

## capitolo 2 Il pianeta terra

### verifica la comprensione

Leggi il brano e rispondi alle domande.



#### Birds can «see» earth's magnetic field

To find north, humans look to a compass... but birds may just need to open their eyes, a new study says.

Scientists already suspected birds' eyes contain molecules that are thought to sense Earth's magnetic field. In a new study, German researchers found that these molecules are linked to an area of the brain known to process visual information. In that sense, «birds may see the magnetic field», said study lead author Dominik Heyers, a biologist at the University of Oldenburg.



Human-made compasses work by using Earth as an enormous magnet and orienting a tiny magnet attached to a needle to the planet's north and south poles.

Scientists have thought for years that migratory birds may use an internal compass to navigate between their nesting areas and wintering grounds, which can be separated by thousands of miles. The new research helps explain how this natural compass may work.

Heyers and his colleagues injected migratory garden warblers with a special dye that can be traced as it travels along nerve fibers. The team put one type of tracer dye into the eyes and another in a region of the brain called *Cluster N*, which is most active when birds orient themselves.

When the birds got their bearings, both tracers traveled to and met in the thalamus, a region in the middle of the brain responsible for vision.

«That shows there is direct linkage between the eye and *Cluster N*», Heyers said. The finding strongly supports the hypothesis that migratory birds use their visual system to navigate using the magnetic field. «The magnetic field or magnetic direction may be perceived as a dark or light spot which lies upon the normal visual field of the bird», Heyers said, «and which, of course, changes when the bird turns its head.»

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- How can birds «see» the Earth's magnetic field? And how do they perceive it?
- How has direct linkage between the eye of migratory birds and Cluster N been proved?