

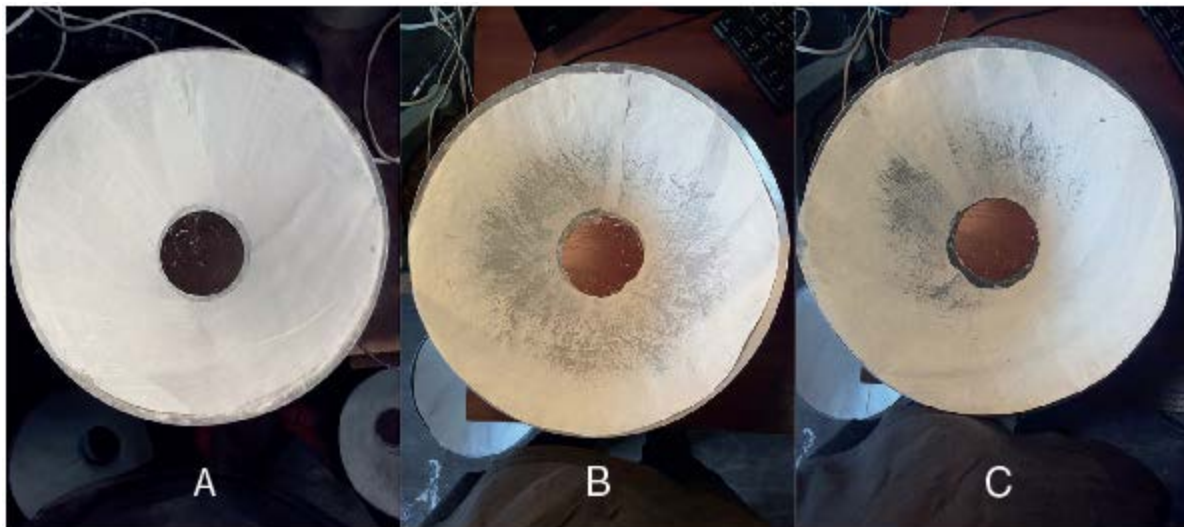
Table S1. Magnetic field parameters in orientation experiments during autumn and spring migration seasons in 2019-2020. NMF – natural magnetic field (the geomagnetic field), VMF – vertical magnetic field. na – data missing.

Autumn migration 2019						Spring migration 2020					
NMF			VMF			NMF			VMF		
Date	Total intensity, nT	Inclination, °(deg)	Date	Total intensity, nT	Inclination, °(deg)	Date	Total intensity, nT	Inclination, °(deg)	Date	Total intensity, nT	Inclination, °(deg)
14.08	50243	70.1	22.08	50257	89.9	11.04	50323	69.9	17.04	50358	89.9
15.08	50257	70	24.08	50278	90	13.04	50350	69.9	18.04	50345	89.8
16.08	50250	70	26.08	50273	89.8	14.04	50347	70.3	21.04	50369	89.7
19.08	na	na	05.09	50285	89.9	15.04	50335	70.2	22.04	50363	89.6
20.08	50257	69.8	06.09	50269	89.9	19.04	na	na	24.04	50374	89.9
21.08	50259	69.9	11.09	50274	90	21.04	50347	70.2			
22.08	50264	70.3	23.09	na	na	22.04	50360	70.1			
23.08	50251	70.2	29.09	50291	89.9	24.04	50367	70.2			
29.08	50245	69.7				25.04	50358	70.2			
30.08	50273	70.2				27.04	na	na			
02.09	50269	70				28.04	50371	70.1			
03.09	na	na									
17.09	50271	70.2									
19.09	50265	70									

Figure S1. Visualization of results obtained using the Emlen funnels method.

(A) The bird was not active during the test. (B) The bird was active but disoriented.

(C) The bird was active, and chose the northern direction (360 deg).



