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Evolution of host-plant specialization in wild bees, physiological or behavioral constraint ?

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Interactions between flowering plants and wild bees are highly diverse. Some bee species are specialized in narrow range of resources (i.e. oligolectic species) while other species forage on numerous plant families (i.e. polylectic species). Some clades of wild bees like the Melittidae include only oligolectic bees. Ancestral host-plant and specialist behavior seem both highly inherited. However some rare “host-plant shifts” occurred during evolution inside clades. The origin and the mechanism of these host-plant shifts remain misunderstood. Similar morphology of alternative host-plants could make the shift easier but the need of particular chemicals (sterol, protein, ...) in pollen could reduce the range of suitable hosts. We present our first results on chemical composition of host-plant pollen..

Effects of hedge connectivity and adjacent crop fields on the pollination of shrub species

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The importance of hedgerow-forest connectivity and adjacent crops, in particular the effects of the mass-flowering oilseed rape was investigated on bee and hoverfly abundance and pollination success in Göttingen, Germany, 2009. Six replicates of forests edges, hedges connected to forests and isolated hedgerows were selected next to winter cereal fields and six next to oilseed rape fields. Pollinator abundance was investigated on blackthorn (*Prunus spinosa*), hawthorn (*Crataegus* sp.) and hip (*Rosa canina*) during the species' flowering time. Bees and hoverflies were counted and sampled during one observation event on each plant. The effectiveness of pollination was measured on previously marked branches by determining fruit set and fruit weight. To test for pollination limitation, 2 branches/plants were bagged to exclude pollinators before the beginning of the flowering period and the fruit set was compared between the covered and open branches. There were significantly more pollinators on blackthorn in the forest edges than in the isolated and connected hedges, however, its early and short flowering period during rainy weather resulted in almost no fruits. Connectivity had no effect on the abundance of pollinators in case of hawthorn and hip, however, it was enhanced by the higher amount of hawthorn and hip flowers and the more pollinators had positive effect on the pollination success of hawthorn. More pollinators were found on hip next to oilseed rape fields than bordered by winter cereal fields. The fruit weight of hip was significant higher in case of the open branches than at the covered ones.