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Taxon	Visit number			% of dataset	% Diurnal
	Diurnal	Nocturnal	Total		
AM	555	0	555	15.3	100.0
ANT	1381	270	1651	45.4	83.6
API	82	0	82	2.3	100.0
ARA	43	10	53	1.5	81.1
BUM	183	0	183	5.0	100.0
CER	52	0	52	1.3	100.0
COL	75	11	86	2.4	87.2
HAL	76	0	76	2.1	100.0
HET	21	0	21	0.6	100.0
INS	20	13	33	0.9	60.6
LC	1	0	1	0.0	100.0
LI	12	25	37	1.0	32.4
NSYR	339	8	347	9.5	97.7
ORT	76	10	86	2.4	88.4
SLU	0	4	4	0.1	0.0
SYR	256	0	256	7.0	100.0
WOO	107	6	113	3.1	94.7
Total	3279	357	3636	100.0	90.2

Table S1. Distribution of flower diurnal and nocturnal visits by morphotype groups. Day period: 05:00–22:00 (254.5h monitored); Night period: 22:00–05:00 (114.5h monitored). The total % Diurnal represents the overall proportion of diurnal visits across all taxa combined. Abbreviations: AM: *Apis mellifera*, ANT: ants, API: other bees, ARA: Arachnida, BUM:

bumblebees, CER: longhorn beetles (Cerambycidae), COL: other beetles (Coleoptera), HAL: Halictid-like bees, HET: Heteroptera, INS: unidentifiable insects, LC: caterpillars, LI: butterflies (Lepidoptera imago), NSYR: non-syrphid flies (Diptera), ORT: Orthoptera, SLU: slugs, SYR: hoverflies (Syrphidae), WOO: woodlice (Isopoda). n=3,636 visits on 140 flowers across four bramble patches.

Patch	Taxon1	Taxon2	N_tx1	N_tx2	Estimator	Overlap	CI_low	CI_high	P_value	Overlap_nul
1	AM	ANT	253	1008	Dhat4	0.57	0.52	0.62	0	0.94
1	AM	NSYR	253	81	Dhat4	0.75	0.66	0.84	0	0.92
1	AM	SYR	253	119	Dhat4	0.87	0.80	0.93	0.0501	0.92
1	ANT	NSYR	1008	81	Dhat4	0.67	0.58	0.76	0	0.91
1	ANT	SYR	1008	119	Dhat4	0.64	0.56	0.73	0	0.92
1	NSYR	SYR	81	119	Dhat4	0.80	0.71	0.89	0.0260	0.89
2	AM	BUM	95	65	Dhat4	0.75	0.65	0.85	0	0.90
3	AM	ANT	207	249	Dhat4	0.42	0.36	0.49	0	0.92
3	AM	BUM	207	86	Dhat4	0.80	0.70	0.89	0.0010	0.92
3	AM	NSYR	207	132	Dhat4	0.54	0.46	0.62	0	0.91
3	AM	SYR	207	62	Dhat4	0.66	0.55	0.76	0	0.90
3	ANT	BUM	249	86	Dhat4	0.47	0.39	0.56	0	0.89
3	ANT	NSYR	249	132	Dhat4	0.57	0.49	0.65	0	0.90
3	ANT	SYR	249	62	Dhat4	0.66	0.56	0.75	0	0.87
3	BUM	NSYR	86	132	Dhat4	0.64	0.55	0.74	0	0.90
3	BUM	SYR	86	62	Dhat4	0.72	0.61	0.84	0.0010	0.89
3	NSYR	SYR	132	62	Dhat4	0.66	0.54	0.77	0	0.88
4	NSYR	SYR	112	39	Dhat1	0.60	0.48	0.73	0	0.88

Table S2. Pairwise temporal niche overlap among co-occurring flower visitor taxa within each bramble patch. Overlap was estimated from individual visit timestamps using kernel density estimation (Dhat4 for $N \geq 50$, Dhat1 for $N < 50$). CI_low and CI_high are the lower and upper bounds of the 95% bootstrap confidence interval (999 replicates). P_{value} is the one-

tailed P -value from a permutation test (999 permutations) testing whether observed overlap was lower than expected by chance; values below 0.05 indicate significant temporal segregation. Overlap_nul is the mean overlap value under the null distribution. Abbreviations: AM: *Apis mellifera*, ANT: ants, BUM: bumblebees, NSYR: non-syrphid flies (Diptera), SYR: hoverflies (Syrphidae).

