

Electronic Supplementary Material

Tracking Pigeons in a Magnetic Anomaly and in Magnetically 'Quiet' Terrain.

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Additional figures and table:

Fig. S1 Magnetic conditions and tracks within an area of 5 x 5 km around the release sites

Fig. S2 Topography and tracks within an area of 5 x 5 km around the release sites

Fig. S3 Altitude profile and tracks within an area of 5 x 5 km around the release sites

Fig. S4 Differences in intensity encountered by the pigeons along their routes compared with those of a random distribution.

Table S1 Data of the individual tracks

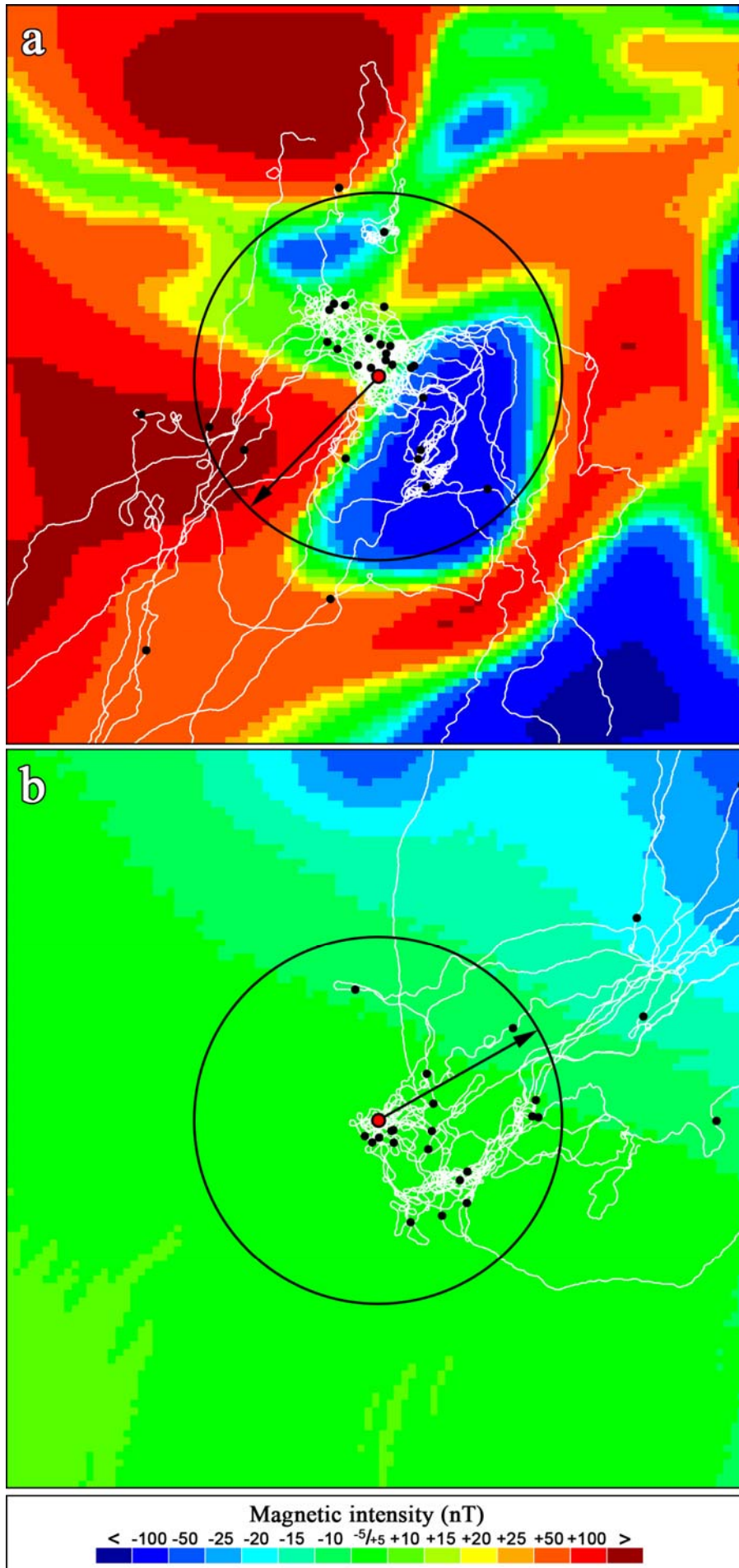


Fig. S1 Magnetic conditions and tracks within an area of 5 x 5 km around the release sites Oberlais within the anomaly (a) and Essenheim within magnetically 'quiet' terrain (b). The colours of the map indicate the local differences in intensity (given in 100 x 100 m squares) to that at the release point - note that the scale is non-linear. The release sites in the centre of a circle with the radius 2.5 km are marked by a red dot; the arrow indicates the home direction. The tracks are shown as white lines, with the black dots marking the Points of Decision.

