

ECODEVELOPMENT PROJECT
SIERRA DE LAS MINAS BIOSPHERE RESERVE

1994 Project Highlights and
1995 Summary Work Plan and Proposal

Prepared by
Defensores de la Naturaleza and World Wildlife Fund

January 1995

PROJECT BACKGROUND

The Sierra de las Minas Biosphere Reserve lies in northeastern Guatemala, with an area of approximately 250,000 hectares of rugged mountainous terrain. It is extremely rich biologically, encompassing seven life zones and species-rich cloud forests. The area is naturally divided into three distinct zones, both by topography and access, that lie on three sides of the Sierra: the northern zone (the Polochic River Valley) inhabited primarily by subsistence farming Kekchí indians on the lower slopes of the Sierra, with large plantation agriculture in the valley below; the western zone of Chilascó, a high plain area abutted by cloud forest and dominated by intensive vegetable production and some subsistence agriculture; and the southern side of the Sierra (the Motagua River Valley), populated primarily by latinos, with higher population densities, subsistence agriculture on the upper slopes, plantation agriculture and agroindustry in the valley below, and scattered industrial development along the road to the Atlantic.

There are more than 100 settlements in and around the Sierra and many thousands of people depend on its resources. In addition to its numerous natural resources, the Sierra is the last extensive montane forest tract in this region of Guatemala and, consequently, plays an extremely important role in producing and safeguarding the vital water supply for the communities in the lower valleys. The area has come under increasing threat in recent years due to human and economic pressures for timber and agricultural land.

WWF's involvement in the area began in early 1989 after passage of legislation defining 44 priority areas, including Sierra de las Minas, to be protected in Guatemala. WWF provided support to Defensores de la Naturaleza, a Guatemalan non-governmental organization long interested in the area, to complete the technical studies of the area required for its official establishment as a Biosphere Reserve by the Guatemalan Congress. The study was completed and Congress decreed the establishment of the Reserve in October 1990.

Overall management authority for the Reserve was delegated to Defensores de la Naturaleza in recognition of their role in creating the Reserve and expertise. An interinstitutional governing commission was established to oversee the Reserve's administration. The framework management plan for the Reserve has as its principal objectives: to protect the biodiversity and forests of the Sierra; to maintain and improve the watershed functions of the Sierra; to improve the quality of life for local residents in accordance with sustainable utilization of the natural resources of the area; and to promote scientific research in the Sierra.

Since the establishment of the Reserve, WWF has been working with Defensores to design and implement an integrated program

linking community-based, environmentally-sound development with the protection of biological diversity and management of natural resources in and around the Reserve. Through the Ecodevelopment Project, Defensores is working closely with the communities and residents of the Reserve to introduce alternative agricultural and forest resource management practices, strengthen women's roles in family nutrition, hygiene, and household production, and increase awareness of the importance of sustainable development practices in the Reserve through a program of environmental education targeting local communities and decisionmakers in the Sierra. The project is particularly important as a demonstration of mixed sector management of a public protected area.

1994 PROJECT HIGHLIGHTS

Several notable events and project highlights occurred during calendar year 1994. First among these was the consolidation of personnel working in the Ecodevelopment Project. Defensores believes that each staff member of the Ecodevelopment Project plays an integral and indispensable role toward meeting the project's objectives. They have been aiming to achieve a stable workforce that can work efficiently and with a clear commitment to the communities of the Reserve. Defensores made an express effort during 1994 to recruit new staff from the region best suited to their tasks. Significant time was invested by Defensores in reviewing resumes, interviewing candidates, and in involving decisionmakers at different levels in the recruitment process. The resulting mix of staff seems extremely well-positioned to make a significant impact throughout the Reserve.

