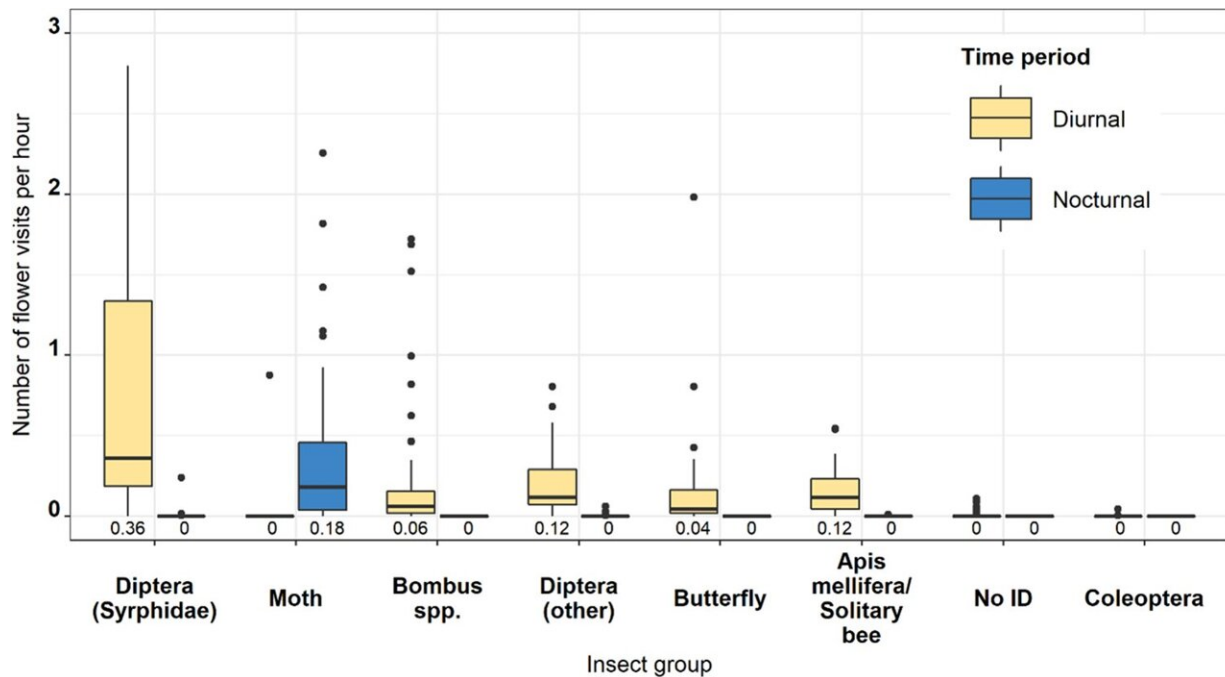


Moths are more efficient pollinators than bees, shows new research

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Boxplot showing the number of flower visits (hour^{-1}) for each insect taxonomic group during the nocturnal and diurnal time periods. Credit: *PLOS ONE* (2023). DOI: 10.1371/journal.pone.0281810

Moths are more efficient pollinators at night than day-flying pollinators such as bees, finds new research from the University of Sussex, published March 29 in *PLOS ONE*.

Amid widespread concern about the decline of wild pollinating insects like bees and butterflies, University of Sussex researchers have discovered that moths are particularly vital pollinators for nature.

Studying 10 sites in the South East of England throughout July 2021, the Sussex researchers found that 83% of insect visits to bramble flowers were made during the day. While the moths made fewer visits during the shorter summer nights, notching up only 15% of the visits, they were able to pollinate the flowers more quickly.

As a result, the researchers concluded that moths are more efficient pollinators than day-flying insects such as bees, which are traditionally thought of as "hard-working." While day-flying insects have more time available to transfer pollen, moths were making an important contribution during the short hours of darkness.

Professor Fiona Mathews, Professor of Environmental Biology at the University of Sussex and co-author this latest research, says, "Bees are undoubtedly important, but our work has shown that moths pollinate flowers at a faster rate than day-flying insects. Sadly, many moths are in serious decline in Britain, affecting not just pollination but also [food supplies](#) for many other species ranging from bats to birds. Our work shows that simple steps, such as allowing patches of bramble to flower, can provide important food sources for moths, and we will be rewarded with a crop of blackberries. Everyone's a winner!"

Researchers studied the contribution of both nocturnal and non-nocturnal insects to the pollination of bramble. They monitored the numbers of insects visiting flowers using camera traps, and worked out how quickly pollen was deposited at different times of day by experimentally preventing insects from visiting some flowers but not others.

Additionally, the study indicates the importance of bramble, a shrub widely considered as unfavorable and routinely cleared away, but which is in fact critical for nocturnal pollinators.

Dr. Max Anderson, who was a Ph.D. student at the University of Sussex working alongside Professor Mathews at the time of the research, and who is now South West Landscape Officer at the Butterfly Conservation, says, "Moths are important pollinators, and they are greatly under-appreciated and under-studied. The majority of pollination research tends to focus on day-flying insects, with little understanding of what happens at night.

"Now we know that moths are also important pollinators, we need to take action to support them by encouraging some bramble and other flowering scrub plants to grow in our parks, gardens, road verges and hedgerows."

Pollinating insects are a vital part of many ecological communities and a very important part of the natural ecosystem. Pollinators allow plants to fruit, set seed and breed. This in turn provides food and habitat for a range of other creatures. So, the health of our ecosystems is fundamentally linked to bees and other pollinators. However, due largely to [climate change](#) and [intensive agriculture](#), there is a widespread decline in wild pollinators.

This research shows that both night-flying and day-flying pollinators need to be protected in order to allow natural ecosystems to flourish. As a result, researchers are also calling for the U.K. public to do their bit to protect [moths](#) by planting white flowers, growing patches of scrub and rough grass, and turning off night lights.

More information: Max Anderson et al, Marvellous moths! pollen deposition rate of bramble (*Rubus fruticosus* L. agg.) is greater at night

than day, *PLOS ONE* (2023). [DOI: 10.1371/journal.pone.0281810](https://doi.org/10.1371/journal.pone.0281810)

Provided by University of Sussex

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