

Flying Colours



There are no colours in the dark! Butterflies' splendid hues show up when light hits the thousands of tiny scales that make up the distinctive markings on their wings.

Fabulous Scales

Linden Gledhill is a biochemist and photographer who uses a microscope with an attached camera and a technique called focus stacking to capture the stunning beauty of butterfly wings at a unique scale. This lets him reveal the subtle nuances of the colours and different shapes of the scales, and the fascinating patterns they create.

Please don't touch any of the butterflies or moths.

Magnification



Left to right
Chrysidia rhipheus • *Hypolimnas dexithea* •
Morpho zephyritis • *Argema mittrei* • *Papilio blumei*

Subtle ultraviolet markings



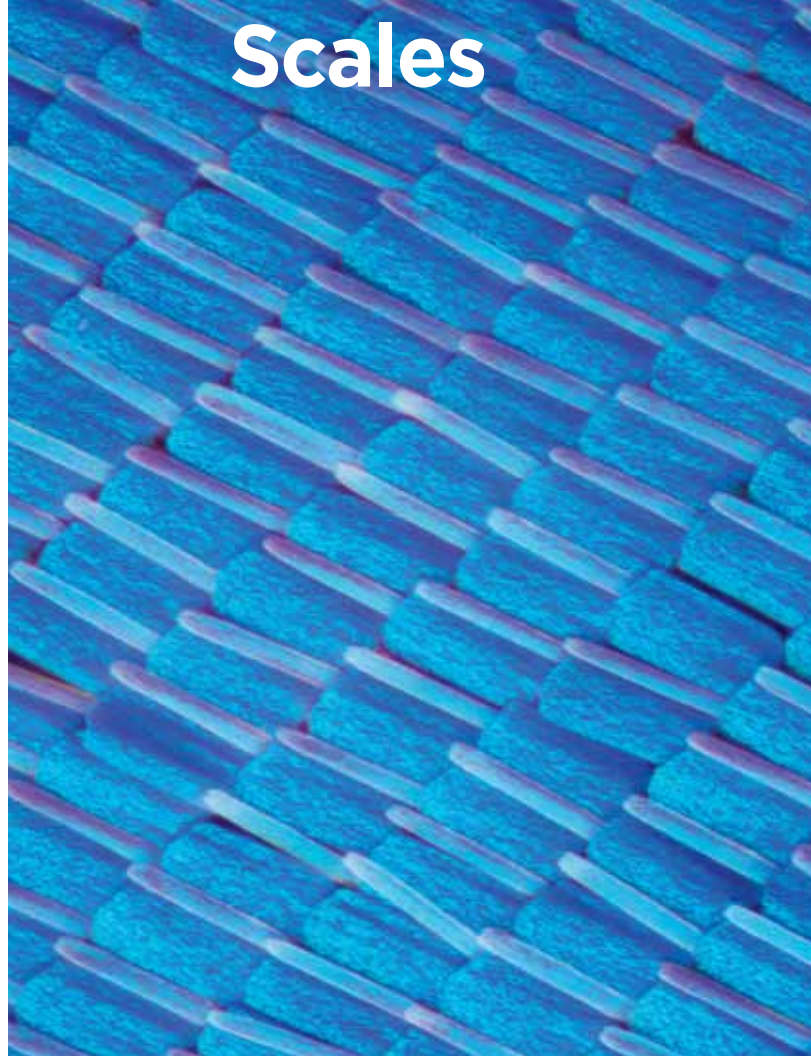
Butterflies have visual pigments that let them detect ultraviolet wavelengths. Some males have ultraviolet markings on their wings that they use to attract females.



