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Aussie flowers target birds with red shift

New research has shown that certain Australian native flowers have shifted away from using insects as pollinators and evolved their flower colour to the red hues favoured by birds.



Credit: RMIT/Monash University

In a [study](#) published in *New Phytologist*, biologists from Monash University and RMIT University have shown for the first time that Australian native flowers exclusively pollinated by birds have evolved colour spectral signatures that are best discriminated by those birds.

Dr Adrian Dyer of Monash and RMIT said previous studies had shown that flower colour evolved to attract bees as pollinators.

‘We know that some flowers had evolved spectral signatures to suit bee pollinators, but the story for bird-pollinated flowers was not clear,’ Dr Dyer said.

Lead author and PhD student Mani Shrestha of the Monash School of Biological Sciences collected spectral data from over 200 flowering plants and identified the pollinators as birds or insects. With Associate Professor Martin Burd – also from Monash – they did phylogenetic analyses to identify how the flowers have evolved spectral signatures.

‘We found that flowers exclusively pollinated by birds had initially evolved to suit insect vision, but more recently the spectral signature of bird-pollinated flowers had shifted towards longer wavelengths,’ Mr Shrestha said.

The research showed that rather than just having any type of red reflection, bird-pollinated flowers targeted the specific wavelengths that best match the long wavelength tetrachromatic (four colour) vision of many Australian native birds.

'Bird-pollinated flowers may have evolved red signals to be inconspicuousness to some insects that are poor pollinators, whilst also enhancing the discrimination of bird pollinators,' Mr Shresthra said.

Associate Professor Burd said the work had broad significance for understanding how flower colours have evolved to suit specific pollinators, and how colour may continue to evolve in particular environments depending upon the availability of effective pollinators.

'The colour cues in Australian flowers would be easily detected by honeyeaters, the most important family of nectar feeding birds in Australia. Hummingbirds in the Americas have similar visual systems to honeyeaters, so we expect to find similar colour signals among American flowers,' he said.

'But in Asia and Africa, birds with a different type of colour vision are the primary avian pollinators. If flower colours in these regions are tuned to the specific capacities of their own birds, we would have strong evidence that we've cracked the code that plants use to communicate with birds.'

Source: Monash University

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