

Iracambi Atlantic Rainforest Research and Conservation Center

Research Priorities

Background

The Atlantic Rainforest, recognized as one of forests having the greatest biodiversity in Latin America, has only 7% of its once 1.2 million square kilometers of forest expanse remaining. Despite government measures to secure its protection, the forest continues to be degraded and deforested due to a self-perpetuating cycle of poverty whereby small farmers are forced to cut forest edges to sustain their livelihoods. Deforestation further degrades the land, forcing farmers to clear more land, and causing erosion, loss of soil fertility and biodiversity, and increasing pressure on water resources.

The Iracambi Atlantic Rainforest Research and Conservation Center carries out applied research into the causes of deforestation and land degradation. The particular emphasis of our work lies in not only identifying possible solutions but also in seeking to apply them. Recognizing that local populations must be integrated into conservation movements if they are to be successful, Iracambi works with local farmers to devise strategies that make conservation of the land most attractive than its destruction.

In its 12 years of operation as a sustainable farm and reserve in the Atlantic Rainforest, Iracambi has established a solid foundation for protection and conservation of the forest. We have set up a dairy operation using modern methods of pasture, herd, and dairy management, pioneered the introduction of fish raising, set up a harvestable timber plantation and planted hundreds of native species trees to enrich our forests. Since the Research Center was set up in January 2000 we have created an environmental education program for the 1000 school children in the municipal district, built a system of trails in the forest, built a classroom and laboratory, set up a Medicinal Plants project, created the first GIS project in the area and carried out preliminary research into forest biodiversity and land use. Iracambi has also forged both national and international research partnerships with the Smithsonian Institution and the Federal University of Viçosa. Iracambi is currently putting together a team of researchers, volunteers, and members from the local community to engage in a mutual process of problem-sharing, research, and learning. Our aims are to develop solutions to locally identified problems critical in causing land degradation and increasing poverty; to strengthen local capacity to analyze opportunities and constraints to development, to provide on-the-job training to increase agricultural sustainability and to improve income generation among our rural neighbors.

We are inviting partnerships from institutions interested in working with Iracambi on the pressing problems of small farmers in the rainforest region, and apply for funding to support the project. We are seeking funding to create fellowships for graduate or post-graduate students to conduct their thesis work at Iracambi. In addition, we will bring in volunteer research assistants under our existing volunteer program to work on specific aspect of the research (especially data gathering) who will pay a fee to support the program.

We have four priority areas of research: a socioeconomic study, agroforestry, income generating alternatives, and a land use study.

Research Area #1: Community Engagement

Background:

Whatever changes that are needed to ensure the sustainability of the ecosystem must be made by the community that lives in it. To understand how these changes can be brought about, we need to have a systematic sociological profile of the community: to understand what the issues are at community level, how the community itself can change things and how Iracambi can assist the process.

Objective: To understand the social, political, cultural, and economic factors which influence decision-making within the community; to understand what changes need to take place and to devise appropriate methods to bring such change about. The research will focus on:

- a. Analysis of the socio-political environment policies on the national and local level (forest conservation laws, tenure issues, policies affecting land management);
- b. Analysis of potential assets within the community. (i.e. human capital, natural capital, financial, physical, social networks (groups, trusts, NGOs, etc);

- c. Analysis of anthropological factors (gender, family, culture) and their effect on attitudes to land conservation;
- d. Constraints facing farmers, especially economic constraints arising from the decline in coffee prices.
- e. The effect of inheritance laws on land fragmentation;
- f. Attitudes towards forest and forest conservation;
- g. Analysis of how these factors that determine present land management decisions;
- h. Identifying potentials for conflict resolution;
- i. Identifying opportunities for change.

Outcome

A snapshot of the socio-economic situation of the small scale farmers in the project area;
 Identification of principal socio-economic opportunities, constraints;
 Policy recommendations.

Research Area #2: Forest Restoration

Background: The natural balance of forests and productive land use needs to be restored, in such a way that the demands of productive farming and forest conservation no longer conflict. We must devise ways that allow the forest to contribute to their sustainable livelihoods. We need to determine how agriculture can be linked with forest management by combining the use of natural forest trees with agricultural production. Use of native species as shade in coffee, interplanting rapid growth exotics with native trees, use of trees in pasture, planting coffee or fruit trees in forest fragments are some of the alternatives we aim to investigate.

Objective: To devise alternative land management schemes which make conservation of the rain forest more economically attractive than its destruction. The focus will be on:

- j. Providing more protein in pastures while maintaining soil fertility by investigating the potential of planting certain tree species in pasture to provide more protein;
- k. Improving coffee production by maintaining soil fertility on the slopes;
- l. Analyzing the capacity of existing eucalyptus plantations to act as cover for the introduction of native species;
- m. Evaluating the effects of native leguminous tree species on soil fertility and fodder productivity potential.
- n. Determine the potential for reconstituting forests by the use of forest corridors. Define a methodology for this, based on farmers' needs as well as the technical requirements of such corridors, (what species of trees should be used, how and where they should be planted etc);

Outcome

Appropriate technology for the incorporating of trees into agricultural and pastoral activities;
 Low cost technology for the constituting forest corridors

Research Area #3: Income Generating Alternatives

Background: Developing additional income sources will be a major factor in influencing farmer's attitudes towards conserving forests. If the forest could provide additional revenue, this could be the deciding factor as to whether a farmer will cut down or preserve.

