

Introduction

Land Use Dynamics in the Brazilian Amazon

Robert Walker

Department of Geography, Florida State University, 358 Bellamy Building, Tallahassee, FL 32306, USA

The articles presented in this special issue of *Ecological Economics* address the important theme of land use dynamics as it pertains to the Brazilian Amazon. Much environmental change is an ecological artifact of human agency, and such agency is often manifested in land use impacts, particularly in tropical areas. The critical problem of tropical deforestation is but one example of a land use dynamic; consequently, such problems are productively conceptualized in these terms. The present issue represents an explicit step in the direction of comprehending human encroachment into the tropical forest biome as a process of land use change. An attempt is also made to view forest environments in a humanized light. Anthropologists and at least one economic historian have long recognized that tropical forests have been inhabited by people for quite some time, without long-term degradation of the biome.

This Special Issue leads off with a paper by Serrão, Nepstad and Walker, who set the stage with a general discussion of agricultural and forestry development in the Amazon. Serrão and his co-authors consider the main agricultural systems in the region and their aggregate impacts. They then consider prospects for improving the sustainability of these systems, and note the importance of democratic action in developing awareness of the importance of ecological conservation.

Three articles then follow describing in empirical detail ground-level processes and circumstances of farmers in the Amazon region. Smith, Falesi, Alvim and Serrão provide a definitive account of current agroforestry components of small producer systems

in the Amazon basin. Presenting data from a survey of 136 polycultural fields with perennials, Smith and his co-authors identify 108 agroforestry configurations involving 72 crops. Scatena complements this work by describing rotation cycles of small producers. Scatena and his co-workers undertook detailed surveys of 68 small producers in the vicinity of Santarem (State of Para) and examined relationships between ages of secondary growth and crop types. They pose a hypothetical model linking household characteristics and conditions in the physical environment to farm system structure and evolution. Moran, Packer, Brondizio and Tucker focus on successional processes in a study site near Altamira (State of Para). Using remotely-sensed, satellite imagery (Thematic Mapper), Moran's team documents extensive succession in the region, a perhaps unexpected phenomenon given widespread concern for tropical deforestation. They also present evidence of an important link between land use history and the pace of secondary succession.

The issue concludes with two theoretical pieces. Beaumont and Walker address the policy issue of property rights and resource degradation, adapted to the case of small producers. Using a supercomputer, Beaumont and Walker show that the prevailing wisdom regarding the alleged superiority of private property in encouraging resource conservation is highly dependent on conditions in the economic environment, as well as on the quality of the resource base. Finally, Walker and Homma consider small producers in a dynamic context. Walker and Homma apply the domestic cycle literature from

anthropology to farm-level decision-making; they also situate small producer behavior within a structural context by addressing land concentration processes and by considering the possible applicability of bid rent-oriented theories (e.g., Von Thunen; Alonso) to the case of tropical deforestation.

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