

Master Projects in Insect Social Behaviour

Available at Zoological Institute, University of Basel

Master-projects on cooperation and conflict resolution in insect families are available at the group of Prof. Mathias Kölliker, Zoological Institute, University of Basel, Switzerland (www.evolution.unibas.ch/koelliker). We experimentally address questions on the evolution of cooperation and conflict inside animal families using the common earwig (*Forficula auricularia*) as experimental system. Two possible Master-projects are described below, but there are additional possibilities for experimental studies in this system. The details of the project will be developed together with the Master student.

If you have a BSc in a relevant field, want to pursue an MSc in Animal Biology, have a keen interest in studying animal behaviour from an evolutionary perspective and want to work experimentally in this area, please contact me by e-mail (mathias.koelliker@unibas.ch).

Project 1. Decision making and weaning in earwig families

Animal families represent a particular social community. They are characterized by cooperation and conflicts, and also by the transient nature of the community which ends when offspring become independent of parental resources. Parents provide resources and offspring compete – sometimes subtly by communication and sometimes fiercely by aggression and siblicide. Possible Master project will focus on the role of behavioural control (parents or offspring, siblings) in the evolution of family interactions, focussing in particular on the weaning period (when offspring and parents dissociate), testing predictions from parent-offspring conflict and co-adaptation theory.

Project 2. Chemical communication and conflict resolution in earwig families

Communication is one possibility for resolving social conflicts, but the conflicts make communication systems prone to cheating, which raises questions about the evolution of honest signalling. Insects are famous for their use of chemical communication (pheromones) in an astonishing variety of functional contexts ranging from species recognition to social parasitism. In a recent study (Mas et al. 2009. Proc. R. Soc. Lond. B. published online) we could show a role for chemical communication in earwig mother-offspring interactions by condition-dependent cuticular hydrocarbons (CHCs; waxy components) secreted on the cuticle of the offspring. In this project, the Master student will experimentally test in more detail the functional role of CHCs as (honest?) chemical signals in earwig family interactions.



Female common earwig *F. auricularia* tending her clutch of eggs (top). Male with the characteristically curved cerci