

# Research ends debate over benefits of butterfly defenses

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Researchers observed how a butterfly evolves to protect themselves from predators, such as the Great-tit.

Researchers observed the behaviour of Great-tits foraging for artificial prey to understand more clearly how a species evolves to protect themselves from predators.

Insects, such as butterflies, have bright contrasting colour patterns that indicate to predators that they are not likely to be palatable. In order to gain greater protection from predators, however, some butterflies evolve to imitate the warning signals of a more highly defended species – a

phenomenon known as mimicry. Scientists at Liverpool, in collaboration with the University of Jyväskylä in Finland, tested which species of butterfly benefits the most from this technique.

Hannah Rowlands explains: “Previous studies have suggested that the relationship between two look-alike species is parasitic, whereby a ‘tastier’ insect reaps all the benefits of resembling a more unpalatable species. Scientists have argued that predators may get confused as to which species is most edible and which is not, resulting in them eating more of the unpalatable species than they normally would have done.

“We found that the two species of butterfly we used in our research do not undermine each other and benefit mutually from looking like each other. Copying in this sense is the highest form of flattery!”

In order to understand how this technique benefited both species of butterfly the team devised an experiment in an indoor aviary and observed the behaviour of Great-tits as they attacked artificial prey made from almond filled paper parcels.

Hannah added: “We coated some of the almonds in a non-toxic chemical which gave them a nasty taste, while others were moderately distasteful and some were left to taste simply of almonds. The birds in our aviary learnt to avoid the highly distasteful species quicker than the moderately distasteful ones. The ‘tastier’ species still benefited, however, in that the birds eventually learnt that in order to stop mistakenly eating the distasteful prey, they must stop eating both species altogether.

“We can now apply this model to other insects that use mimicking techniques, giving us greater insight into why particular species evolve to resemble one another and change their behaviour.”

Source: University of Liverpool

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