
GC54A-06: Coupled social and ecological outcomes of land use change and agricultural intensification in Costa Rica and the future of biodiversity conservation in tropical agricultural regions.

Friday, 15 December 2017**17:15 - 17:30**📍 *New Orleans Ernest N. Morial Convention Center - 267-268*

Tropical ecosystem conversion to agriculture has caused widespread habitat loss and created fragmented landscapes composed of remnant forest patches embedded in a matrix of agricultural land uses. Non-traditional agricultural export (NTAE) crops such as pineapple are rapidly replacing multiuse landscapes characterized by a diverse matrix of pasture and smallholder crops with intensive, large-scale, monoculture plantations. Using an interdisciplinary approach, we conduct a case study to examine the coupled social and ecological implications of LUCC and agricultural intensification in this region, with larger application to regions experiencing similar patterns. Guided by frameworks from both political and landscape ecology, we: (1) describe the social and economic implications of pineapple expansion, specifically the concentration of land, labor and financial resources, (2) quantify pineapple cultivation's spatial characteristics, and (3) assess the effects of pineapple expansion on surrounding forest ecosystems, on the agricultural matrix and on biodiversity conservation. Our results indicate that pineapple production concentrates land, labor, and financial resources, which has a homogenizing effect on the agricultural economy in the study region. This constrains farm-based livelihoods, with larger implications for food security and agricultural diversity. Landscape ecology analyses further reveal how pineapple production simplifies and homogenizes the agricultural matrix between forest patches, which is likely to have a negative effect on biodiversity. To offset the effects of pineapple expansion on social and environmental systems, we recommend developing landscape level land use planning capacity. Furthermore, agricultural and conservation policy reform is needed to promote landscape heterogeneity and economic diversity within the agricultural sector. Our interdisciplinary research provides a detailed examination of the social and ecological impacts of agricultural intensification in a tropical landscape, and offers recommendations for improvement relevant not only to our study region but to the many other tropical landscapes currently undergoing non-traditional agricultural export driven agricultural intensification.

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