In addition to consolidating the workforce, Defensores has improved the administration of the Reserve by clarifying implementation, supervision, and reporting functions of all project staff. This has helped to improve the information flow among staff as well as result in a more efficient allocation of supervisor's time. The addition of technical (thematic) advisors to the staff in the areas of resource protection and environmental education has resulted in better integration of project activities and a more consistent message delivered by the extensionists and resource guards. A continuing dialogue and workshop with World Neighbors on strategies for managing field extension staff, as well as discussion on the operating framework for the women's development and environmental components, have all contributed to improving project administration and field effectiveness.

During 1994 Defensores expanded the work of the Ecodevelopment Project to several new areas. The Matanzas District was established dividing the Polochic District in two administrative units. The western zone (renamed the Matanzas District), and the eastern zone (remaining the Polochic District)

will make possible a more effective deployment of Defensores staff in the Polochic region. New work in the Matanzas District was initiated with an excellent reception by the communities in the Jalauté and Monte Blanco sectors via the hiring of a new technical supervisor for the district. New work in the Morazán sector of the Chilascó District was begun in the southwest corner of the Reserve with two new extension workers (agricultural and women's development). The community of Mal Paso in the Río Hondo sector of Motagua achieved the most impressive results in terms of community participation, achieving 90 percent participation in the project in one year.

Finally, Defensores initiated a participatory planning and evaluation process in the latter part of 1994 seeking to systematize its planning and to achieve the active involvement by the communities of the Reserve in evaluating progress and defining targets. This process - involving training of field staff; community-based planning and evaluation workshops using maps, transects, and focal groups; data analysis; staff-based workshops to review results; and presentation to Defensores' Board of Directors - proved to be an extremely useful tool. It has given Defensores a more realistic means of evaluating the usefulness of technologies it is promoting as well as its extension methods. It also served to establish a stronger bond and commitment between the communities of the Reserve and project staff, as well as strengthen the team approach among the staff. Finally, Defensores believes that the participatory planning process has led to the preparation of a work plan for 1995 that is realistic, achievable, and truly reflective of conservation and sustainable development needs as they pertain to the Reserve.

WORK PLAN FOR 1995

The four principal components of the Ecodevelopment Project (i.e., sustainable agriculture, integrated women's development, environmental education, and community forestry), are described below along with the main activities planned for 1995.

1. Sustainable Agriculture

• Objectives

The Sustainable Agriculture Program works with local farmers to achieve sustained increases in the production of basic crops in order to better meet consumptions needs and replace traditional slash and burn farming practices with methods that are more sound, both environmentally and economically. Through increased adoption of improved farming practices, the project hopes to check the advance of the agricultural frontier into forested lands. This component began in 1991 in the Polochic District and was extended in 1993 to the other two districts.

The program promotes improved soil conservation practices as well as increased use of agroforestry with the aim of achieving lasting improvements in agricultural productivity as well as to increase the availability of agroforestry products such as wood and fodder. The project also seeks to reduce the use of agrochemicals by promoting organic farming and pest management practices.

- Methodology and Strategy

The methodology used for agricultural extension by Defensores is based on a combination of activities that foster reflection on the part of local farmers on the past, present, and future situation regarding the quality of the land, natural resources, and agricultural production in Sierra de las Minas. Technological alternatives to improve soil conservation and productivity are introduced through a combination of household visits, technical assistance, lectures, demonstrations, field trips, and joint collaboration between farmers and local extension workers to implement sustainable agricultural practices. Site visits are made periodically and are predicated on the "learn by doing" or experiential learning method, in which the extensionists work directly with each farmer to develop a work plan for the farm. In addition, the extension workers will organize workshops in which farmers can meet to discuss their results, experiences, and suggestions regarding the work.

Extension activities are planned around the cropping cycle, beginning with soil conservation measures such as minimal contour tillage and dry organic barriers in the dry season (November through May). Live barriers or fences and green fertilizers are introduced at the start of the rainy season, followed by application of organic fertilizers and pest control. At the end of the cropping cycle, participatory workshops between farmers and extension workers are conducted to evaluate results and plan activities for the coming year.

