

Social structure 'helps birds avoid a collision course'

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These Greylag goslings have still to learn the social structures that help them to fly safely. Credit: Christine Cockett

The sight of skilful aerial manoeuvring by flocks of Greylag geese to avoid collisions with York's Millennium Bridge intrigued mathematical biologist Dr Jamie Wood. It raised the question of how birds collectively negotiate man-made obstacles such as wind turbines which lie in their flight paths.

It led to a research project with colleagues in the Departments of Biology and Mathematics at York and scientists at the Animal and Plant Health Agency. The study found that the social structure of groups of

[migratory birds](#) may have a significant effect on their vulnerability to avoid collisions with obstacles, particularly [wind turbines](#).

The research is published in the Royal Society journal *Interface*.

The researchers created a range of computer simulations to explore if social hierarchies are beneficial to navigation, and how collision risk is affected by environmental conditions and the birds' desire to maintain an efficient direct flight path.

Lead author Dr Wood, said: "We wanted to understand how different social behaviour of different species would affect the ability to avoid obstacles, such as [wind](#) turbines and farms, and how much disruption these obstacles cause to the group structure."

Co-author Dr Jon Pitchford added: "We all know that birds naturally migrate in groups. It is less clear whether this is caused by leaders and followers, or by simple democratic rules. Our simulations show that [social structure](#) makes an important difference, and that groups with a single well-informed leader are more likely to avoid collisions with wind farms."

More information: "Obstacle avoidance in social groups: new insights from asynchronous models." [DOI: 10.1098/rsif.2015.0178](https://doi.org/10.1098/rsif.2015.0178)

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