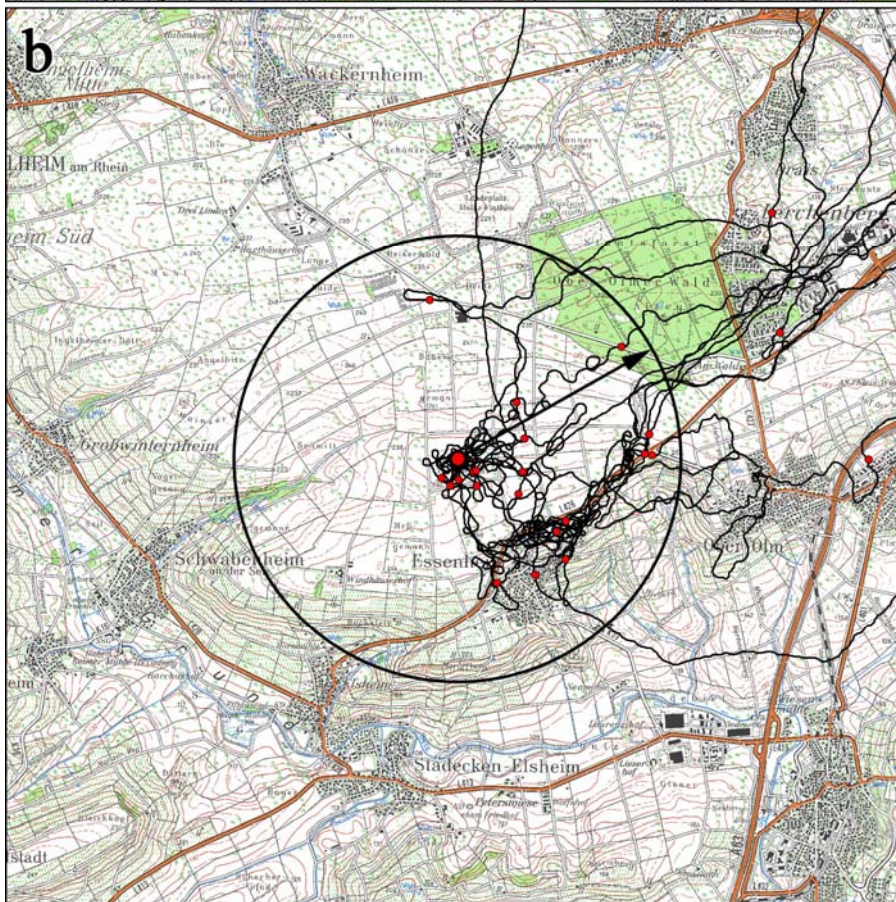
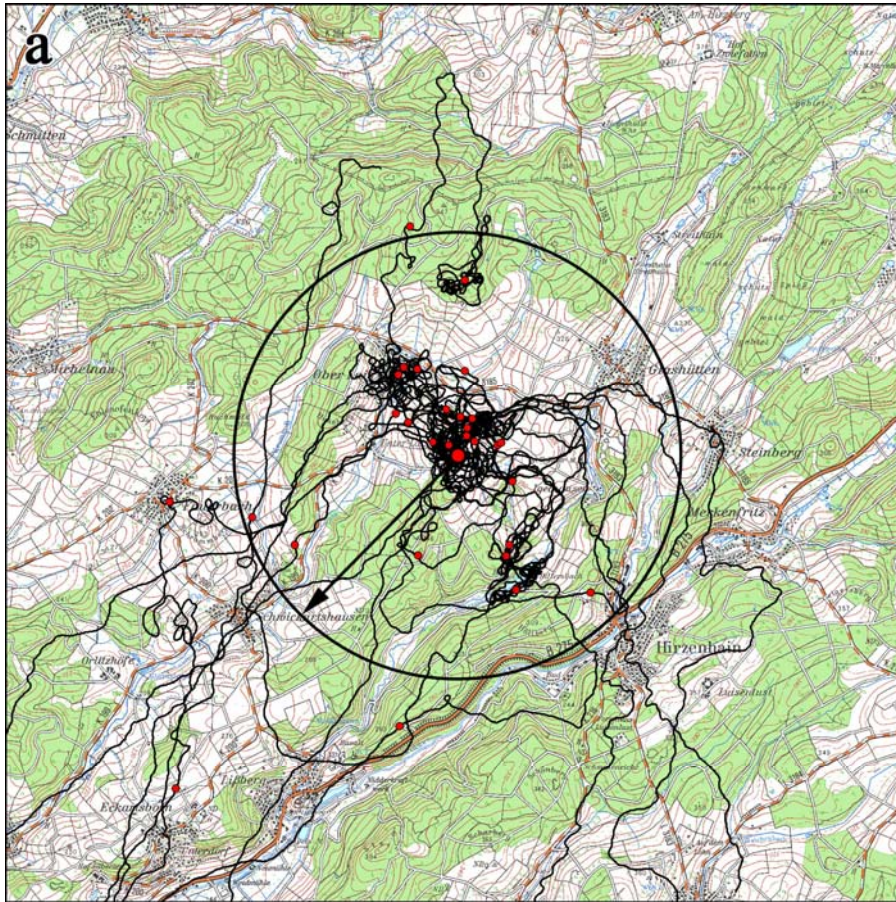


