

Big-brained birds survive better in nature

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Birds with brains that are large in relation to their body size have a lower mortality rate than those with smaller brains, according to new research published in the journal *Proceedings of the Royal Society B: Biological Sciences* today.

The research provides the first evidence for what scientists describe as the 'cognitive buffer' hypothesis - the idea that having a large brain enables animals to have more flexible behaviours and survive environmental challenges.

This theory was first put forward to answer the puzzle surrounding why animals, including humans, would evolve a larger brain, given the 'cost' associated with developing and maintaining a larger brain.

The researchers compared the brain size, body mass and mortality rates in over 200 different species of birds from polar, temperate and tropical regions.

They found that birds with larger brains relative to their body size survived better in nature than birds with small brains. This may explain why, for example, birds with small relative brain sizes, such as pheasants, find it harder to avoid a moving car than those with larger brain size, such as magpies.

"The idea that large brains are associated with reduced mortality has never been scientifically tested," said Dr Tamas Szekely from the Department of Biology & Biochemistry at the University of Bath.

"Birds are ideally suited for such a test, as they are one of the only groups of animals for which the relationship between large brains and enhanced behavioural response to ecological challenges is best understood.

"We have shown that species with larger brains relative to their body size experience lower mortality than species with smaller brains, supporting the general importance of the cognitive buffer hypothesis in the evolution of large brains."

The researchers made allowances for factors which may have accounted for variations in mortality rates, such as migratory behaviour, competition for mates and chick behaviour.

"Our findings suggest that large-brained animals might be better prepared to cope with environmental challenges such as climate change and habitat destruction," said Dr Szekely, who worked with researchers from the Autonomous University of Barcelona (Spain), Pannon University (Hungary) and McGill University (Canada) on the project.

"This is supported by other research which has shown that large-brained birds are more successful in colonising new regions and are better at surviving the changing seasons."

Source: University of Bath

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