Pollination network analysis by environmental metagenomics

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Abstract

Plant-Pollinator interactions are organized in bipartite, mutualistic complex networks with two organism groups: for plants, pollinators are essential pollen vectors required for their reproduction, while plants provide vital food resources to pollinators. Studies of plant-pollinator networks are traditionally based either on field observations of pollinator visits to plant species or pollen identification by microscopy, both having strong limits. Recently, a new innovative approach has been developed; it consists to identify the pollen of the various plant species carried by insects or deposited on plant stigma by using DNA metabarcoding, high throughput sequencing and bioinformatics tools. Compared to traditional approaches, metabarcoding provides a striking different picture of pollination networks. Moreover, the approach allows investigating intraspecific networks and upscaling the impacts of individual behavior on species networks.

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