Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

PhD position in ecological modelling and insect field ecology

Extinction debt of plants, insects and biotic interactions: interactive effects of habitat fragmentation and climate change

Background: In human-modified landscapes the occurrence of many species is restricted to small and isolated habitat fragments. Although the positive relationship between species richness and habitat area is well-known, the long-term ecological and evolutionary consequences of habitat fragmentation for species survival still require deeper understanding. Local or range-wide species extinctions can be triggered by increased environmental and demographic stochasticity, reduced genetic diversity, and the loss of mutualistic interaction partners such as pollinators and seed dispersers. Particularly long-living plant species might show delayed extinctions that could have severe cascading effects on associated herbivores, pollinators and their antagonists. Climate change can reinforce population and community processes that lead to extinction by disrupting the seasonal synchronisation of interacting species and causing spatial range shifts. Such range shifts are often hampered by a fragmented habitat within a hostile landscape matrix and might differ between trophic and functional groups with different dispersal abilities and local population dynamics, resulting in spatial mismatches of interacting species. Due to the various involved spatial and temporal scales the topic requires an approach where ecological modelling, field experiments and long-term data sets on biodiversity and biotic interactions are combined.

In the planned project we aim to realise such an interdisciplinary approach by first developing spatial population and community models to simulate the long-term consequences of habitat fragmentation and climate change for species survival and biotic interactions. Second, modelling predictions will be tested in the field, building upon our long-term data sets for plant and insect diversity and multiple biotic interactions in fragmented calcareous grasslands along a climatic gradient in Germany.

Requirements: We are seeking a highly motivated PhD student with experience and interest in both ecological modelling and field ecology. Applicants should have a MSc or Diploma degree in ecology or related disciplines and combine a strong interest and expertise in ecological modelling, plant-insect interactions, experimental field research, statistical data analysis (preferably in R) and scientific writing in English. Knowledge in plant and insect identification as well as programming software are highly valued. A driver license is required. The candidate is expected to work independently and to be able to integrate into an interdisciplinary and international team. The PhD position will be located at the Department of Animal Ecology and Tropical Biology (http://www.zoo3.biozentrum.uni-wuerzburg.de/en/) in close collaboration with the newly founded Center for Computational and Theoretical

Biology (CCTB), Biocenter, University of Würzburg, Germany. For further information, please contact Prof. Dr. Ingolf Steffan-Dewenter and Prof. Dr Juliano Sarmento Cabral.

Salary and conditions: Salary and benefits are according to public service positions in Germany (TVL 13/65%). Start date: **1st October 2016**. The position is for three years. The doctoral thesis will be done as a series of English manuscripts. We offer the membership in a leading research team, modern facilities and a structured graduate training program. Female scientists are particularly encouraged to apply. Disabled applicants will be preferentially considered in case of equivalent qualification.

Applications: Please send your application as a single pdf file per email to *ingolf.steffan@uni-wuerzburg.de* and *juliano.sarmento_cabral@uni-wuerzburg.de* latest until **31th July 2016**. Applications should include a cover letter, a short summary of research interests, CV, complete certificates, and the names (with email addresses) of two potential referees. Interviews of invited candidates will be held on 1st September 2016.

References:

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