

Grey squirrels beat reds in 'battle of wits'

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Grey squirrel pictured during the study. Credit: University of Exeter

Problem-solving powers may help to explain why grey squirrels have taken over from native red squirrels in the UK, new research says.

The study tested wild squirrels with an "easy" task (opening a transparent lid) and a "difficult" task (a more complex process of pushing and pulling levers) to get hazelnuts.

The two [species](#) were equally successful at the easy task, but a more of the [grey squirrels](#) cracked the difficult one.

The researchers, from the universities of Exeter and Edinburgh, said this "superior behavioural flexibility may have facilitated their invasion success".

Red squirrels have lived in the UK for thousands of years, but grey squirrels - which arrived from North America in the 19th Century - now outnumber them by more than 15 to one.

"Many factors have been considered to explain why grey squirrels are more successful when they move into areas where red squirrels live," said Dr Pizza Ka Yee Chow, of Exeter's Centre for Research in Animal Behaviour.

"These factors include disease resistance and the fact grey squirrels are bigger, but our research shows problem solving could be another key factor for the success of greys.

"This might be especially important for an invasive species like grey squirrels, as they have evolved elsewhere and have to adapt to their surroundings."

The researchers set up the tasks and observed squirrels, which can be identified by their unique body characteristics.

About 91% of grey squirrels eventually solved the difficult task, compared to 62% of red squirrels.

The study says "inefficient" foraging and food extraction are likely to mean poorer fitness among red squirrels, harming their chances of reproduction - and reduced breeding is known to be a major factor in the decline of the species.

"It is not yet clear whether grey squirrels are born better problem solvers, or whether they work harder because they're an [invasive species](#) living outside their natural environment," said Dr Chow.

"The current stage of our research is to look at this, and the results may give us more insight into the likely future of both species."

The findings did offer some hope for red squirrels, as among those that succeeded at the difficult [task](#), a few solved it more quickly than greys in subsequent attempts.

The successful red squirrels were also quicker to change tactics after trying a method that did not work.

Professor Stephen Lea, also of Exeter's Centre for Research in Animal Behaviour, added: "These results illustrate how investigating animals' differing cognitive abilities can help us understand important issues in conservation."

Ideally, the researchers would have studied wild squirrels living in the same area but - as red [squirrel](#) numbers usually decline rapidly when grey squirrels arrive - they chose similar but separate locations.

The grey squirrels studied were in woodland around the University of Exeter's Streatham Campus, or on the campus itself, while the red squirrels were in woodland around Brodick Castle on the Isle of Arran, Scotland.

The paper, published in the journal *Animal Behaviour*, is entitled: "A battle of wits? Problem-solving abilities in invasive Eastern grey squirrels and native Eurasian [red squirrels](#)."

More information: Pizza Ka Yee Chow et al, A battle of wits? Problem-solving abilities in invasive eastern grey squirrels and native Eurasian red squirrels, *Animal Behaviour* (2018). [DOI: 10.1016/j.anbehav.2017.12.022](#)

Provided by University of Exeter

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