One such alternative, on which Iracambi is already working, is medicinal plants. Hundreds of plants in the rainforest have recognized medicinal properties, and many more are traditionally used, but have not been scientifically evaluated. We aim to identify the plants by drawing on local knowledge and scientific research, and determine how they can be harvested and marketed for a profit, creating an incentive to keep the forest intact.

Objective: To create an alternative and viable method of income generation by identifying, researching and marketing medicinal plants native to the rainforest as well as adding value by creating a line of medicinal products. The focus will be on:

- o. Identifying other income generating potentials (such as hearts of palm, ornamental plants);
- p. Continuing our research on identifying the existing and potential medicinal plants, and how they may be sustainably grown, processed, harvested, packaged, and marketed.

Outcome

Recommendations for the production and marketing of medicinal plants;
Development of other forest-derived product lines.

Research Area #4: Land Use Planning

Background: Iracambi lies in the area that has the largest remnant of the Atlantic Rainforest in Minas Gerais, the core of which is the Serra do Brigadeiro State Park, about 13,000 hectares. In addition, there are three municipal conservation areas, plus Iracambi’s own private reserve. To date, no systematic plan has been made as to how these areas should be conserved and of what could or should be done to conserve the many other fragments outside the declared conservation areas.

Iracambi is working with local farmers to identify existing land use and catalog the forest fragments with the object of supporting local government in the elaboration of a land use plan. Iracambi has already built up a Geographic Information System (GIS) covering its own land, and is now working on extending this to the surrounding area. We aim eventually to cover the whole 200 km sq of Iracambi’s area of influence.

Objective: To map the region according to land use and soil types, and to inventory the biodiversity in remaining forest fragments in order to create a land management scheme for rehabilitating degraded lands. The focus of the work will be on:

- q. Mapping current and potential land use; identify remaining forest fragments and land and water resource degradation hot-spots;
- r. Evaluating alternative uses that enhance the potential for rehabilitation;
- s. Identifying critical fragments and patches of degraded lands with a view to acquiring them and putting them under conservation management;
- t. Studying population dynamics and do inventories of existing forest fragments to determine which patches hold the largest biodiversity and population sizes;
- u. Assisting local Government in preparing a plan that indicates measures and policies that will synchronize sustainable smallholder livelihoods and conservation.

Outcome

A sustainable development land use plan;
A biodiversity conservation plan;
A snapshot of current land use;
A snapshot of the current state of biodiversity conservation, both to be a baseline for monitoring future changes.

Resources available

Physical Facilities

The Iracambi Research Center has accommodation for 10 researchers for whom board and lodging is provided. It has telephone and internet access, a small laboratory, and a classroom. It is situated on a working farm with 200ha of its own forest in various phases of regeneration, including 70 ha of primary forest in a private reserve. It is close to the Serra do Brigadeiro State Park with over 13,000 ha of forest.

Human resources

The project directors, Robin Le Breton and Dr. James Bryan bring a wealth of practical experience to the project. Mr Le Breton worked internationally for many years in natural resource management with the World Bank; in his twelve years of practical field experience at Iracambi he has sought to combine the development of the farm with the conservation needs of the region and the economic needs of local farmers. Dr Bryan has been Program Director at the Tropical Resources Institute at the Yale School of Forestry for the past five years, helping students develop their research programs. He is a specialist in nitrogen fixation for forest

restoration who also has extensive experience managing education programs for difficult learners. The Medicinal Plants Project is coordinated by Eleanor Gallia, a practicing medical herbalist. Iracambi plays an active part in community affairs, and has been working for some time with the local partners it plans to include in the project: the Federal University of Vicosa, the Federal Technical Agricultural School at Rio Pomba, the Centro de Tecnologias Alternativas at Viçosa, the state forestry and agricultural extension agencies, local farmers associations, the Municipal Economic Development Council (currently chaired by one of Iracambi's directors) and the rural workers union. The Iracambi team will be reinforced by students from the university of Viçosa and the Technical Agricultural School in Rio Pomba, and will also count on the energy, enthusiasm and skills of its conservation volunteers and the widespread support of the local community.

ANNEX 1
Community Characterisation

PRA
Sociological survey
Data collation
Meeting facilitators

ANNEX 2
Agroforestry Program

Trials of tree species
Soil fertility studies
Coffee shade study
Farm trials
Farmers meetings
Collaborative program with EMBRAPA

ANNEX 3
Income Generating Research Proposal

Econioca
Market survey
Product study
Chemical trials
Farmers meetings
Desk research
Plants trials
 Bromeliads
 Palmito
Ethnobotanical survey

ANNEX 4
Land Management Research Program

Project Coordination:
Technical Supervision
Partners:

National Graduate researchers
National Student interns

International Graduate Researchers
International Student Interns
International Volunteer Researchers

Aerial photography
Mapping
GIS

Surveys:
 Topographical
 Botanical
 Dendrological
 Zoological
 Hidrological
 Pedological

Soil analysis

Stakeholder meetings

Planning:
 Conservation Areas
 Land Use
 Water resources