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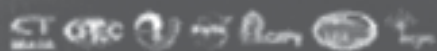
Experimento de Grande Escala
da Biosfera-Atmosfera na Amazônia

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Centro de Convenções Studio 5,
Av. Rodrigo Otávio, 3555 - Distrito Industrial
Fone: (092) 216-3555 Manaus/AM

Organização:
Secretaria da Conferência
MA - Secretaria Regional de Manaus - SREMA
E-mail: lba2conf@lba.gov.br
Tel: (92) 216-2200 - Manaus - (92) 441-2216
Manaus - AM - Brasil



HUMAN DIMENSIONS AND METRICS OF LANDSCAPE CHANGE IN RONDÔNIA, BRAZILIAN AMAZON

Mateus Batistella*, Emilio F. Moran, and Eduardo S. Brondizio

*Embrapa Satellite Monitoring
Av. Dr. Júlio Soares de Arruda, 803
13088-300 Campinas, SP

E-mail: mb@cnpm.embrapa.br

Deforestation and colonization processes within the Brazilian Amazon have attracted substantial attention since the early 1970s. The phenomenon has been associated with issues related to global change, alteration of biogeochemical cycles, land-use/land-cover (LULC) dynamics, and biodiversity losses. This paper focuses on an area of approximately 3,000 km² within the State of Rondônia in western Amazon. Two adjacent settlements of similar age, biophysical features, and assets among colonists were compared to assess the role of their different architectural and institutional designs in landscape change. Vale do Anari was planned following an orthogonal road network system. Machadinho d'Oeste was designed with attention to topography in laying out the grid of farm properties and included communal reserves with right-of-use to local rubber tappers. Field research was undertaken in conjunction with the use of multi-temporal remotely sensed data (1988-1998), GIS integration, and landscape ecology methods. The results indicate that the communal reserves play an important role in maintaining lower levels of fragmentation in Machadinho, where 66% of forest cover remained in 1998 (after 15 years of colonization), in comparison with just 51% in Anari. Without the reserves, forest cover in Machadinho is also 51%. Also, pasture conversion is more significant in the fishbone scheme of Anari. Analyses of landscape structure confirmed that Machadinho is less fragmented, more complex, and more interspersed. The combination of privately based decisions for the properties and community-based decisions for the reserves clearly indicates that this architectural and institutional design can produce positive social and environmental outcomes.