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## Sexual selection and ectoparasitic load in the cantharid beetle *Rhagonycha fulva*

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The red soldier beetle *Rhagonycha fulva*, a member of the family Cantharidae, is one of Austria's most common beetles. Despite its abundance in Central Europe, very little research has previously been done about the species' biology, life-cycle and mating behaviour.

Observations of a population of *R. fulva* in Oberpiesting (Lower Austria) in 1999 revealed an infestation with ectoparasitic larval mites of the genus *Trombidium* (Trombidiidae). The larval stages of these parasites have been found to occur on a large number of arthropod hosts. In Coleoptera they are most frequently attached to the intersegmental membranes between the subelytral abdominal tergites, where they feed on the host's hemolymph.

Based on the ambiguous results of previous research and the competing theories aiming to explain possible correlations between an individual's resistance to parasitic infections and its mating success, the goal of this study is to explore the relationship of ectoparasitic load and mate-choice in *Rhagonycha fulva*. The aim is to clarify if and how the presence, abundance and location of ectoparasites influences mate-choice in this particular species and whether parasitic load correlates with other traits such as sex and body-size.

Microscopic assessments of parasite load, size and distribution on the host's body as well as measurement of the right metathoracic femur as a size parameter were performed on 34 unmated males, 11 unmated females as well as 198 mated pairs of *R. fulva*.

The results of these observations will be used to answer the following questions:

- Is there sexual dimorphism regarding the abundance or location of ectoparasites?
- Does parasitic load and distribution differ significantly between mated and unmated individuals?
- Is there evidence for size assortative mating based on femur measurements?
- Does body-size influence infestation with ectoparasitic mites?

- What is the relationship of ectoparasitic loads and distributions within mated pairs?
- Can ectoparasites be considered to play a role in mate-choice and mating success?

Master's Thesis by Alice LACINY, Department of Theoretical Biology, University of Vienna, Supervising Professor: Hans Leo Nemeschkal

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## **Dispersionsverhalten alpiner *Erebia* (Nymphalidae) Schmetterlinge: Was macht eine Habitatsgrenze aus?**

### **Dispersal behavior of alpine *Erebia* (Nymphalidae) butterflies: What constitutes a habitat barrier?**

D. POLIC, K. FIEDLER & A. GRILL

Dispersal is a crucial feature for the preservation of butterfly metapopulations, which can be affected by habitat fragmentation. Habitat fragmentation might be more destructive to butterfly populations in an alpine habitat as opposed to lowland conditions. Each individual that leaves the habitat and enters the matrix takes a risk. The harsh climatic conditions and frequent and sudden onsets of bad weather in an alpine environment may further increase the mortality during dispersal events. Therefore, even winged organisms, like butterflies, are often extremely sedentary and spend their whole lifetime in a relatively small area. Dispersal processes through the matrix start with the individual's behaviour at the habitat borders. Borders of different structure might promote different behavioural responses, i.e. "low-contrast" edges might be more permeable than "high-contrast" edges.

We analysed the dispersal behaviour of seven alpine *Erebia* species in an anthropogenically and naturally fragmented habitat in the Hohe Tauern National Park in Austria. In order to find out which landscape elements constitute a barrier for movement for these relatively sedentary butterflies, we observed the butterflies' flight behaviour at the edge of their natural habitats, alpine mountain meadows. We analysed different landscape features that bordered meadows, such as dwarf shrub heaths, scree areas, tree groups and the Großglockner Hochalpenstraße – a highly frequented alpine road which cuts through the mountain meadows. To find out if there is an interspecific difference in the flight behaviour we analysed seven different *Erebia* species.

Our data indicates that the road seems to be a major barrier for dispersal. Further, butterflies seem to be more likely to cross low-contrast edges such as dwarf shrubs rather than high-

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