

Taking a bird's eye view could cut wildlife collisions with aircraft

Using lights to make aircraft more visible to birds could help reduce the risk of bird strikes, new research by the US Department of Agriculture (USDA) has found. The study, which examined how Canada geese responded to different radio-controlled model aircraft, is the first of its kind and is published in the British Ecological Society's Journal of Applied Ecology.

Aircraft collisions with wildlife – primarily birds – is a serious and growing threat to civil and military aviation, as well as an expensive one: bird strikes cost civil aviation alone more than \$1.2 billion a year world-wide.

Although almost all efforts to prevent bird strikes focus on the airport environment, the fate of US Airways flight 1549 – which was forced to make a dramatic landing in the Hudson River in New York in 2009 after several Canada geese were sucked into its engines – shows that effectively reducing bird strikes requires developing strategies that work far beyond the airport perimeter.

Now, a team of researchers from the USDA, Indiana State University and Purdue University, is taking a bird's eye view of the problem. According to Dr Bradley Blackwell of the USDA's National Wildlife Research Center: “Birds see so much differently than humans do, so we cannot translate our own perceptual understanding to the problem of birds avoiding aircraft.”

Using knowledge about birds' visual systems, the team tested the response of Canada geese to three radio-controlled aircraft: the first with lights off, the second with lights on, and the third painted to resemble a bird of prey.

They found geese respond more quickly to the threat of an approaching model aircraft when its lights were on, making it more visible to the birds.

The study also found that the geese were just as cautious of the standard radio-controlled aircraft as the predator model, an important finding. According to Dr Blackwell: “Because Canada geese will respond to aircraft approach as a potential threat, the theory behind how animals respond to predators is very applicable to understanding the response to aircraft approach, and we can enhance this response via lighting.”

The research – the first to combine visual sensory ecology with anti-predator behaviour – could set the aviation industry on the right track to developing lighting systems that will reduce the rate of

bird strikes.

Next, the team hopes to expand their understanding of the visual ecology of other bird species commonly struck by aircraft, so they can design aircraft lighting that will be seen by a range of species. “This is only the first step. As well as lighting, we also want to understand how to manipulate aircraft paint schemes so that birds find them easier to detect. It's exciting work,” he says.

Bradley F Blackwell et al (2012). 'Exploiting avian vision with aircraft lighting to reduce bird strikes', doi: 10.1111/j.1365-2664.2012.02165.x, is published in the Journal of Applied Ecology on Tuesday 10 July 2012.

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Notes for editors

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3. The Journal of Applied Ecology is published by Wiley-Blackwell for the British Ecological Society. Contents lists are available at www.journalofappliedecology.org.

4. The USDA-APHIS Wildlife Services (WS) program provides Federal leadership to help resolve conflicts between people and wildlife. Scientists at the WS National Wildlife Research Center are dedicated to finding biologically sound, practical and effective solutions to resolving wildlife damage management issues related to agriculture, human health and safety, property damage, invasive species, and threatened and endangered species. For more information, visit www.aphis.usda.gov/wildlife_damage/nwrc/.

5. The British Ecological Society is a learned society, a registered charity and a company limited by guarantee. Established in 1913 by academics to promote and foster the study of ecology in its widest sense, the Society has 4,000 members in the UK and abroad. Further information is available at www.britishecologicalsociety.org.