

Fig. S1. A simulated null reference distribution of the mean vector lengths (\mathbf{r}) for the pooled data. (A) *Fukomys mechowii*, bearings pooled with respect to the topographic north of the arena; (B) *F. mechowii*, bearings pooled with respect to magnetic north; (C) *Heliothobius argenteocinereus*, bearings pooled with respect to the topographic north of the arena; (D) *H. argenteocinereus*, bearings pooled with respect to magnetic north.

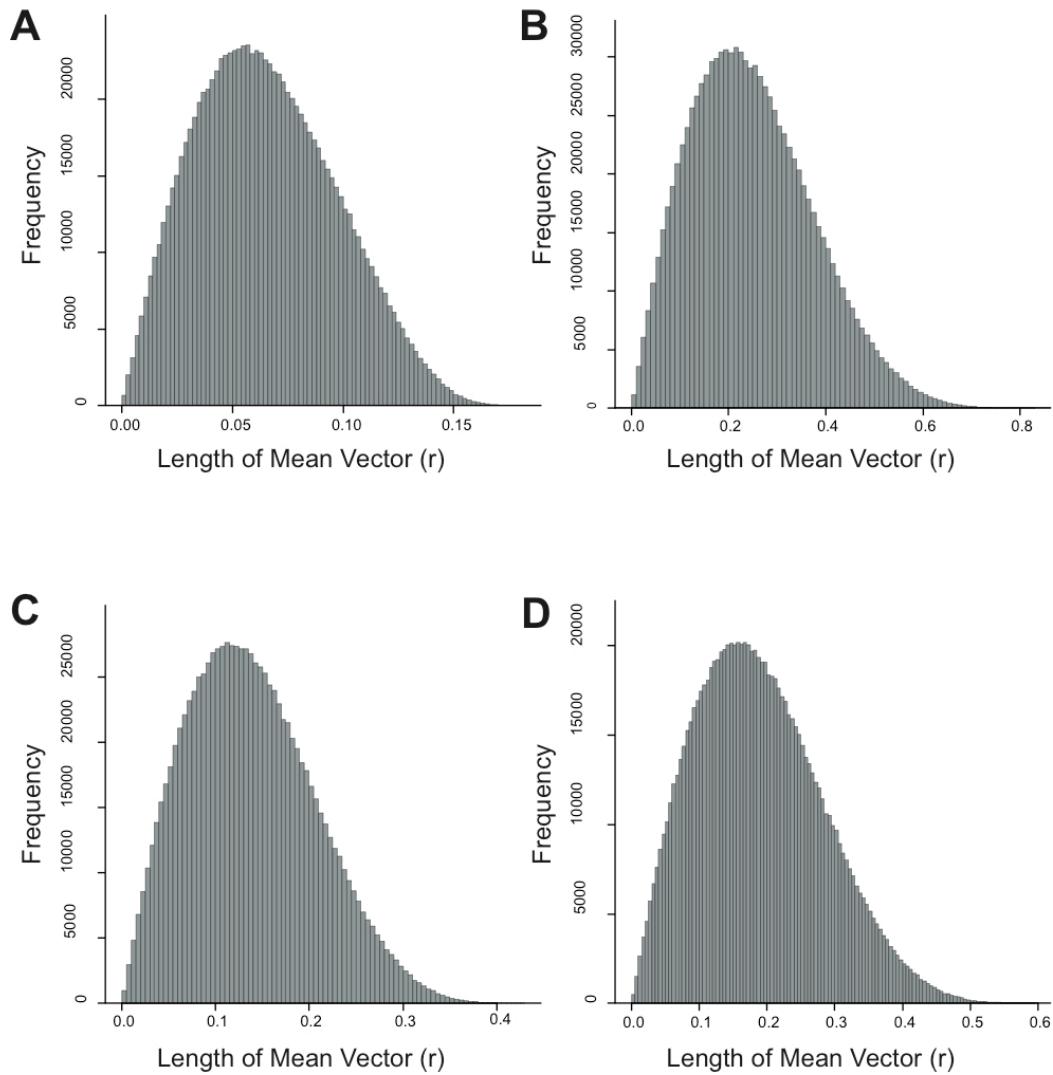


Table S1. Results of the Watson–Williams *F*-test

F. m. 0 deg	F. m. 90 deg	F. m. 180 deg	F. m. 270 deg	H. a. 0 deg	H. a. 90 deg	H. a. 180 deg	H. a. 270 deg
F. m. 0 deg	—	0.011	3.89×10^{-6}	8.48×10^{-4}	0.448	0.017	2.86×10^{-5}
F. m. 90 deg	8.1	—	0.02	1.72×10^{-4}	0.004	0.792	0.002
F. m. 180 deg	42.62	6.515	—	0.002	3.83×10^{-6}	0.009	0.139
F. m. 270 deg	15.967	22.247	12.651	—	0.005	1.16×10^{-4}	0.075
H. a. 0 deg	0.602	10.928	42.725	10.336	—	0.006	1.27×10^{-4}
H. a. 90 deg	6.85	0.072	8.463	23.998	9.653	—	0.001
H. a. 180 deg	30.827	12.709	2.399	3.583	23.584	15.207	—
H. a. 270 deg	11.049	20.821	11.521	0.052	7.005	21.197	3.711

F. m., *Fukomys mechowii*; H. a., *Heliophobius argenteocinereus*.

F-scores are given in the lower half and probabilities in the upper half.