Hypolimnas bolina
Great eggfly bolina



Phoebis philea
Orange-barred sulphur

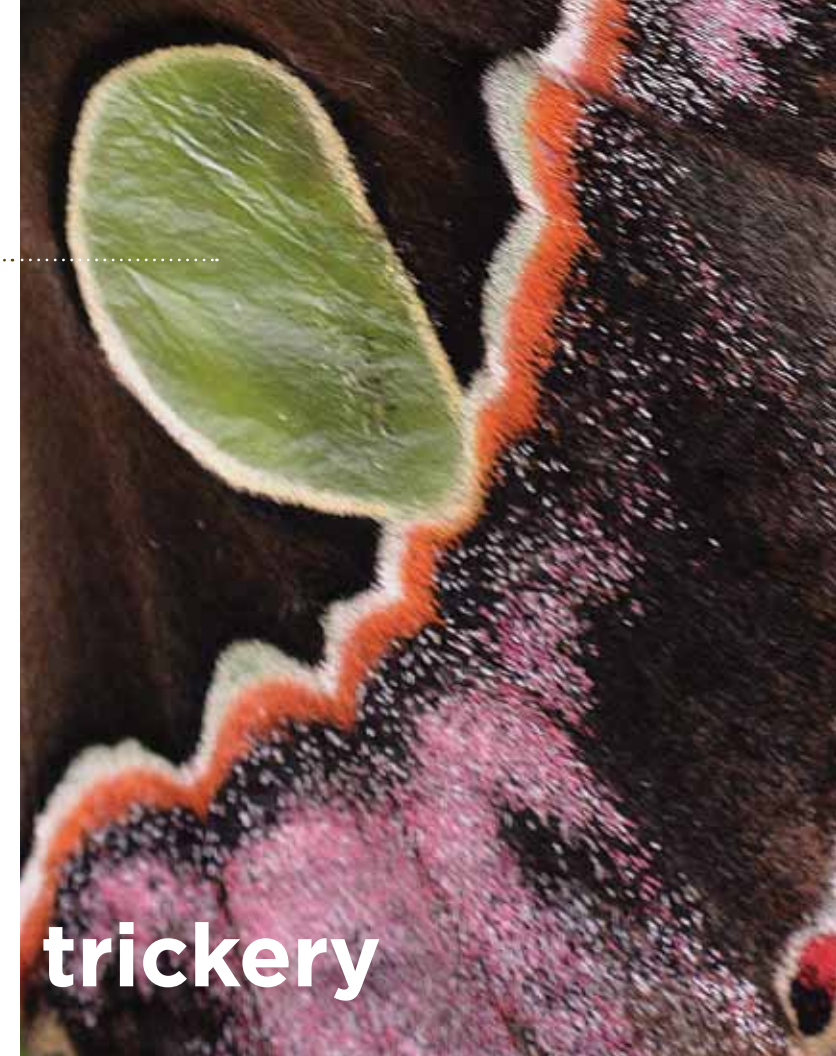


Rothschildia jacobaeae
Jacob's silkmoth



Attacus atlas
Cobra moth

Some butterflies have bare patches on their wing membranes. By letting light through, these transparent "windows" change the insect's shape and fool potential predators.



Transparent trickery



A pigment mosaic



Dryas julia
Julia



Dryadula phaetusa
Banded orange



Heliconius melpomene
Postman



Papilio lowi
Asian swallowtail



Papilio rumanzovia
Rumanzovia swallowtail



Troides rhadamantus
Small troides



Papilio thoas
Thoas swallowtail



Caligo sp.
Owl butterfly



Danaus chrysippus
African monarch



Danaus plexippus
Monarch



Argema mimosae
African moon Moth



Idea leuconoe
Rice paper

The scales on some butterflies' wings get their colours from the plants that the caterpillar fed on. The colours of the different scales combine to create patterns on the wings.



Morpho helenor
Blue morpho



Morpho polyphemus
White morpho



Papilio palinurus
Banded peacock



Siproeta stelenes
Malachite



Graphium agamemnon
Tailed jay

As light strikes the internal and external structures of the scales on these butterflies' wings, the wavelengths that reflect off them produce shimmering colours.

Optical effects

