)	–0.47 (0.21)
Zygaenidae	*Z. filipendulae*	G	34	–0.30 (0.14)	–0.30 (0.14)
Zygaenidae	*Z. lonicerae*	S	38	0.16 (0.38)	–0.16 (0.52)
Zygaenidae	*Z. carniolica*	S	27	–0.15 (0.18)	–0.20 (0.18)
Zygaenidae	*Z. purpuralis*	S	32	0.12 (0.25)	–0.24 (0.29)

*The habitat preferences of butterflies was done by an external butterfly expert and is based on observations of general occurrence in the study area.

†Data from ref. 1.

‡Data for estimation of DAR_{slope} were based on density estimates from 2 years (1996 and 2000). In each year, butterfly and zygaenid densities were estimated by counting all individuals in standardized transects. All sites were sampled five times per study year in a randomized sequence every 3–4 weeks by one person in 1996 and another person in 2000. Transect time per walk varied from 15 to 60 min, depending on the size of the grassland. During each transect walk, the distance was measured allowing for the calculation of butterfly

density per m^2. Differences between years were considered to be due to random effects, such as differences in weather conditions and observer. For additional details, see refs. 2 and 3.

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