Fig. S2
 Topography and tracks within an area of 5 x 5 km around the release sites Oberlairs within the anomaly (a) and Essenheim within magnetically 'quiet' terrain (b). The release sites in the centre of a circle with the radius 2.5 km are marked by a red dot; the arrow indicates the home direction. The tracks are shown as black lines, with the smaller red dots marking the Points of Decision.

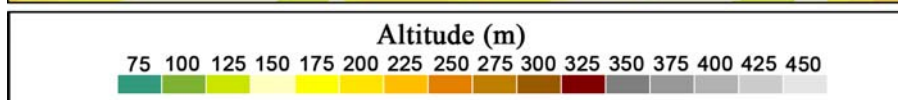
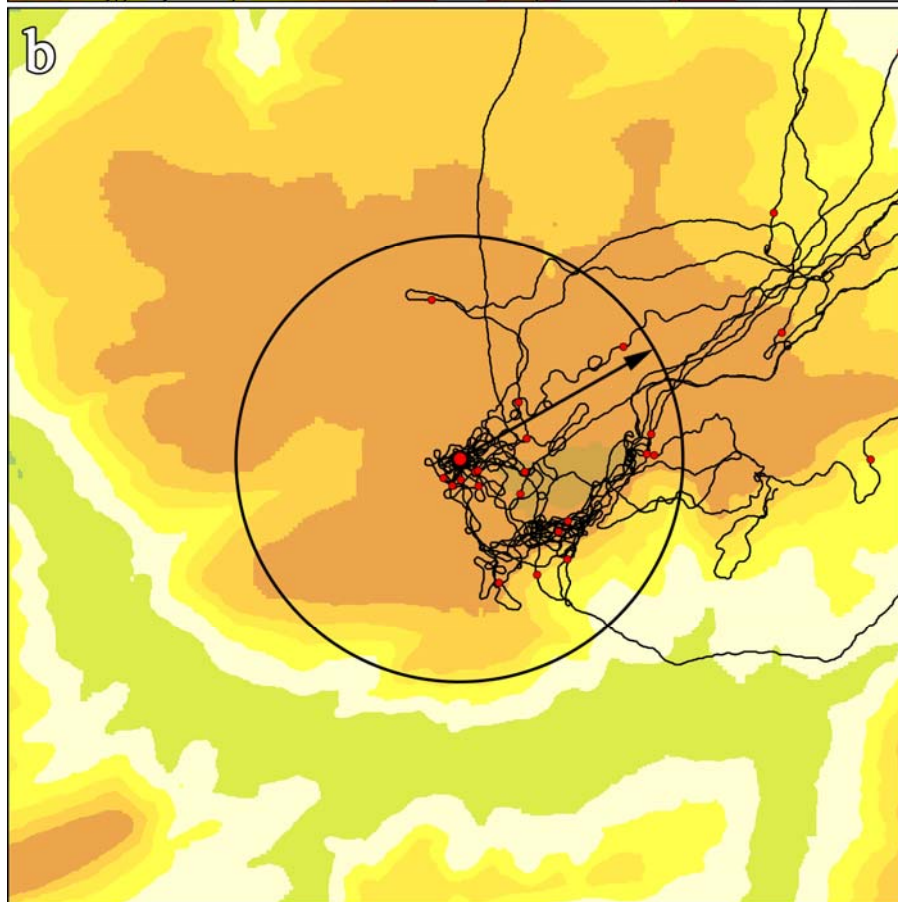
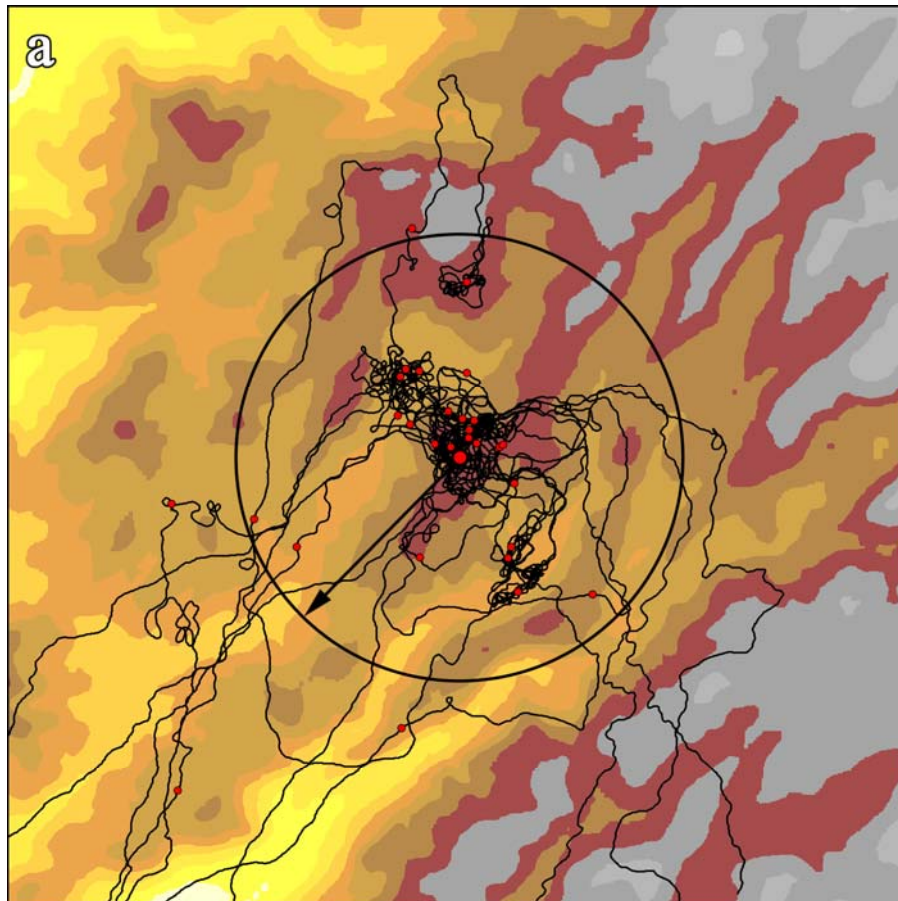


