

Table S2. Mean vectors of individual birds, spring experiments

2006	G			RpeR			RpeR HF 480		
	Bird	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$	n	$\alpha_b$
05-25	3	24°	0.89 <sup>A</sup>	3	52°	0.90	3	18°	0.99
05-26	3	5°	0.87 <sup>A</sup>	3	35°	0.96	3	322°	0.80
05-29	3	15°	0.98	2	31°	0.98	3	26°	0.76
05-30	3	12°	0.77 <sup>A</sup>	3	24°	1.00	3	38°	0.84
05-34	3	356°	0.96	3	356°	0.94	3	25°	0.80
05-36	3	341°	0.99	3	10°	0.87	3	344°	0.88
05-37	3	27°	0.98	3	8°	0.95	3	335°	0.41
05-39	3	53°	0.91	3	320°	0.52	3	333°	0.60 <sup>A</sup>
05-42	3	40°	0.75	3	332°	0.88	3	5°	0.89
05-43	3	1°	0.97	3	358°	0.96	3	339°	0.87
05-46	3	319°	0.65	3	340°	0.97	3	48°	0.89
05-47	3	51°	0.59	3	317°	0.75 <sup>A</sup>	3	61°	0.76

2007	G			RpeR			RpeR -V			RpeR HF 4800			RpeR Xy		
	Bird	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$	n	$\alpha_b$
06-2	1	45°	(1.00)	3	5°	0.95	3	356°	0.86	2	107°	0.55	2	125°	0.98
06-3	3	16°	0.99	2	55°	1.00	3	299°	0.32 <sup>A</sup>	3	344°	0.85	3	24°	0.63
06-9	3	18°	0.73 <sup>A</sup>	3	1°	0.80 <sup>A</sup>	3	1°	0.94	3	353°	0.59 <sup>A</sup>	3	297°	0.60
06-10	2	33°	0.91 <sup>A</sup>	2	20°	0.95	2	21°	0.95	3	21°	0.97 <sup>A</sup>	2	241°	0.64 <sup>A</sup>
06-11	3	38°	1.00	3	232°	0.73 <sup>A</sup>	3	29°	0.94 <sup>A</sup>	3	307°	0.37	3	353°	0.77
06-17	3	56°	0.56	3	346°	0.92	3	10°	0.86	3	29°	0.70 <sup>A</sup>	3	326°	0.84 <sup>A</sup>
06-18	3	31°	0.98	3	359°	0.97	3	3°	0.71 <sup>A</sup>	3	5°	0.64	3	138°	0.97 <sup>A</sup>
06-19	2	56°	0.52 <sup>A</sup>	2	8°	0.99	1	350°	(1.00)	2	25°	1.00	1	58°	(1.00)
06-23	3	3°	0.97	3	25°	0.99	3	30°	0.96	3	49°	0.98	3	277°	0.48
06-24	3	1°	0.98	3	37°	0.65 <sup>A</sup>	3	357°	0.77	3	7°	0.95	3	109°	0.64
06-25	3	14°	0.99	3	29°	0.82 <sup>A</sup>	3	281°	0.62	3	326°	0.58	3	270°	0.67 <sup>A</sup>
06-26	3	20°	0.92	3	344°	0.61 <sup>A</sup>	3	224°	0.80	3	13°	0.88	3	39°	0.88

n, number of recordings

$\alpha_b$ ,  $r_b$ , direction and length of the birds' mean vector, with <sup>A</sup> indicating a preferred end of an axis (see text)

*Test conditions:*

G 565 nm green light (control)

RpeR 645 nm red light, after 1 h pre-exposure in red light

RpeR-V 645 nm red light as above, vertical component of the magnetic field inverted

RpeR HF 480 645 nm red light, as above, with a high frequency field of 1.315 MHz, 480 nT added

RpeR HF 4800 645 nm red light as above with a high frequency field of 1.315 MHz, 4800 nT added

RpeR Xy 645 nm red light, after 1 h pre-exposure in red light, beak locally anesthetized with Xylocain

Table S2, continued: Mean vectors of individual birds, spring experiments

2010		G		YpeY			YpeY-V			YpeY-H		
Bird	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$
1	3	327°	0.98	3	329°	0.61	3	12°	0.98	3	142°	0.95
2	3	360°	0.99	3	7°	1.00	3	212°	0.07 <sup>A</sup>	3	212°	0.99
3	3	9°	0.84	3	1°	0.99	3	353°	0.87 <sup>A</sup>	3	158°	0.91
4	3	3°	0.95	3	224°	0.76	3	2°	0.83	3	252°	0.69
7	3	18°	0.98	3	51°	0.89	3	150°	0.65	3	150°	0.50
9	3	5°	0.87	3	358°	0.98	3	339°	0.70 <sup>A</sup>	3	133°	0.79
10	3	360°	0.98	3	4°	0.81	3	7°	0.77	3	154°	0.99
12	3	22°	0.87	3	26°	0.98	3	359°	0.99 <sup>A</sup>	3	144°	0.84 <sup>A</sup>
13	3	9°	0.92	3	43°	0.60	3	312°	0.62	3	164°	0.80
14	3	45°	0.81 <sup>A</sup>	3	61°	0.90	3	258°	0.51	3	214°	1.00 <sup>A</sup>
16	3	7°	0.95	3	10°	0.99	3	12°	0.86 <sup>A</sup>	3	174°	0.92 <sup>A</sup>
27	3	2°	0.93	3	337°	0.53	3	21°	1.00	3	196°	1.00

2010		YpeY HF		YpeY Xy		
Bird	n	$\alpha_b$	$r_b$	n	$\alpha_b$	$r_b$
1	3	358°	0.85	3	168°	0.97 <sup>A</sup>
2	3	14°	0.97 <sup>A</sup>	3	217°	0.07 <sup>A</sup>
3	3	204°	0.98	3	340°	0.31 <sup>A</sup>
4	3	326°	0.56	3	262°	0.44 <sup>A</sup>
7	3	282°	0.54	3	335°	0.86 <sup>A</sup>
9	3	8°	0.86 <sup>A</sup>	3	194°	0.97 <sup>A</sup>
10	3	346°	0.68 <sup>A</sup>	3	32°	0.79
12	3	201°	0.88	3	332°	0.91
13	3	46°	0.42 <sup>A</sup>	3	233°	0.77 <sup>A</sup>
14	3	334°	0.83	3	51°	0.75
16	3	14°	0.88	3	130°	0.92
27	3	23°	0.80	3	153°	0.73

n, number of recordings  
 $\alpha_b$ ,  $r_b$ , direction and length of the birds' mean vector, with <sup>A</sup> indicating a preferred end of an axis (see text)

*Test conditions:*

G 565 nm green light (control)  
YpeY 582 nm yellow light, after 1 h pre-exposure in yellow light  
YpeY-V yellow light as above, vertical component of the magnetic field inverted  
YpeY-H yellow light as above, horizontal component reversed  
YpeY HF yellow light as above, a high frequency field of 1.315 MHz, 480 nT added  
YpeY Xy yellow light as above, beak locally anesthetized with Xylocain