



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:
Socio-ecological transitions and bio-cultural shifts”

Enhancing Biodiversity – Identification of Conservation Corridors in a Plantation Dominated Landscape in the Mekong Region

LINDA HILGERS, PHILIP BECKSCHÄFER, CHRISTOPH KLEINN

University of Goettingen, Chair of Forest Inventory and Remote Sensing, Germany

Abstract

The rapid expansion of rubber tree plantations (*Hevea brasiliensis*) and cash crops across southern subtropical China puts high pressure on natural forests and their biodiversity. Xishuangbanna Prefecture in the South of Yunnan Province is particularly affected as here rubber monoculture plantations currently cover about 440,000 ha and have replaced large shares of traditional land use systems and natural rainforests over the past 40 years. Today, contiguous blocks of mature natural forest are confined to the prefecture’s nature reserves which are, however, isolated. Further, the ongoing transformation of the lands surrounding the reserves and the encroachment of plantations into them, continues to increase the separation of reserve dwelling plant and animal populations, impeding movements and interactions between them. In order to reconnect isolated populations, it is necessary to establish wildlife corridors that prepare the grounds for the dispersion of organisms. We identified potential wildlife corridors for three functional groups of species: (a) large mammals, (b) primates and (c) birds. Group specific resistance values that quantify the species’ likelihood to migrate through certain land cover were derived from a literature review and an up-to-date land cover map was employed for corridor mapping using least-cost models. The identified least cost paths clearly displayed the high degree of isolation of all reserves since none of the routes connected two reserves on the shortest way. Instead, the model primarily proposed detours integrating fragmented forest remnants into the corridors. Conservation corridors for large mammals corresponded mostly with those for primates, solely the corridors for birds differed. The corridors for primates had most similarities with both other groups and were therefore suggested to be appropriate for the greatest variety of species. Our results illustrate the high degree of isolation of nature reserves in Xishuangbanna and confirm the urgent need of reconnecting them through corridors in order to protect, preserve and enhance the remaining biodiversity and counteract the ecological threats from the expansion of rubber plantations.

Keywords: Cost-based corridor, land transformation, landscape connectivity, landscape resistance values, least-cost path, Linkage Mapper, rubber plantation, Xishuangbanna