Fig. S3

Altitude profile and tracks within an area of 5 x 5 km around the release sites Oberlais within the anomaly (a) and Essenheim within magnetically 'quiet' terrain (b). The colours of the map indicate the altitude above NN. For the other symbols, see Fig. S2.

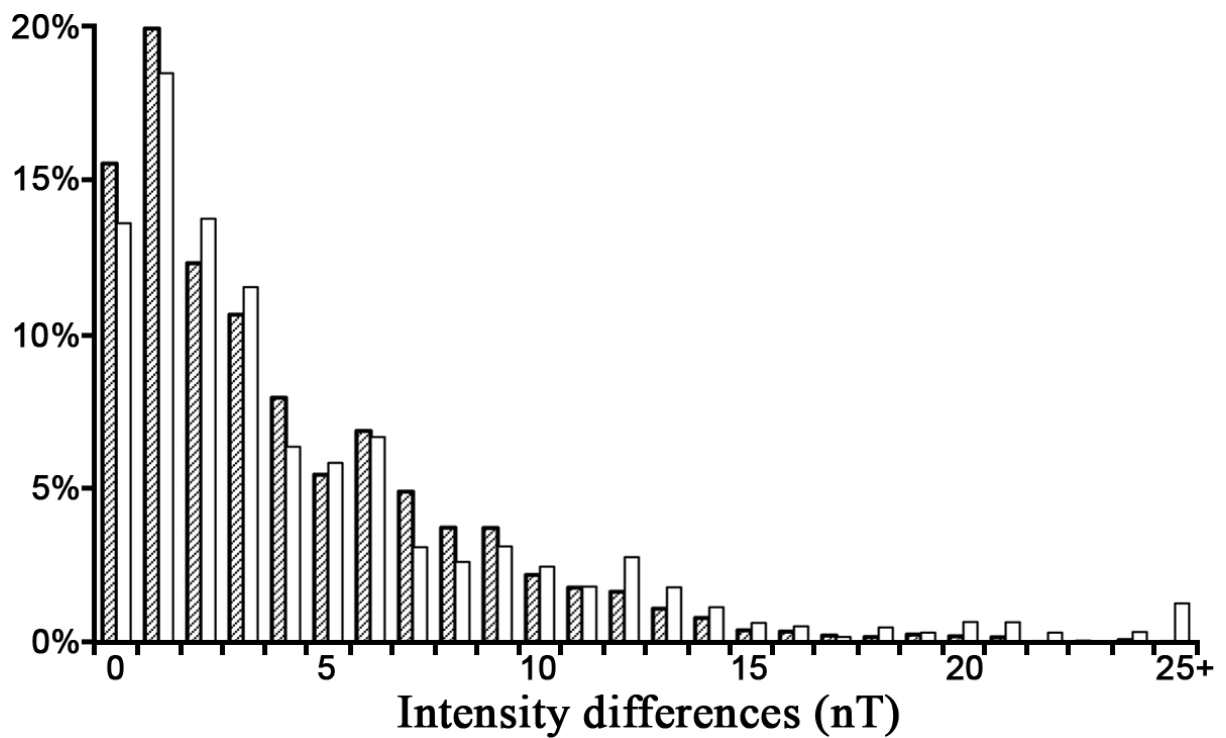


Fig. S4 Distribution of intensity differences encountered by the pigeons along their routes through the anomaly until the 5 km circle (hatched columns) compared to those of a random distribution based on 13 trajectories, one every 15° within the home-semicircle, from the release point to the 5 km circle (open columns).

Table S1 Data of the individual tracks

Pigeon	Date	1st Point of Dec.		Initial Phase				Depart. Phase	
		Bear.	Dist.	Dur.	Route	Head.	Stead.	Head.	Stead.
Control site Essenheim in magnetically quiet terrian, 42.2 km, home direction 61°									
05-1049	29.06.2010	+58°	799	90	1405	+63°	0.54	-13°	0.94
07-387	29.06.2010	+132°	282	60	858	+133°	0.27	+97°	0.64
07-389	29.06.2010	- 5°	2239	315	5065	- 14°	0.46	+4°	0.83
08-771	29.06.2010	+60°	233	210	3341	+68°	0.01	-59°	0.91
08-779	29.06.2010	+71°	1654	150	2513	+73°	0.65	+54°	0.82
05-1012	08.07.2010	+12°	810	150	1916	+9°	0.49	+8°	0.83
05-1078	08.07.2010	- 15°	952	150	1910	- 11°	0.51	-9°	0.81
05-1007	20.07.2010	+109°	218	75	1081	+69°	0.15	+56°	0.44
05-1036	20.07.2010	+79°	374	90	1325	+55°	0.27	+3°	0.67