Taxon	AIC_ temp	AIC_ light	AIC_ combined	Temp_beta	Temp_SE	Temp_p	Lum_beta	Lum_SE	Lum_p
AM	471.4	471.7	473.4	0.235	0.296	0.427	-0.048	0.4	0.904
ANT	508.4	505.6	502.8	0.541	0.251	0.031	-0.642	0.253	0.011
BUM	411.1	412	413.5	0.241	0.361	0.503	0.336	0.364	0.356
NSYR	735	730.1	730.5	0.237	0.231	0.305	-0.638	0.248	0.01
SYR	627.4	627.6	629.2	-0.062	0.236	0.793	0.086	0.291	0.769

Table S3. Comparison of single-predictor and combined models fitted to predict flower visitor occurrence probability as a function of microclimate. AIC values are shown for temperature-only, light intensity-only, and combined models. All models include a smooth term for time of day (s(Hour, bs='tp', k=8) and random effects for sampling date and bramble patch. β and SE refer to standardised coefficients in the combined model.

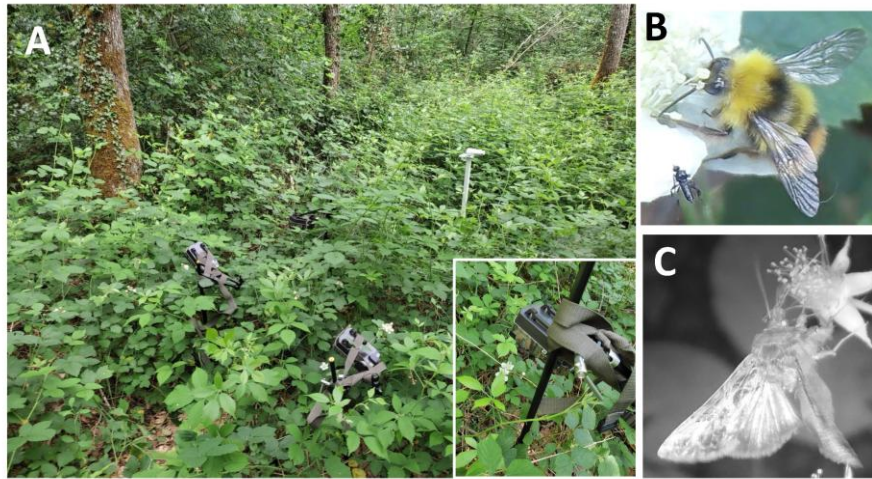


Figure S1. *In situ* experimental deployment with two camera traps and one microclimate data logger in bramble patch 4 (A). Each camera is positioned 10 cm from the focal bramble flower (A, insert). Examples of frames from diurnal (B, bumblebee and a non-syrphid Diptera) and nocturnal (C, Noctuidae) videos.

