

EVOLUTIONSBIOLOGISCHES

The seminar series in evolutionary biology

KOLLOQUIUM

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Parallel adaptation to similar selective landscapes in *Erica plukenetii*

Dr. Timotheus van der Niet

Naturalis Biodiversity Center, Leiden, the Netherlands

Abstract

One of the strongest signatures of natural selection driving phenotypic divergence is if similar adaptations evolve independently in similar selective landscapes. While such evidence is available for a handful of systems, including repeated parallel evolution of divergent feeding morphologies in fish, evidence consistent with parallel adaptation in plants is surprisingly rare. In this study, we focus on the evolution of floral morphology in *Erica plukenetii* in relation to pollination ecology. This heath from the Cape Floral Kingdom is characterized by three pollination ecotypes: white, scented flowers with short corollas are pollinated by settling moths; unscented flowers with intermediate corollas are pollinated by short-billed sunbirds, while unscented flowers with long tubes are pollinated by long-billed sunbirds. In a previous analysis, we demonstrated that short-billed sunbird pollination is the ancestral character state, and that both other pollination ecotypes evolved independently. In particular, the colonization of an area where short-billed sunbirds are absent may have driven the evolution of long corollas, as adaptation to local long-billed birds. In a follow-up study, we focus on the ecotype with long-tubed flowers, which occurs in two disjunct areas, each characterized by the absence of short-billed birds. We use a phylogenetic approach to determine whether the evolution of long tubes occurred independently in both regions. Furthermore, we use pollinator observations to assess whether long-billed sunbirds are the main pollinator at both sites, as suggested by preliminary observations. Finally, we use experimental evidence to test whether long floral tubes represent an adaptation to long-billed sunbirds. Together, this evidence can test the hypothesis that the absence of the ancestral pollinator resulted in a similar adaptive response to a novel pollinator, resulting in parallel evolution of the same floral modifications.

Future seminars are coming in December, January, and February. Details will be announced later.

Any question? tengl@uni-mainz.de

