

Flower-visiting, long-proboscid flies and megadiverse monkey beetles: current research in South Africa.

Florian Karolyi, Harald W. Krenn

florian.karolyi@univie.ac.at, harald.krenn@univie.ac.at

The Capensis is one of the world hotspots of plant diversity that is also inhabited by numerous and uncommon taxa of flower-visiting insects, like long-proboscid flies and the mega-divers group of monkey beetles.

The long-proboscid fly pollination system in South Africa is regarded to be a model system to study the concept of mosaic coevolution. Pollinator proboscis length and host plant flower spur length coevolved in geographically separated populations. However, it is unknown whether local adaptation may co-vary between years. Our long term study investigates the relationship between body size and proboscis length of the nemestrid fly *Prosoeca* sp. in relation to nectar spur lengths over several years at the same study sites. The results suggest that pollinator body size may be a crucial predictor of the proboscis length. These results oppose the model of reciprocal adaptation in long-proboscid flies and flowers; and cast a new light on the concept of mosaic coevolution. Our results suggest that a temporal pattern of fly size mask the geographic mosaic that has been shown in previous studies.

Monkey beetles (Hopliini) visit flowers to feed on nectar, pollen, and/or floral tissue. Several species use specific flowers as aggregation places where males fight for females and are destructive to flowers by feeding on floral tissue. The first topic to be addressed in our project will be a comparative morphological study of mouthparts and alimentary tracts in flower visiting beetles belonging to different feeding guilds using microCT. The second part of the study will examine the male hind leg morphology of several hopliine species. It aims to evaluate their role in male-male competition for flowers as mating and feeding sites.