

# Orchids and fungi -- partners for life

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This is an *Aphyllorchis montana* orchid. Credit: Roy et al., BMC Biology

Three Thai orchids have been found to rely on a wide range of fungi to help them take carbon out of the soil instead of producing their own organic carbon. A detailed study of the relationship, published in the open access journal *BMC Biology*, also features stunning pictures of the plants.

Marc-André Selosse and Mélanie Roy, from the Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier, France, studied *Aphyllorchis montana*, *A. caudata* and *Cephalanthera exigua* orchids with Suyanee Vessabutr and Santi Watthana from the Queen Sirikit Botanic Garden, Thailand. These orchids have no chlorophyll and rely on fungi colonizing their roots for their carbon supply.

The [plants](#), which grow on the ground in mountain forests, were collected from 10 different sampling sites in diverse parts of Thailand. The two *Aphyllorchis* orchids studied were found to associate with a wide range of fungi, while the *Cephalanthera* was much more specific.

Selosse said, "We show for the first time that certain tropical orchids associate with highly diverse soil fungi colonizing their roots; using stable isotopes, we show that they are likely to use these fungi as a carbon source". Most importantly for conservation concerns, all these fungi associate in turn with the roots of nearby green trees, where they collect carbon for the orchids.

Speaking about the results of the study, Selosse said, "Plants really interact with fungi in an unexpectedly diverse way - the impression one gains is that there is a great need for more research on biological interactions in the tropics to unravel this diversity".

More information: Two mycoheterotrophic orchids from Thailand tropical dipterocarpacean forests associate with a broad diversity of ectomycorrhizal [fungi](#); Mélanie Roy, Santi Watthana, Anna Stier, Franck Richard, Suyanee Vessabutr and Marc-André Selosse; *BMC Biology* (in press); [www.biomedcentral.com/bmcbiol/](http://www.biomedcentral.com/bmcbiol/)

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