05-1044	20.07.2010	-147°	57	60	954	- 34°	0.03	+68°	0.74
05-1054	20.07.2010	+156°	259	75	1011	+148°	0.15	-45°	0.54
05-1067	20.07.2010	+39°	769	135	2138	+29°	0.43	+29°	0.69
05-1079	20.07.2010	+57°	261	105	1297	+32°	0.31	+51°	0.75
Anomaly site Oberlais, 44.8 km, home direction 225°									
05-1049	14.08.2007	+151°	216	45	678	+165°	0.28	-117°	0.95
05-1007	08.05.2008	+17°	2103	135	2795	+14°	0.73	-19°	0.91
05-1056	08.05.2008	+97°	1135	225	3930	+99°	0.22	-10°	0.83
07-393	23.08.2009	+102°	1176	225	3457	+125°	0.24	3°	0.87
08-758	23.08.2009	+134°	418	270	4122	-146°	0.13	102°	0.53
08-763	23.08.2009	+151°	425	480	7045	-146°	0.14	-24°	0.74
08-771	23.08.2009	+67°	192	45	629	+37°	0.16	60°	0.69
08-778	23.08.2009	+178°	212	120	1596	-140°	0.19	-94°	0.34
08-779	23.08.2009	+137°	944	285	4144	-177°	0.23	-12°	0.85
08-785	23.08.2009	+70°	356	360	5159	-116°	0.08	-148°	0.15
08-789	23.08.2009	+122°	2606	690	19364	+159°	0.18	+157°	0.76
08-790	23.08.2009	+84°	178	135	1708	-170°	0.04	-139°	0.44

First Point of Decision: Bear., bearing given as angular deviation from the home direction; Dist., distance from release point in m. Initial Phase: Dur., duration in s; Route, length of route flown in m; Head., heading given as angular deviation from the home direction, Stead, steadiness, defined as vector length of headings; Depart. Phase, departure phase (see main text).