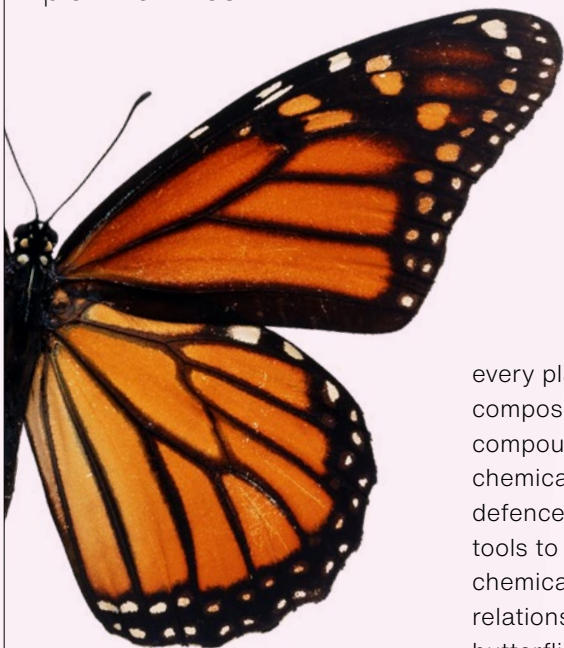


# Chemistry determines plant-butterfly links

The chemical defences of plants determine which butterflies they are host to. This 'tolerance' cuts across plant families.



Butterflies lay their eggs on specific plants: their larvae are resistant to the chemical defences of that particular host plant. Many plants are therefore linked as host plants to a group of butterflies (and/or other insects).

Biologists are looking for explanations for how those special relationships between plants and butterflies develop. Are closely related plants hosts to closely related butterflies? Or does the kind of chemical defence play a decisive role? Master's student Corné van der Linden gives the answer in an article in *Ecology and Evolution*, of which he is the lead author (while still a student!)

Van der Linden studied 145 species of Northern European butterflies belonging to six different families. There was already a database of the host plants of these butterflies. For

every plant, he identified the composition of the defence compounds, obtaining the chemical profile of the plant's defences. He then used statistical tools to find links between that chemical composition and the relationships between plants and butterflies.

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## Van der Linden studied 145 species of butterfly and their associated host plants

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The result was clear: the chemical defence system in use determines which butterflies visit a plant. 'So the defences of the host plant largely explain which group of butterflies visit it,' explains Van der Linden. 'That means that you need a lot of chemical diversity in the host plants' defence systems in order to get ecological communities with a diverse range of butterflies.'

The various defence systems often cut right across plant families, as the same defences evolved independently of each other at different times during evolution. Sometimes nature repeats itself. RK