

Supplementary Material

Standardized butterfly surveys: comparing transect counts and area-time counts in insect monitoring

Barkmann, F. ^a; Huemer, P. ^b; Tappeiner, U. ^{a,c}; Tasser, E. ^c; Rüdissler, J. ^a

^a *Department of Ecology, University of Innsbruck, Sternwartestraße 15, 6020 Innsbruck, Austria*

Friederike.Barkmann@uibk.ac.at (0000-0002-9179-7494); Ulrike.Tappeiner@uibk.ac.at (0000-0002-0195-7459)

^b *Tiroler Landesmuseen Betriebsges.m.b.H., Sammlungs- und Forschungszentrum, Naturwissenschaftliche Sammlungen, Krajnc-Straße 1, 6060 Hall, Austria;*

P.Huemer@tiroler-landesmuseen.at (0000-0002-0630-545X)

^c *Institute for Alpine Environment, Eurac Research, Viale Druso 1, 39100 Bozen/Bolzano, Italy*

Erich.Tasser@eurac.edu (0000-0002-9179-7494)

Corresponding author: Johannes Rüdissler; Johannes.Ruedissler@uibk.ac.at (0000-0001-6498-7068),

Tel.: +43 (0) 512 507 51617; Fax: +43 (0) 512 507 51699. Department of Ecology, University of Innsbruck, Sternwartestraße. 15, 6020 Innsbruck, Austria

Table S1 Observed species/species complexes, their abundances and site occupancies (number of sites they were detected on) counted over four visits on 144 sites with either the area-time counts or transect counts.

Species or species complex	Abundance – area-time count	Abundance – transect count	Site occupancy – area-time count	Site occupancy – transect count
<i>Maniola jurtina</i>	905	292	72	52
<i>Pieris rapae</i>	647	142	106	64
<i>Polyommatus icarus</i>	347	113	76	48
<i>Aglais urticae</i>	333	97	102	57
<i>Melanargia galathea</i>	271	75	24	18
<i>Coenonympha pamphilus</i>	265	93	63	43
<i>Lysandra coridon</i>	252	72	29	19
<i>Erebia aethiops</i>	241	94	26	17
<i>Hesperia comma</i>	214	43	55	22
<i>Vanessa cardui</i>	213	51	53	28
<i>Erebia pronoe</i>	200	59	23	18
<i>Speyeria aglaja</i>	179	46	54	25
<i>Minois dryas</i>	160	68	12	8
<i>Cupido minimus</i>	158	122	21	18
<i>Aphantopus hyperantus</i>	154	63	38	24
<i>Coenonympha gardetta</i>	150	47	27	17
<i>Colias crocea</i>	133	41	35	14
<i>Erebia melampus</i>	133	46	24	13
<i>Cyaniris semiargus</i>	126	39	46	21
<i>Aporia crataegi</i>	108	22	48	15
<i>Erebia euryale</i>	108	40	28	20
<i>Thymelicus sylvestris</i>	100	29	21	12
<i>Vanessa atalanta</i>	92	26	60	24
<i>Melitaea athalia</i>	86	22	28	9
<i>Erebia manto</i>	82	24	17	10
<i>Erebia medusa</i>	76	28	22	11

Species or species complex	Abundance – area-time count	Abundance – transect count	Site occupancy – area-time count	Site occupancy – transect count
<i>Fabriciana niobe</i>	71	19	15	10
<i>Pieris bryoniae</i>	69	17	22	14
<i>Papilio machaon</i>	66	16	31	11
<i>Erebia oeme</i>	60	16	16	11
<i>Pieris brassicae</i>	58	11	34	9
<i>Thymelicus lineola</i>	56	21	13	8
<i>Erebia tyndarus</i>	55	11	10	4
<i>Fabriciana adippe</i>	53	14	22	9
<i>Colias hyale</i>	53	9	24	7
<i>Erebia albertanus</i>	52	29	10	6
<i>Leptidea sinapis/juvernica</i>	50	11	30	6
<i>Callophrys rubi</i>	46	13	12	4
<i>Boloria euphrosyne</i>	44	22	23	14
<i>Coenonympha glycerion</i>	43	7	4	2
<i>Phengaris arion</i>	43	13	21	8
<i>Colias alfacariensis</i>	42	10	11	4
<i>Lycaena virgaureae</i>	41	7	14	4
<i>Lysandra bellargus</i>	40	9	7	5
<i>Aricia agestis/artaxerxes</i>	40	10	18	5
<i>Boloria titania</i>	38	5	11	2
<i>Lasiommata maera</i>	36	9	21	8
<i>Argynnis paphia</i>	35	7	15	5
<i>Erebia ligea</i>	30	10	15	7
<i>Ochlodes sylvanus</i>	30	15	13	7
<i>Boloria selene</i>	29	5	11	5
<i>Pyrgus alveus</i>	27	8	15	3
<i>Lycaena tityrus</i>	25	6	9	3
<i>Pieris napi</i>	24	5	17	5
<i>Plebejus argus</i>	24	15	5	3

