

LCLUC/LBA Project entitled "Anthropogenic land-use change and the dynamics of Amazon forest biomass", operated by the Smithsonian Institution and the Biological Dynamics of Forest Fragments Project, is undertaking the following specific activities in the year 2001:

- 1) Integrate high-resolution videography imagery of our study area (produced by a collaborating research team at the University of Massachusetts) with ground-based measurements of forest structure and biomass, within intact, fragmented, and secondary forests. The objective of this work is to test the efficacy of high-resolution videography as a tool for conducting rapid inventories of Amazon forest biomass and disturbance intensity (investigators: Dana Slaymaker, Andrew Murcher, Eduardo Ventincinque, Chris Hayward, William Laurance).
- 2) Produce a high-quality chronosequence of secondary vegetation types in the central Amazonian region based on Landsat TM imagery from 1983 to the present. These data will be used in concert with extensive field samples of forest biomass to assess the influence of forest age, disturbance history, and proximity to primary forest on the trajectory of biomass accumulation and species composition in Amazonian secondary forests (investigators: Rita Mesquita, Marc Steininger, Scott Bergen, Bruce Williamson, Andrew Murcher).
- 3) Conduct a detailed comparison of the impacts of regulated vs. unregulated commercial logging operations on aboveground biomass and forest architecture in the central Amazon (investigators: Carlos Rittl, William Laurance).
- 4) Complete an investigation of the carbon dynamics of coarse wood debris in fragmented and continuous forests in the BDFFP study area (investigators: Henrique Nascimento, William Laurance).
- 5) Complete studies on the incremental growth and biomass accumulation of marked trees in 20 large transects in secondary forests established in early 1999, and a further 10 transects established in mid-2000 (investigators: Rita Mesquita, Bruce Williamson, Marcelo Moreira).
- 6) Assess the impacts of floristic changes (particularly a general shift from densely wooded old-growth species to light-wooded pioneers) on aboveground biomass in Amazonian forest fragments (investigators: William Laurance, Susan Laurance, Sammya d'Angelo, Ana Andrade).
- 7) Complete an ongoing study of litterfall rates and factors influencing litter decomposition in fragmented and continuous Amazonian forests (investigators: Heraldo Vasconcelos, Adriana Rubinstein).
- 8) Complete a detailed, GIS-based investigation of major development trends, deforestation, and spatial patterns of forest fragmentation in the Brazilian Amazon. This study is providing vital insights into the impacts of major new infrastructure and

transportation projects on Amazonian forests (investigators: William Laurance, Andrew Murcher, Mark Cochrane, Philip Fearnside, Scott Bergen, Patricia Delamonica, Sammya d'Angelo, Tito Fernandes, Chris Barber).

9) Conduct long-term analyses of the biomass dynamics of tree and liana communities in fragmented vs. continuous Amazonian forests, based on extensive permanent plot data for >65,000 trees (investigators: William Laurance, Susan Laurance, Sammya d'Angelo).

10) Continue a long-term study of aboveground biomass dynamics in intact Amazonian forests in order to test the hypothesis that these forests are functioning as a major carbon sink (investigators: William Laurance, Susan Laurance, Sammya d'Angelo).

11) Assess the interaction of fire and forest fragmentation in eastern Amazonian forests using multitemporal analyses of Landsat TM imagery. Develop predictive models of fire return frequency based on parameters such as fragment area and shape (investigators: Mark Cochrane, William Laurance).