Developing an Evaluation Tool for the assessment of the impact of large scale plantation systems on Biodiversity

DR. MARC COTTER

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The Xishuangbanna Prefecture in Yunnan Province (PR China) is facing increasing conflicts between rural development and nature conservation because of an ongoing expansion and commercialization of farming. The rapid development of large-scale farming and the improvement of infrastructure throughout the region are posing serious threats to the conservation of endemic species of flora and fauna, while also offering possibilities for enhancing the livelihood of rural populations to an extend never seen before. The expansion of rubber (*Hevea brasiliensis* Willd Ex A. Juss) has caused a reduction and fragmentation of natural and secondary forest cover, thereby decreasing structural and species diversity as well as the loss of valuable ecosystem services. Rural development and simultaneous environment conservation often face trade-offs, especially in regions that host an exceptionally high biodiversity, such as many tropical areas. In order to adequately consider and evaluate these interactions, tools and methods have to be developed that allow decision makers to assess the impacts of different management and infrastructure options on the environment.

The aim of the work presented in this talk was to analyze and evaluate the effect of large-scale rubber cultivation on local and regional biodiversity by developing methods to integrate field studies from various disciplines into a comprehensive assessment model. This model was then used to highlight key aspects of anthropogenic influence on the plant species composition within the research area and to identify possible impacts of alternative land use decisions. Furthermore, the development of an interdisciplinary approach to scientific scenario design methods has been supplemented with a study on the acceptance of 3D-visualization as communication tool for land use planning in the background of nature conservation sciences.

Dr. Marc Cotter, Institute of Plant Production and Agroecology in the Tropics and Subtropics, Universität Hohenheim, Garbenstr. 13, 70593 Stuttgart, email: cotter@uni-hohenheim.de