

## Butterflies 'take turns courting'

By Ella Davies  
Earth News reporter

**Male and female butterflies switch courting roles depending on the season they were born in, say scientists.**

Squinting bush brown butterflies use reflective "eye spots" on their wings to attract potential mates.

Males born in the wet season beat their wings to flash their spots but in the dry season females grow brighter spots instead and take the lead.

This behaviour could benefit females, allowing them to control mating when fewer food resources are available.

### BUTTERFLY EYE SPOTS

- Eye spots on the underside of butterfly wings are used to deter predators
- Eye spots on the surface of the wing are used to attract mates and warn off rivals

Published in the journal *Science*, the study is the first to show that butterflies develop sexual ornamentation in response to their environment.

Like many butterfly species, squinting bush brown butterflies (*Bicyclus anynana*) perform wing-beating courtship displays to attract potential mates.

Unusually, the male and female butterflies take it in turns to lead this courting behaviour depending on the season.

Males beat their wings to attract mates in the warmer wet season and in the cooler dry season, the roles are reversed.

In many butterfly species, members of the courting sex have more ornamented wing surfaces with distinctive eye spots that they flash at potential mates in wing-beating displays.

However, to the human eye both sexes of *B. anynana* sport very similar surface wing patterns.

So in order to understand the role-switching, researchers at Yale University, Connecticut, US analysed courtship displays from a butterfly's perspective.

Led by Dr Antonia Monteiro, the team found that the white "pupil" at the centre of each butterfly's eye spot reflects different amounts of ultraviolet (UV) light, depending on what temperature the butterfly was reared at when a larvae.

"Cool temperatures increase the UV reflectance of female sexual ornaments, warmer temperatures increase the UV reflectance of male sexual ornaments. These changes are not visible to humans because we do not see UV," explains postdoctoral fellow Dr Kathleen Prudic.

However butterflies can see UV, so by developing more attention-grabbing eye spots, females born in the dry season are able to attract males.

Researchers suggest that female butterflies may take over the performance role in order to survive the adverse conditions of the dry season.

By actively attracting mates and mating more often researchers have found that the dry season

females in their studies live longer.

**Butterflies have evolved complex and dynamic mating behaviours that can respond to predictable changes in their environment**  
Kathleen Prudic

This evidence supports previous studies that suggest female butterflies benefit from receiving sperm and associated nutrients during mating.

"The implications of these findings build upon a growing understanding that butterflies and other insects have evolved complex and dynamic mating behaviours that can respond to predictable changes in their environment," says Ms Prudic.

Squinting bush brown butterflies are native to sandy forest habitats from central to south eastern Africa.

Three to five generations are born per year and developing caterpillars experience considerably different temperatures between wet and dry seasons.

Story from BBC NEWS:

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