3 PhD POSITIONS IN BEHAVIOURAL ECOLOGY Institute of Ecology and Evolution, University of Bern, Switzerland The Institute of Ecology & Evolution at the University of Bern offers excellent opportunities and infrastructure for theoretical and experimental research in the field of ecology and evolution. It hosts six chairs, several associated professors and junior group leaders with complementary, yet overlapping and linked areas of scholarship. It is home to a large number of post-doctoral researchers, PhD and MSc students from different countries worldwide. Research at the chair of Behavioural Ecology focuses on the evolution of sociality and cooperation, within-population individual variation of behaviour and life history pathways, and the influence of early experience on life-long and transgenerational traits and decisions. In addition to theoretical modelling, our research uses cichlid fishes from Lake Tanganyika, ambrosia beetles and Norway rats as model systems. We combine sophisticated behavioural experiments in the laboratory and field with long-term monitoring of individual life histories in nature, develop theoretical models of evolutionary mechanisms underlying behaviour, and study molecular mechanisms by transcriptome profiling and hormone manipulations. Currently the division comprises roughly 30 staff and student members.

Job descriptions

1st project:
Integration of early environmental information within and

across generations in a cooperative breeder

Early life conditions can have life-long effects on the phenotypic development of animals. Most research in developmental plasticity focuses only on a single environmental trigger or ontogenetic stage. However, natural environments are usually complex. If we aim to understand the development of well-integrated adult phenotypes, we must consider effects of multiple ecological factors during multiple ontogenetic stages. The highly social cichlid *Neolamprologus pulcher* is a unique model system to study the development of integrated phenotypes, because it uses environmental cues to specialize on one of two life history strategies during ontogeny, namely early own reproduction or delayed dispersal to help rearing offspring of dominant breeders. *N. pulcher* is a well-studied model system of social evolution that is exceptionally suited to experiments in the field and laboratory. Within this project, two PhD positions are currently available:

Position 1:
"Environmental influences on development during different

ontogenetic stages"
The aim of this PhD-project is to investigate the relative significance of four important environmental influences for the development of helping and dispersal propensities of *N. pulcher* : prenatal maternal effects, brood care, early juvenile and late juvenile environments. Position 2:
"Long-term effects of early environment within

and across generations"

This PhD project investigates whether the early environment influences adult life histories and reproductive performance, and whether it affects the phenotypes of successive generations through epigenetic inheritance. Both PhD projects will pursue a multidisciplinary approach involving behavioural experiments in the laboratory, field work, ecological genomics and/or quantitative meta-analysis. Eligible candidates will have a master's degree (or equivalent) in Biology and research experience in animal behaviour and a genuine understanding of evolutionary theory. Practical skills in molecular genetics techniques, the application of statistical models and empirical work with fish would be beneficial, but they are not a precondition. The project will be mostly based in Bern, but will involve collaboration with Nadia Aubin-Horth (University Laval, Canada) for the molecular analyses and with Shinishi Nakagawa (University of Otago, New Zealand) for meta-analysis. Supervisor: Barbara Taborsky.

2nd project:

The use of information in social decisions

Position 3:

"Conditional decisions to stay or disperse in fungus

tending ambrosia beetles"

When deciding to stay or disperse from the natal territory, information about the quality of potential dispersal areas may be limited and costly to obtain. Modelling results imply that the stage before dispersal decisions are made is of particular interest to understand social evolution. Ambrosia beetles are cooperative breeders cultivating fungi for food. Individual dispersal is timed in dependence of the need for cooperative care in the natal colony. Here we ask whether and how dispersal decisions depend on (i) the body condition of beetles, (ii) the microbial condition in the natal gallery, and (iii) the sustainability of the substrate in which they live. Experiments will show how beetles respond to the microbial composition of their gallery, including hygienic behaviour, allogrooming and fungal care, and their timing of dispersal. The utility of galleries will be manipulated to test effects on the beetles' condition, dispersal and reproductive decisions. In addition, the degree of sociality will be determined in scolytid ambrosia beetles colonizing living trees, to test whether the ephemeral nature of freshly dead trees, the resource used by most species, prevents this group from being eusocial. This PhD project will pursue a multidisciplinary approach involving behavioural experiments in the laboratory, field work in temperate and tropical regions, and the assessment and manipulation of the chemical ecology of the beetles' fungus gardens. Eligible candidates will have a master's degree (or equivalent) in Biology, research experience in animal behaviour, and a genuine understanding of evolutionary theory. Practical skills in the application of statistical models, in chemical ecology and in empirical work with arthropods are beneficial. Supervisor: Michael Taborsky. All three positions are funded by the Swiss National Science Foundation. They last for three years and may start as early as January 2015. Salaries will follow the schemes of the Swiss National Science Foundation.

Closing date: Open until filled, but all application

materials, including the CV and a motivation letter, a summary of research experience, copies of any published or in-press papers, and two letters of recommendation should be received **by 8th December 2014**
to ensure full consideration. Candidates should indicate in the cover letter for which of the

three positions they apply and when they could take up the position. Please send all application material to the secretary's office, c/o Claudia Leiser, Behavioural Ecology, University of Bern, Wohlenstrasse 50A, CH-3032 Bern, Switzerland; or, preferably, as e-mail attachments to claudia.leiser@iee.unibe.ch
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