

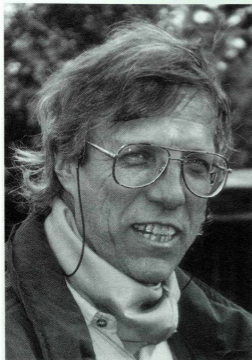
Evolutionary Biology

Hannes F. PAULUS

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Research

Our research concentrates on organismic-evolutionary and phylogenetic questions.



1. Pollination biology and coevolution between sexual mimicking orchids and pollinator males (pseudocopulation-system of the genus *Ophrys*: pollinator-specificities, chemical, optical and tactile attractions, sexual selection) (together with Dr.Manfred Ayasse, Univ.Assistant).
2. Functional and evolutionary morphology of Arthropoda (evolution of lateral and median eyes and their neuronal connections: Paulus and co-workers; functional morphology of mouthparts of flower visiting insects: butterflies, euglossine bees, together with Dr.Harald Krenn, Univ.Assistant).

3. Functional and evolutionary morphology of accessory pulsatile organs in Arthropoda (Univ.Doz.Dr.Günter Pass).

4. Phylogenetic systematics of the Coleoptera and of Apoidea and other arthropods (Paulus and co-workers).

5. Chemical ecology and olfactory communication in bees (Apoidea) (together with Dr.Manfred Ayasse and co-workers).

6. Reproductive biology of tropical frogs, partner recognition, isolation mechanisms, speciation in S.America (Univ.Doz.Dr.Walter Hödl).

7. Species development and population biology in European water frogs (tit.ao.Prof. Dr. Heinz Turner).

8. Morphology and bioacoustic behaviour in tropical fishes (Univ.Doz.Dr.Helmut Kratochvil, Dr. Fritz Ladich).

Teaching

Introduction to Evolutionary Ecology (Paulus) (L); Functional morphology and evolution of Arthropoda: Project exercises, lectures (Paulus, Pass); Reproductive biology and sexual selection in animals (Paulus); Pollination biology (Paulus); Introduction to the central European fauna (Paulus, Pass); Tropical zoology (Hödl); Introductory exercises in biology (zoological part (Paulus); Basic courses in zoology I (Paulus); Comparative anatomy in animals (part Arthropoda) (Paulus, Pass, Hödl); Field trips to the high mountains in Central Europe (Paulus, Pass); Terrestrial excursions to mediterranean areas (fauna, flora, pollination biology) (Paulus); Introduction and special courses in bioacoustics (general and fishes) (Kratochvil, Ladich)

International Cooperations

C. Gack, University of Freiburg/Germany (pollination biology); - W. Francke, University of Hamburg/Germany (chemistry of olfactory bouquets in bees and *Ophrys* orchids); - R. Melzer, University of Munich/Germany (comparative morphology of optical neurons in arthropods); - J. Tengö, University of Uppsala/Sweden (communication in bees); - H. Penzlin, University of Jena/Germany (cardiac physiology of insects).

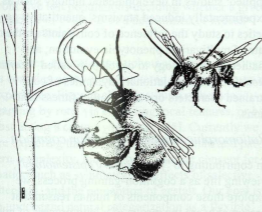


Fig. 1. Pseudocopulation behaviour of *Tetralonia berlandi* male bees on the mediterranean *Ophrys heldreichii* (pollination by sexual deception)

Selected References

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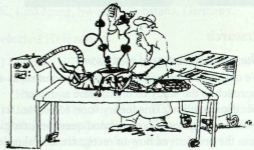


Fig. 2. Accessory pulsatile organs in Arthropoda (with permission of Klaus Pitter, Vienna)