

Revegetation of Deforested Areas in the Poço das Antas Biological Reserve, Rio de Janeiro

Dionízio M. Pessamílio, Director, Poço das Antas Biological Reserve, Caixa Postal 113049, 28820-000 Silva Jardim, Rio de Janeiro, Brazil.

Introduction

For some years now, studies of the golden lion tamarin, *Leontopithecus rosalia*, have shown that the Poço das Antas Biological Reserve has insufficient forest to maintain a viable population of the species (Green, 1980; Kleiman *et al.*, 1986; Seal *et al.*, 1990). This is especially serious considering that this is the largest forested area maintaining a wild population of this species. Nearly half of the Reserve's 5,500 ha consists of vegetation which is inappropriate for lion tamarins. For this reason, the Brazilian Institute for the Environment and Renewable Natural Resources (Ibama), responsible for the maintenance and protection of the Reserve (Brazil, MA/IBDF/FBCN, 1981), has been developing a series of projects in conjunction with the Golden Lion Tamarin Conservation Program of the National Zoological Park, Washington, D.C., to promote natural recovery processes as well as direct planting to increase the area of forest in the mid- to long-term.

Research and Reforestation Programs

The first reforestation program was begun by Suzanne Kolb, University of Georgia, Athens, in late 1989, financed by the Golden Lion Tamarin Conservation Program and the World Wildlife Fund - US (Kolb, 1992, 1993). The main concerns of the study included not only increasing the suitable habitat for lion tamarins, but also reforestation as a means of reducing the frequency and extent savanna fires, common during the dry season. The initial stages of the project included investigation on the role of isolated patches of secondary growth in old pastures. It was found that they were important regeneration foci, that they were increasing in size, and that closed canopy patches were more effective for seed germination than open canopy patches. This resulted in a second stage of the Project (1991-1992) examining the more cost-effective strategy of planting islands of native trees rather than uniformly spaced seedlings.

1993 saw the start of the "Revegetation Project for Poço das Antas", following on from the research of Suzanne Kolb, and coordinated by researchers and technicians from the Rio de Janeiro Botanical Garden (administered by Ibama) in collaboration with the Margaret Mee Foundation, Rio de Janeiro. This involves 12 research projects and programs in the following areas: floristics and phytosociology; animal-plant interactions; secondary succession; wood anatomy; the development of an information and service center; phenology and seed collections; seed conservation; population dynamics; ecophysiology; revegetation; mapping of the Reserve; and ecophysiology of vegetation in inundated areas.

This major research and revegetation program is being financed by Shell do Brasil S.A., The John D. and Catherine T. MacArthur Foundation, the Brazil Science Council (CNPq) and the Fundação o Boticário para Conservação da Natureza. In addition, the forest engineering company Biovert Florestal e Agrícola Ltda. has submitted a proposal to the Botanical Garden and World Wildlife Fund - US, which involves the planting of 300 ha of native forest trees free of charge.

Fire Prevention

Successive fires, principally in the peatbogs covering part of the Reserve, have prevented forest regeneration over hundreds of hectares. Combatting fires in these peaty soils is impossible due to difficulties of access and the fact that the fires smoulder up to one meter below ground. To resolve this, a revegetation project is underway involving a strip of 3,000 x 50 m along the Aldeia Velha canal, to act as a barrier to fires which spread from neighboring ranches.

The damaging extent of the fires over recent years, and the threat they pose to the forest habitat of the golden lion tamarins, has resulted in international interest in establishing a fire prevention system, including the participation of the US Forest Service and NASA. The

Reserve now has a meteorological station, and is also well stocked with fire-fighting equipment, including look-out towers and fixed and portable radio-telephones. Reserve personnel have undergone training courses in Brazil and overseas.

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