

# Birds migrate using magnetic map

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European robin. Credit: jcoelho

Migrating birds use magnetic particles within their body to create a 'map' with which to navigate using the earth's magnetic field, according to new research published today in *Journal of the Royal Society Interface*.

Thanks to new tracking technology, Richard Holland and Barbara Helm from the Max Planck Institute for Ornithology in Germany, were able to show that adult but not [juvenile birds](#) (those making their first

migration) are disrupted during their migration by magnetic pulse treatments administered before departure, suggesting that their [magnetic particles](#) are used as a 'map' sense to tell them where they are on their migratory journey.

Previous experiments on certain bacteria had indicated that a brief, strong magnetic pulse (greater than 0.1 T) re-magnetizes their magnetic material and leads to incorrect orientation. Based on these findings, it was proposed that if birds used a magnetic sensory pathway to navigate using the earth's magnetic field, they should likewise orient incorrectly after treatment with a magnetic pulse.

Adults that departed within 10 days of pulse treatment (after which the effects wear off) failed to show significant orientation and deviated more from mean migration direction than adult controls and juveniles. More investigation is needed, but this new data gives field-based support for a magnetic map-sense during [bird migration](#).

**More information:** Holland, R. and Helm, B. A strong magnetic pulse affects the precision of departure direction of naturally migrating adult but not juvenile birds, *Journal of the Royal Society Interface*.  
[dx.doi.org/10.1098/rsif.2012.1047](https://doi.org/10.1098/rsif.2012.1047)

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