Species or species complex	Abundance – area-time count	Abundance – transect count	Site occupancy – area-time count	Site occupancy – transect count
<i>Anthocharis cardamines</i>	23	4	11	3
<i>Melitaea didyma</i>	23	16	5	2
<i>Colias phicomone</i>	21	0	12	0
<i>Erynnis tages</i>	21	14	13	9
<i>Lasiommata megera</i>	21	4	7	3
<i>Boloria dia</i>	20	3	8	3
<i>Erebia cassioides</i>	20	2	3	1
<i>Lycaena phlaeas</i>	20	8	9	6
<i>Gonepteryx rhamni</i>	19	10	18	10
<i>Erebia pharte</i>	18	6	8	5
<i>Phengaris nausithous</i>	17	16	2	2
<i>Pyrgus serratulae</i>	17	2	13	2
<i>Melitaea diamina</i>	16	7	9	5
<i>Colias palaeno</i>	15	2	9	2
<i>Pyrgus malvae/malvoides</i>	13	8	9	6
<i>Aglais io</i>	12	3	11	3
<i>Erebia pandrose</i>	12	1	4	1
<i>Lasiommata petropolitana</i>	12	8	9	6
<i>Parnassius apollo</i>	12	1	7	1
<i>Eumedonia eumedon</i>	11	8	7	3
<i>Erebia epiphron</i>	10	1	6	1
<i>Erebia eriphyle</i>	10	6	5	4
<i>Phengaris teleius</i>	10	5	2	2
<i>Lycaena hippothoe</i>	9	6	6	4
<i>Polygonia c-album</i>	8	1	6	1
<i>Hipparchia semele</i>	7	2	3	2
<i>Brenthis ino</i>	6	1	4	1
<i>Agriades orbitulus</i>	5	3	3	1
<i>Boloria pales</i>	5	0	3	0

Species or species complex	Abundance – area-time count	Abundance – transect count	Site occupancy – area-time count	Site occupancy – transect count
<i>Issoria lathonia</i>	5	3	3	2
<i>Nymphalis antiopa</i>	5	0	5	0
<i>Agriades optilete</i>	4	2	2	1
<i>Erebia montanus</i>	4	1	2	1
<i>Melitaea phoebe</i>	4	2	2	2
<i>Polyommatus eros</i>	4	0	2	0
<i>Satyrium w-album</i>	4	1	4	1
<i>Coenonympha arcania</i>	3	3	1	1
<i>Carterocephalus palaemon</i>	3	0	3	0
<i>Hamearis lucina</i>	3	2	2	2
<i>Euphydryas aurinia</i>	3	0	1	0
<i>Euphydryas intermedia</i>	3	3	2	2
<i>Araschnia levana</i>	2	0	2	0
<i>Celastrina argiolus</i>	2	0	2	0
<i>Iphiclides podalirius</i>	2	1	1	1
<i>Melitaea aurelia</i>	2	1	1	1
<i>Polyommatus amandus</i>	2	0	1	0
<i>Polyommatus thersites</i>	2	1	2	1
<i>Spialia sertorius</i>	2	1	1	1
<i>Thecla betulae</i>	2	0	2	0
<i>Apatura iris</i>	1	0	1	0
<i>Boloria aquilonaris</i>	1	0	1	0
<i>Boloria thore</i>	1	0	1	0
<i>Coenonympha tullia</i>	1	0	1	0
<i>Phengaris alcon</i>	1	0	1	0
<i>Melitaea cinxia</i>	1	0	1	0
<i>Nymphalis polychloros</i>	1	0	1	0
<i>Pararge aegeria</i>	1	0	1	0
<i>Polyommatus damon</i>	1	0	1	0

Species or species complex	Abundance – area-time count	Abundance – transect count	Site occupancy – area-time count	Site occupancy – transect count
<i>Pontia callidice</i>	1	1	1	1
<i>Pyrgus andromedae</i>	1	0	1	0
<i>Pyrgus cacaliae</i>	1	1	1	1
<i>Cupido argiades</i>	0	1	0	1
<i>Plebejus idas</i>	0	1	0	1
<i>Pyrgus armoricanus</i>	0	1	0	1