



Seewiesen Colloquia

Speaker invited by: Dept. Manfred Gahr

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Sexual selection, male reproductive phenotypes, and sexual differentiation

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Male ornaments such as bright plumage in birds appear to be sexually-selected indicators of male quality. It is common to find considerable variation in male ornamentation within a species, and in many taxa this variation is non-continuous with individuals falling into discrete phenotypic classes. In some taxa, these male reproductive types are genetically fixed and associated with differences in life histories. In others, male type is associated with condition and social context. Studies of the mechanisms regulating facultative expression of sexual signals in systems with discrete male phenotypes can inform hypotheses about the evolution of sexual selection and differentiation. In our studies we use the existence of discrete male plumage and behaviour phenotypes in the Red-backed fairy wren (RBFW) *Malurus melanocephalus*. RBFW are small Australian passerines with a socially monogamous mating system and three male reproductive phenotypes: Brightly-coloured breeders (BM), dull female-coloured breeders (DM), and dull helpers (AUX). BM invest more in mating and less in paternal behaviour than DM. Females prefer BM as mates. Male types differ in androgen levels during breeding. AUX can rapidly assume a breeder role when vacancies become available and the transition from helper to breeder is associated with changes in androgen levels. Breeding phenotype is induced and regulated by androgen levels during a pre-nuptial moult when breeding plumage is assumed. Androgen levels during prenuptial moult, in turn, are correlated with body condition during moult. Thus androgens serve as a mechanistic link between body condition and the expression of male sexual signals to maintain signal honesty. This system not only provides tools to test hypotheses of sexual selection, phenotypic plasticity, and sexual differentiation but also to delineate physiological and molecular processes associated with the rapid transition between behavioural phenotypes.

Who is Hubert Schwabl?

1981 Ph.D. Ludwig-Maximilian University, Munich, Germany
1981 AvH Feodor-Lynen postdoctoral fellowship, University of Washington, Seattle, USA
1984 MPG, DFG fellowships, MPI Behavioural Physiology, Andechs, Germany
1989 Habilitation, LMU Munich, Germany
1989 Assistant Professor, Rockefeller University, New York, USA
1997 Associate Professor, Washington State University, Pullman, USA
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Selected publications:

Schwabl, H., J.C. Wingfield, and D.S. Farner. 1980. Seasonal variation in plasma levels of luteinizing hormone and steroid hormones in the European blackbird *Turdus merula*. *Vogelwarte* 30: 283-294.
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Schwabl, H., D. Mock, and J. Gieg. 1997. A hormonal mechanism of parental favouritism. *Nature* 386: 231.
Groothuis, T.G. G. and H. Schwabl. 2008. Hormone-mediated maternal effects in birds: mechanisms matter but what do we know of them? *Phil. Trans. R. Soc. London B* 363: 1647-61.
Partecke, J. and H. Schwabl. 2008. Organizational effects of maternal testosterone on reproductive behavior of adult house sparrows. *Dev. Neurobiol.* 68:1538-48.
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