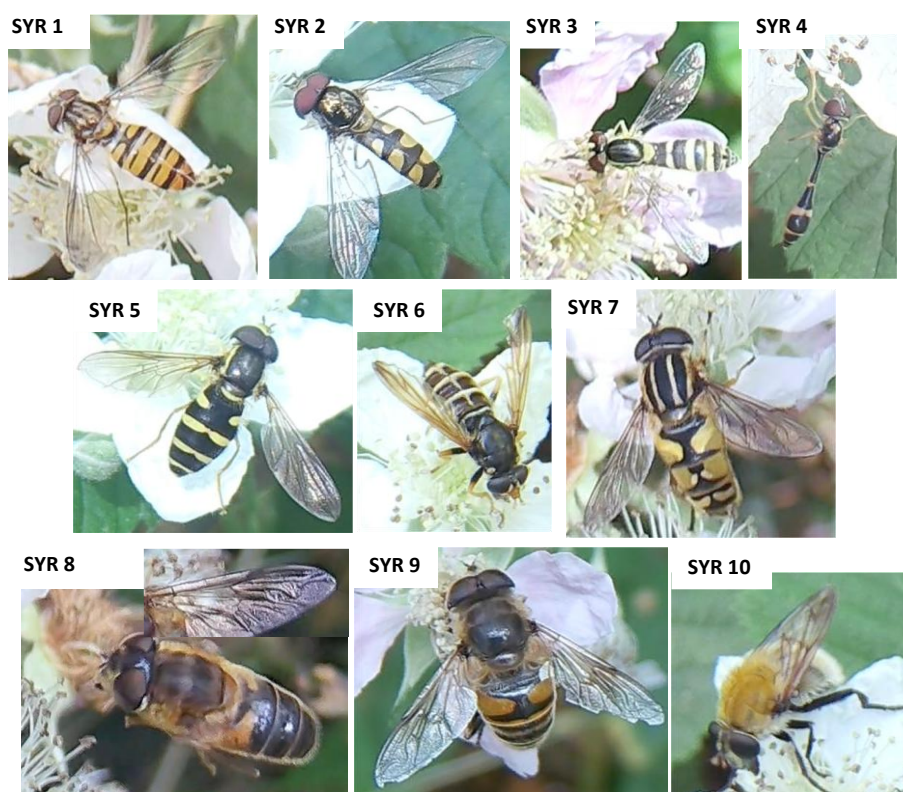


Figure S2. Illustration of the ten Syrphid morphotypes observed on the videos. SYR 1, the most frequently observed morphotype, is *Episyrrhus balteatus*, an ubiquist species whose aphidophagous larvae develop in herbs and trees. SYR 2 includes slender species with yellow spots of variable size on the tergites. SYR 3 belongs to the *Sphaerophoria* group. SYR 4 is *Baccha elongata*, whose aphidophagous larvae develop in forest habitats. SYR 5 belongs to the *Xanthogramma* genus with a thorax bearing yellow lateral stripes and a partially yellow scutellum. SYR 6 is *Caliprobola speciosa*, whose saproxylic larvae develop more than one year in decaying wood, indicative of forest continuity or ancient deciduous forest. SYR 7 likely belongs to the genus *Helophilus*. SYR 8 and SYR 9 are large bee-like species with *Eristalis*-type wing characters. SYR 10 resembles a bumblebee. Identifications were performed following (Schulten 2019; Speight 2020).

References

- Schulten A (2019) Syrphes de Belgique et des Pays-Bas. Natagora and CEN Nord et pas-de-Calais. [online] URL: <https://fr.slideshare.net/slideshow/syrphes-debelgiqueetdespaysbas/231354117>
- Speight MCD (2020) The Syrph the Net database of European Syrphidae (Diptera), past, present and future. Dept. of Zoology, Trinity College.

