Medical Xpress

Food choices evolve through information overload

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Ever been so overwhelmed by a huge restaurant menu that you end up choosing an old favourite instead of trying something new?

Psychologists have long since thought that information overload leads to people repeatedly choosing what they know. Now, new research has shown that the same concept applies equally to hundreds of animal species too.

Researchers from the University of Leeds have used computer modelling to examine the evolution of specialisation, casting light on why some animal species have evolved to eat one particular type of food. For example some aphids choose to eat garden roses, but not other plants which would offer similar nutritional values.

"This is a major leap forward in our understanding of the way in which animals interact with their environment," says lead researcher Dr Colin Tosh from the University's Faculty of Biological Sciences. "Our computer models show the way in which neural networks operate in different environments. They have made it possible for us to see how different species make decisions, based on what's happening - or in this case, which foods are available - around them."

Despite the prevalence of specialisation in the animal kingdom, very little is known about why it occurs. The work conducted at Leeds has provided strong evidence in support of the 'neural limitations' hypothesis put forward by academics in the 1990s. This hypothesis, derived from

[human psychology](#), is based on the concept of information overload.

"There are several hypotheses to explain specialisation: one suggests that animals adapt to eat certain foods and this prevents them from eating other types of food," says Dr Tosh.

"For example, cows have evolved flat teeth which allow them to chew grass but they are unable to efficiently process meat. However, the problem with these hypotheses is that they don't apply across the board. Some species - such as many plant eating insects - have evolved to specialise even though there are many other available foods they could eat perfectly well."

This is the first study to provide a realistic representation of neural information processing in animals and how these interact with their environment. The research team believe that it could also have major implications for predicting the effects of environmental change.

"A good example of a struggling specialist is the giant panda, which relies on high mountain bamboo," says Dr Tosh. "In understanding how neural processes work, we may be able to gain an insight into how future environmental conditions - such as the dying out of particular types of plants - may affect a range of different animal species that utilise them for food."

Source: University of Leeds ([news](#) : [web](#))

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