

Researcher studies behavioural flexibility in the great-tailed grackle

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Credit: University of Cambridge

Have humans underestimated the intelligence of birds? A new study suggests one species of bird - the great-tailed grackle - may be able to learn to adapt its behaviour when faced by new challenges.

The research, published in the *Royal Society Open Science* journal today, is the first to test the cognitive abilities of great-tailed grackles which are native to the Americas. In Colombia, the great-tailed grackle is the

official bird of Cartagena de Indias and many Colombian monuments and artistic works have been created there in honour of its intelligence and adaptability.

Researcher Corina Logan, a Gates Cambridge Scholar who is now a Leverhulme Early Career Research Fellow at the University of Cambridge, has been fascinated by the species for a long time. Before she started her PhD in Experimental Psychology in 2008, she spent time in Costa Rica where she observed the behaviour of great-tailed grackles and was struck by their apparent intelligence.

Dr Logan obtained funding from the National Geographic Society/Waitt Grants Programme and the SAGE Centre for the Study of the Mind at the University of California Santa Barbara in 2012 to set up a field site in Santa Barbara to study cognition in the great-tailed grackle and to do comparative tests with New Caledonian crows. Relatively few studies have been done on this species up until now, and none on their [cognitive abilities](#).

The research Dr Logan conducted has resulted in three peer-reviewed papers, two of which have now been published. The latest, published by the *Royal Society Open Science*, is out today.

Its focus is the great-tailed grackle's behavioural flexibility, its ability to learn to adapt to changed circumstances, and whether behaviourally flexible individuals can invent new behaviors to solve novel problems. The tests showed they didn't, which Dr Logan says suggests that behavioural flexibility and innovation do not measure the same thing, contrary to common assumptions. What they could do was adapt their behaviour to attain certain goals.

In two of the tests she conducted, grackles showed they were able to problem solve. One, the colour association task, involved an ability to

discriminate between different colours of tubes. A gold and a silver tube were placed on a table at the same time, with one of the tubes containing hidden food. Once birds learned that the food was always in the gold tube, the food was then switched to the silver tube.

All the grackles were able to quickly change their behaviour to primarily choose the silver tube. Most other species were also able to switch colour cues, but the majority took longer to do so.

The second, more complex challenge, was a problem-solving test called Aesop's Fable. It involved food floating in a partially filled water tube. The birds had to work out that they could raise the water level and bring the food within reach by inserting objects into the tube. All of the grackles solved the problem, but only two changed their preferences in a follow-up test, thus exhibiting behavioural flexibility.

Dr Logan says that the speed at which the grackles solved problems was not a predictor of their behavioural flexibility. Moreover, different grackles seemed more flexible than others on different tasks.

Her third paper which will be out later in the summer will investigate the possible reasons for this.

She is now applying for grants to investigate this variation between grackle populations across their range in North and Central America. She is interested to find out if certain circumstances, such as length of stay in one particular area, how well fed they are or genetics play any part in determining which populations are best able to adapt to new challenges. She is also interested to see if grackles are more flexible in particular contexts. "I want to understand how behavioural flexibility works and why it differs according to the type of problem being solved," she says.

More information: How far will a behaviourally flexible invasive bird go to innovate? [DOI: 10.1098/rsos.160247](https://doi.org/10.1098/rsos.160247)

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