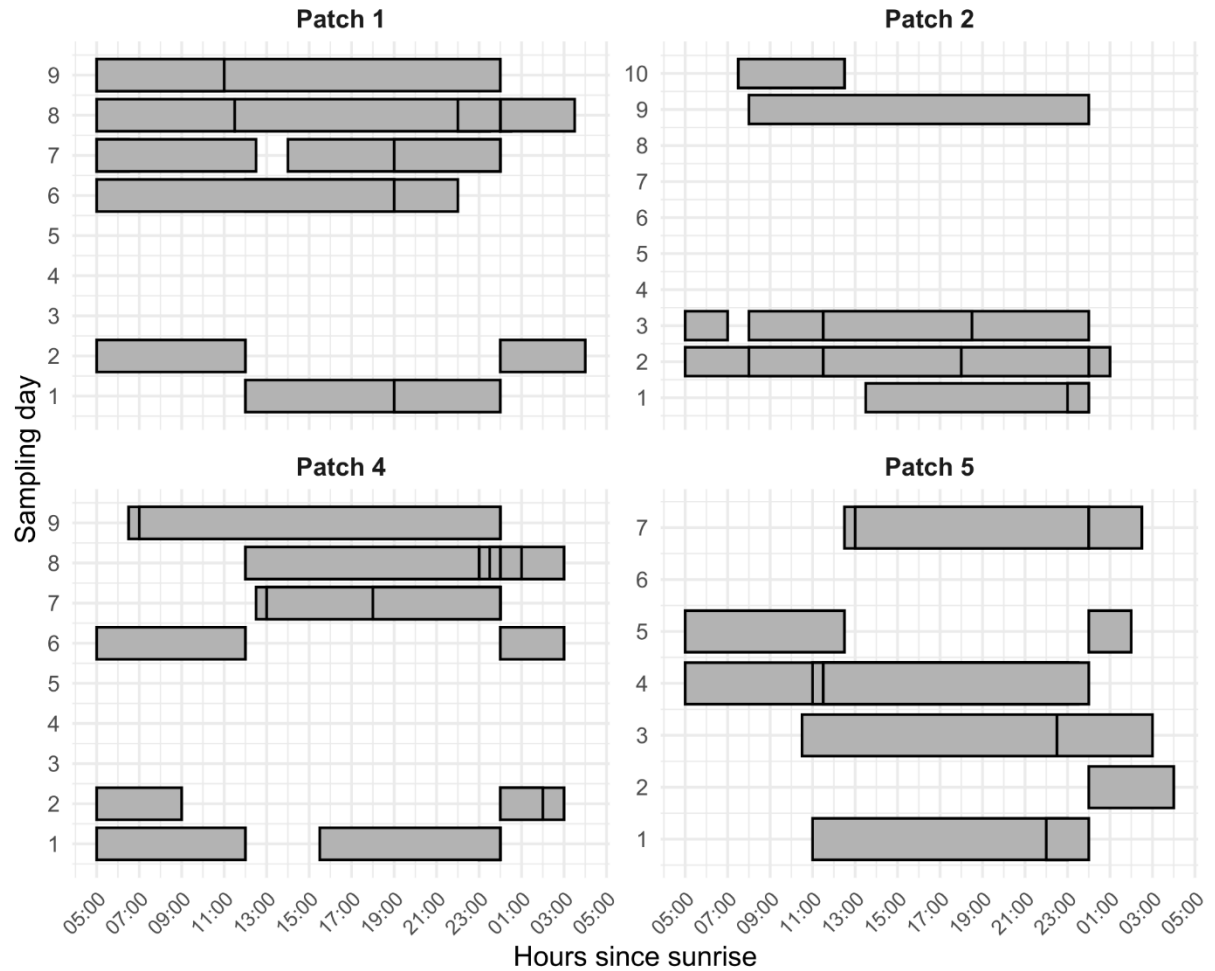


Figure S3. Temporal sampling coverage by bramble patch. Horizontal bars show the observation periods (relative to sunrise) for each sampling day at each of the four bramble patches. Black vertical lines within the grey bars indicate camera changes during the observation period. Variation in start and end times reflects field logistics and weather conditions. This temporal variation was accounted for by including sampling date as a random effect in all statistical models.

