
Supplementary information

Bogong moths use a stellar compass for long-distance navigation at night

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Supplementary Table 1

Statistical analysis of all tested subsamples of moths shown in Main Paper Figure 3

	Spring 2018 A	Spring 2018 B	Spring 2018 C	Autumn 2018 D	Autumn 2018 E	Autumn 2018 F	Spring 2019 G	Spring 2019 H	Spring 2019 I	Autumn 2019 J	Autumn 2019 K	Autumn 2019 L
Moth N° (n)	20	24	15	31	28	24	50	44	43	23	28	25
MV (μ)	176°	18°	330°	337°	144°	325°	155°	337°	26°	339°	197°	209°
GMV (α)	187°	15°	328°	341°	148°	12°	159°	340°	22°	342°	197°	222°
Length MV (r)	0.524	0.544	0.156	0.633	0.504	0.159	0.342	0.456	0.084	0.474	0.364	0.224
CV	0.476	0.456	0.844	0.367	0.496	0.841	0.658	0.544	0.916	0.526	0.636	0.776
CSD	65°	63°	110°	55°	67°	110°	84°	72°	128°	70°	81°	99°
95% CI (-/+) for μ	145° 208°	351° 46°	*****	317° 357°	116° 171°	224° 66°	124° 187°	312° 2°	242° 170°	306° 11°	157° 236°	140° 279°
99% CI (-/+) for μ	135° 218°	343° 54°	*****	311° 3°	107° 180°	193° 98°	114° 197°	304° 9°	196° 215°	295° 22°	144° 249°	118° 301°
RT (z)	5.483	7.103	0.366	12.43	7.119	0.61	5.834	9.154	0.303	5.157	3.703	1.259
RT (p)	0.003	5.2E-4	0.701	1.1E-6	5.5E-4	0.548	0.003	6.9E-5	0.741	0.005	0.023	0.287
MMRT (R*)	1.471	1.563	0.581	2.044	1.526	0.404	1.57	1.592	0.454	1.493	1.174	0.407
MMRT (p)	< 0.005	< 0.001	0.1<p<0.5	< 0.001	< 0.001	0.5<p<0.9	< 0.001	< 0.001	0.5<p<0.9	< 0.005	< 0.025	0.5<p<0.9

A. Spring 2018 natural orientation
 B. Spring 2018 180° rotation
 C. Spring 2018 randomised
 D. Autumn 2018 natural orientation
 E. Autumn 2018 180° rotation
 F. Autumn 2018 randomised
 G. Spring 2019 natural orientation
 H. Spring 2019 180° rotation
 I. Spring 2019 randomised
 J. Autumn 2019 natural orientation
 K. Autumn 2019 180° rotation
 L. Autumn 2019 randomised

n: number of moths tested
 MV: Mean vector, μ = vector direction, r = vector length ($0 < r < 1$)
 GMV: Grand mean vector, α = vector direction
 CV: Circular variance
 CSD: Circular standard deviation
 95% CI: 95% Confidence interval (both angular limits (+/-) shown)
 99% CI: 99% Confidence interval (both angular limits (+/-) shown)
 RT: Rayleigh Test
 z: Rayleigh z statistic = nr^2
 p: Probability of obtaining observed results, assuming null hypothesis is true
 R*: Directedness of the MV for a population of tested moths
 MMRT: Moore's Modified Rayleigh Test