The birds and bees and bright blue leaves: investigating the functions of leaf iridescence

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As photosynthetic organisms, plants have developed a diverse range of mechanisms to manipulate the light they rely on to provide both energy and information. One of these mechanisms is by the production of cellular structures that directly influence the reflection or transmission of light at specific wavelengths. A phylogenetically diverse range of plants produce such structures in their photosynthetic tissue, (predominantly the leaves). As well as this phenomena being phylogenetically diverse, there is also a diversity in the mechanism by which this light manipulation is achieved. Due to the prominence of these structures in the photosynthetic tissue, our initial enquires have focused on the impacts of iridescence on light harvesting, and this presentation will summarise our current findings as to the impact of leaf iridescence on photosynthesis.

However, as sessile organisms, plants can also use light to manipulate the biotic aspects of their of their environment, such as pollinators and herbivores. We have also been investigating the hypothesis that leaf iridescence might be multifunctional, and have roles in detering or confusing potential herbivores. The results from this investigation suggest that the visual impacts of iridescence can be complex, and may have implications for how biomimetic materials should be used.