

Project Update: February 2006

This Park constitutes a distinct and unique protected area, not only because of the intrinsic value and beauty of its scenario, but also for being one of the biggest and most diverse protected areas in Argentina, that is connected to other protected areas (Urugua-í Provincial Park, located in Misiones Province and Iguazu National Park in Brazil).

The first part of this project, by which we studied forest structure and dynamics as affected by bamboo grasses invasion, is almost finished. We made a great contribution to forest ecology, and information gathered was found very useful not only for the management of protected areas but also for timber production in Misiones. We measured bamboo and tree seedlings and saplings abundance and growth, microclimatic conditions in the forests, nutrients, light and water availability for plants species. In order to assess factors contributing to the invasive behaviour and success of bamboo we are also studying bamboo population ecology and ecophysiology.

For these reason we planted two bamboos species on 40 already fertilized permanent plots in the National Reserve of the Iguazú National Park. These plots were installed by me and other researchers belonging to the "Funcional Ecology lab" to study nutrient control over ecosystem processes and plant ecophysiology. Plots are subjected to 4 nutrients treatments (N, P, N+P, and Control) in 2 contrasting light situations in the forest environment (gaps and closed-canopy sites). During this year we will measure and harvest plants under treatments and estimate growth rates for both bamboo species, as well as physiological and morphological characteristics of plants that determine the success of these invasive species.

The objective of the second part of this project, started on October 2005, was to applied restoration techniques to a degraded primary forest inside Iguazú National Park. The practices we proposed for this area were strictly based on scientific knowledge of ecosystem functioning and processes. Some of the activities involve bamboo cutting and removal from gaps, planting sun adapted native tree species, and attracting animals that may help in seed dispersal of forest species. The restored area of 5 hectares was subjected to severe selective extraction before the protected area was created 70 years ago. Other 5 hectares area, contiguous to the restored area, will serve as control for monitoring purposes. Plots are being installed according to MAB-UNESCO program for permanent plots (Dallmeier 1992). The 10 has are very accessible for people visiting the National Park (only 898.000 persons visited the park during 2004). With the help of the National Park Administration employees, we are planning to implement a demonstrative area open to tourists, students, farmers, people working on timber extraction, foresters, land managers and public in general making this project an excellent opportunity not only for interacting and developing relationships with local community throughout the region and showing scientist's work, but also for helping to recognize forest intrinsic value and promote its conservation.

The large remaining area of continuous forest placed in Misiones plays a critical role in the conservation of the Atlantic Forest. However, the forests in Misiones province, even in protected areas, have experienced selective logging. This kind of management alters gap size and dynamics, creating environmental conditions that favour growth and development of native invasive plants that arrest succession in gaps changing forest structure and

functioning. For this reason the selective extraction and the maintenance of protect areas is not sustainable over time, and hard restoration strategies and management practices conducted to reduce the abundance of the invasive species are necessary to enhance tropical rainforest diversity and in order to sustainable use forest resources in the long term.