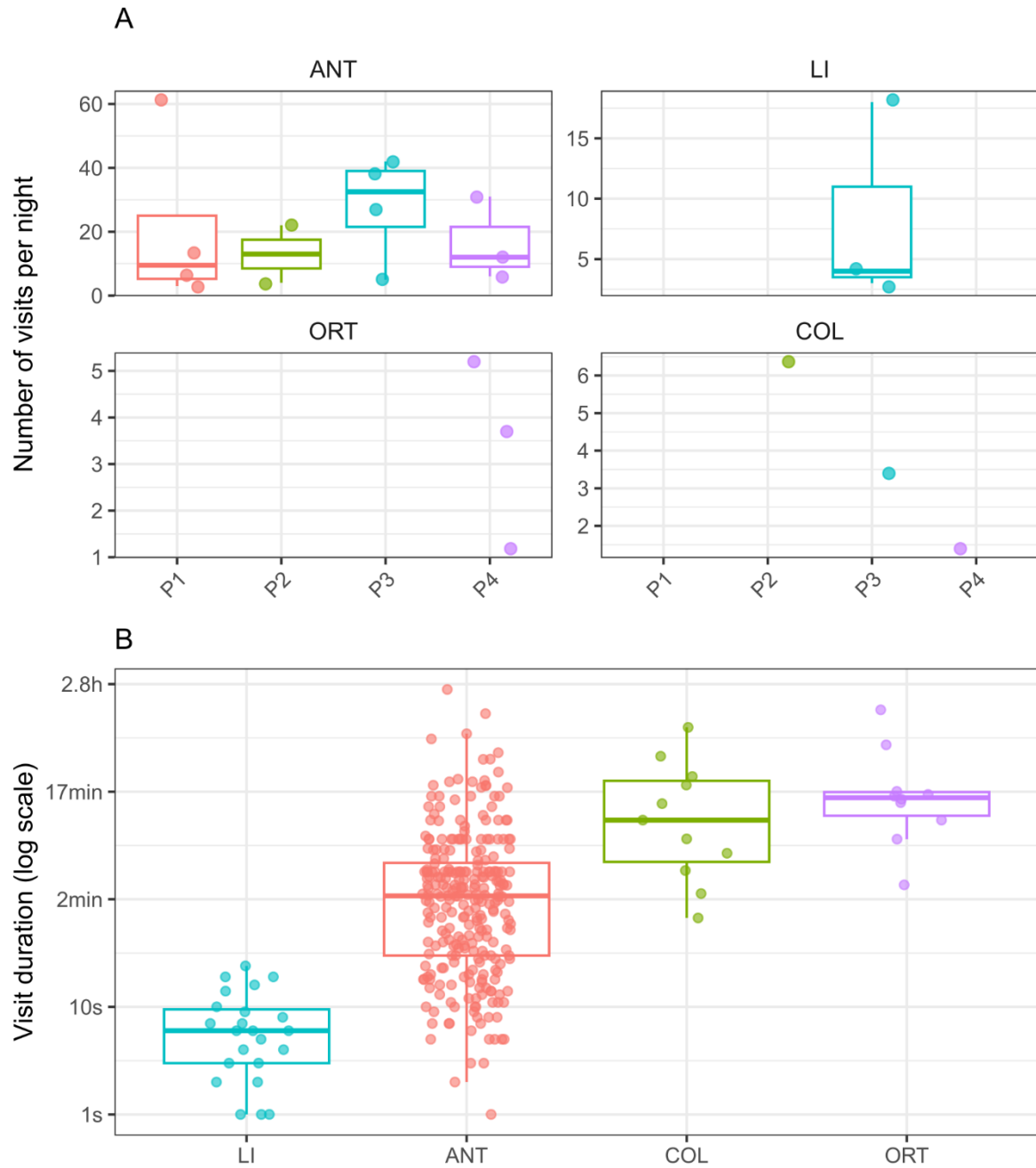


Figure S4. Nocturnal floral visitation patterns across four bramble patches (22:00-5:00).

(A) Number of visits per night for main nocturnal visitor groups, shown for each bramble patch (P1-P4, x-axis). Each point represents one sampling date. Boxplots shown for ANT and LI only (insufficient data for ORT and COL). Note that scales differ among panels to improve readability. **(B)** Visit duration by flower visitor taxon during nighttime hours (log scale). Taxa shown: ANT: ants, LI: adult moth, ORT: Orthoptera, COL: Coleoptera).