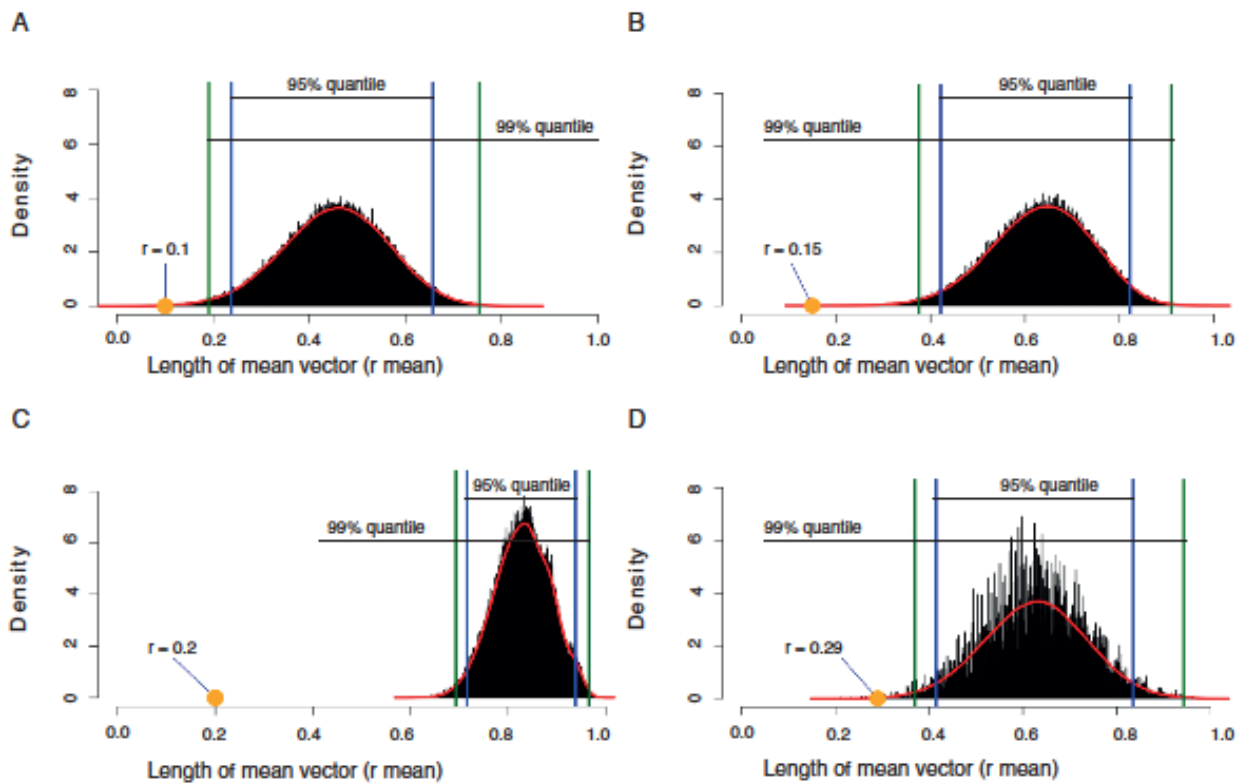


Figure S2. The results of bootstrap analysis. Each diagram represents a distribution of lengths of mean vectors that were calculated using a bootstrap technique ($n = 100000$, see the details in the main text of manuscript, Materials and methods section). (A) The distribution for birds from the group I, «celestial cues deprived group», in the VMF, autumn (Fig. 1C; 95 and 99 % quantiles for r mean are 0.23 - 0.66 and 0.37 - 0.75, respectively). (B) The distribution for birds from the group II, «stars deprived group», in the VMF, autumn (Fig. 1D; 95 and 99 % quantiles for r mean are 0.42 - 0.82 and 0.38 - 0.91, respectively). (C) The distribution for birds from the group Ia, «celestial cues deprived till spring group», in the VMF, spring (Fig. 2D; 95 and 99 % quantiles for r mean are 0.72 - 0.94 and 0.69 - 0.96, respectively). (D) The distribution for birds from the group II, «group with access to all celestial cues», in the VMF, spring (Fig. 2F; 95 and 99 % quantiles for r mean are 0.41 - 0.83 and 0.37 - 0.94, respectively). Vertical blue and green lines indicate 95 and 99 % quantiles, respectively. The red curve is a normal distribution, an orange dot is a length of the mean vector of the group in each experimental condition.