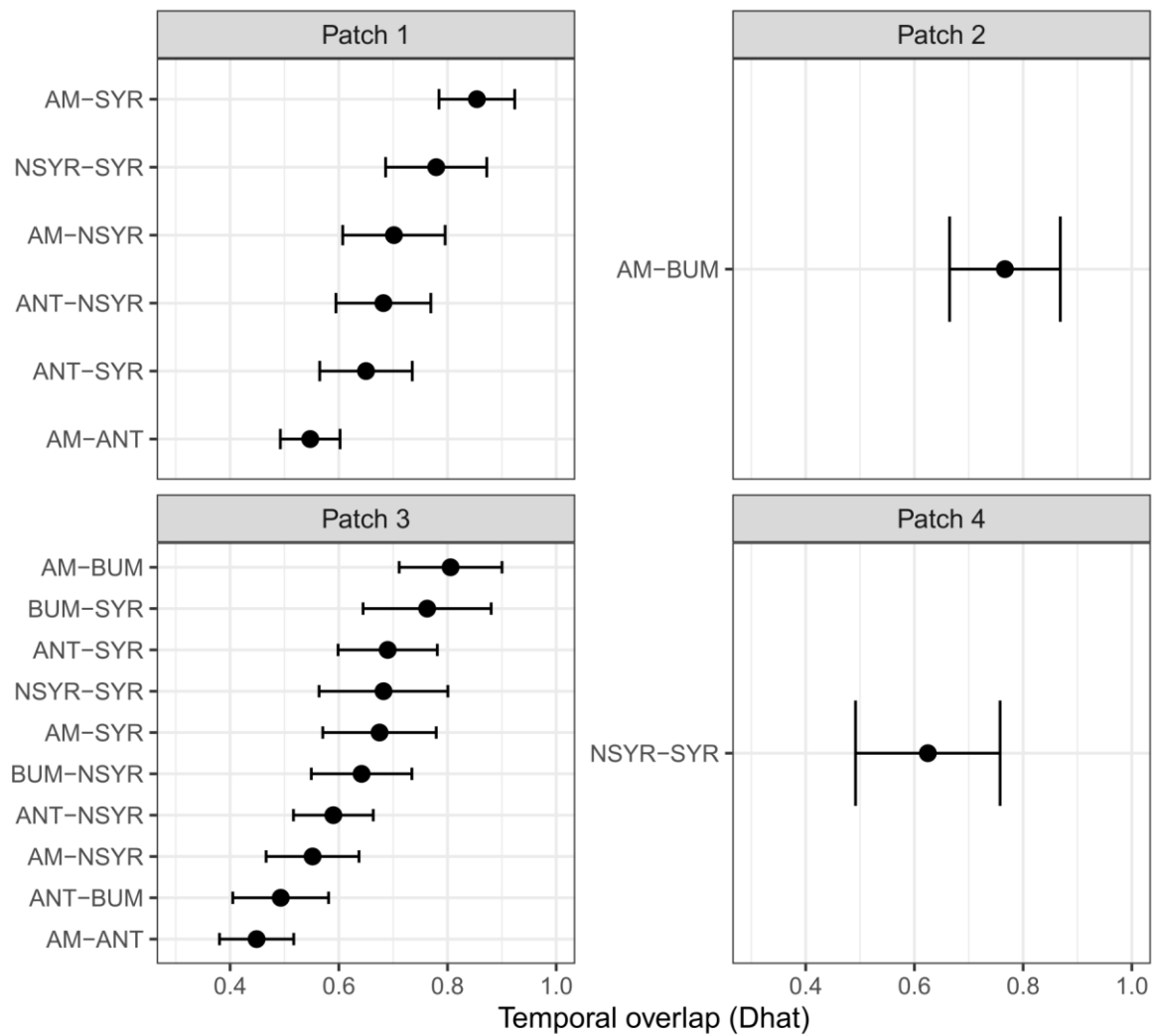


Figure S5. Pairwise temporal niche overlap among co-occurring flower visitor taxa. Points represent overlap estimates derived from kernel density estimation of individual visit timestamps (Dhat4 when both taxa had $N \geq 50$; Dhat1 when at least one taxon had $N < 50$), with horizontal bars indicating 95 % bootstrap confidence intervals (999 replicates). All observed overlap values were significantly lower than random expectation (permutation test, 999 permutations, $P < 0.05$; see Table S2), except AM-SYR at patch 1 ($P = 0.0501$). Abbreviations: AM: honeybees, BUM: bumblebees, NSYR: non-syrphid flies (Diptera), SYR: hoverflies (Syrphidae).

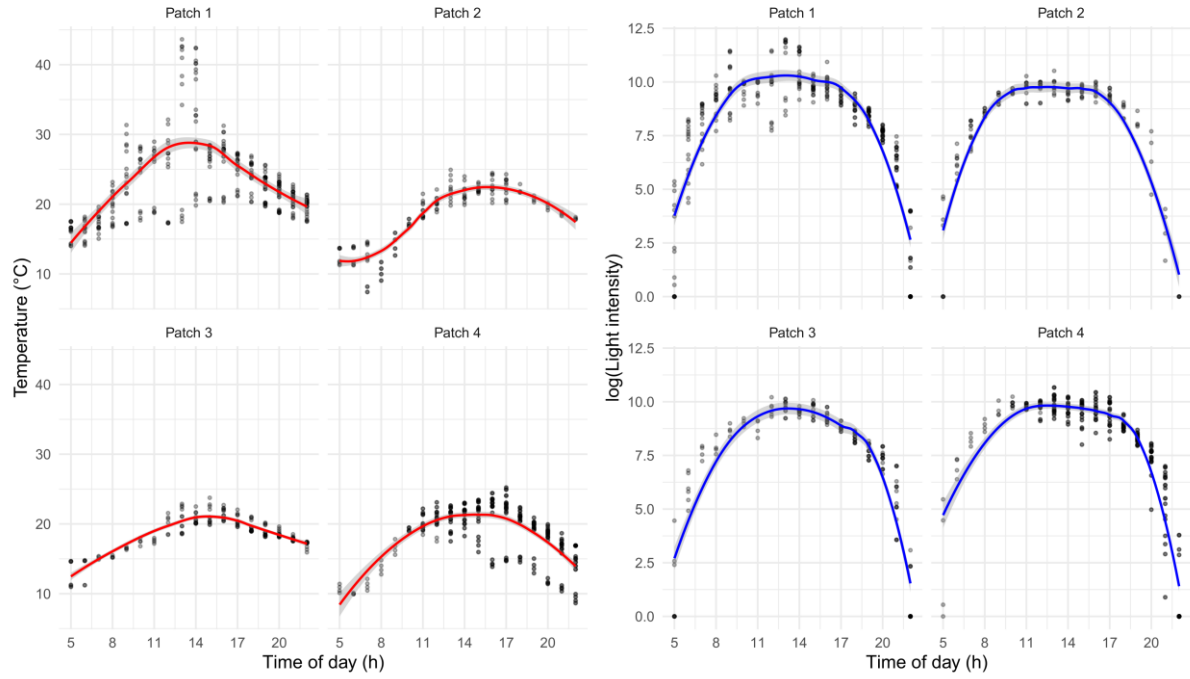


Figure S6. Microclimatic conditions used in visitor occurrence models. Temperature (left, °C) and log-transformed light intensity (right, $\log(\text{lux} + 1)$) over the course of the day at patches 1-4. Points represent mean values per 15-min time interval used in the occurrence GLMMs. Smoothed lines show loess regression (red: temperature, blue: light intensity).