The sustainable agricultural program will continue to emphasize basic soil conservation technologies (including contour tillage, live fences and dead barriers, and composting). These techniques have proven to be an important deterrent to erosion in the sloped fields of the lower parts of the Reserve and are well accepted by local farmers. Agroforestry practices such as live fences, alley cropping, perennial crops (coffee and cardamon), and dispersed planting of multiple-use trees have also shown to have high rates of adoption, especially in the Motagua and Chilasco Districts.

- Training

Training needs for the local extensionists were determined through both the participatory planning process carried out in

late 1994 and district-level workshops with the extensionists. Training planned for 1995 will focus on improved soil conservation practices for the new extension workers, and will be given by the district coordinators and extensionists during monthly district meetings. Additional training in extension methodologies and integrated pest management will be given to all field staff. The latter courses are part of an ongoing training program in sustainable resource management which is being carried out in the northern region of the Sierra (Telemán) in Q'eqchi, and in the southern region (Salamá) in Spanish.

Other training activities planned for 1995 include orientation for the district coordinators and technicians in training methods (given by ALTERTEC, a NGO specializing in organic agriculture and training methods for campesinos and technicians), a project exchange visit to Honduras to several projects of interest (PRODAI, PACA-CARE, Bosque Latifoliado, COSECHA, Zamarano and Cidico), and consulting visits to the Reserve by staff of COSECHA (soil conservation and extension methodologies) and ALTERTEC (organic agriculture and medicinal plants).

• Coverage and Personnel

Work during 1995 will attempt to further integrate efforts on sustainable agriculture with those on women's development and environmental education, especially in communities where the project has already established a solid presence. Defensores's experience is that more rapid and significant improvements in community-based conservation and development are realized when entire families can be targeted through an integrated program (i.e., farmers through sustainable agriculture, women through women's development, and children through environmental education). The participatory planning process carried out in the latter part of 1994 has enabled the project to establish clear commitments with 445 farmers in 45 communities. Defensores currently has 13 people working full-time and 9 part-time on the sustainable agriculture component. Funding from WWF and the Ortenberg Foundation will cover 6 full-time salaries and 1 part-time salary.

2. Integrated Women's Development

• Objectives

The importance of women in the transmission of values to their children as well as in influencing decisions affecting resource use is undisputed. Likewise, family quality of life related to health and nutrition stems from decisions and practices carried out by women. The Ecodevelopment Project believes it is crucial to strengthen and reinforce the

participation of women in activities that can ultimately serve to improve conservation and development for the residents of the Reserve.

The Integrated Women's Development Program has four key objectives in which it seeks to strengthen participation by women: 1) improve family nutrition through promotion of family gardens, emphasizing native plants and food preparation to maximize nutritional value; 2) improve family health through use of medicinal plants, improved hygiene, and children's vaccination programs; 3) promote women's organization and involvement in domestic production activities for self-sufficiency and increased incomes; and 4) inform women about the objectives of the Reserve and their role in conservation and sustainable resource use. This program began in 1991 in the Polochic district and, based on the favorable reception of the project by women in the initial communities, the project was expanded to new communities in the Polochic and Motagua districts in 1993 and Chilascó and Matanzas in 1994.

- Methodology and Strategy

Work is carried out through the organization of women's groups who meet with Defensores' women extension workers to define their needs and subsequent activities. A strategic workshop was carried out during September 1994 by the extension workers which led to a detailed workplan for 1995. Key elements and activities identified include:

- Family Gardens - improve soil fertility through soil conservation practices, promote raising of domestic animals, and cultivate medicinal plants and vegetables.
- Family Nutrition - evaluate main nutritional problems in communities, identify commonly used plants to determine their potential to resolve nutritional deficiencies, and promote their widespread use through family gardens, demonstrations of food preparation and recipes, and nutritional training.
- Family Health - prioritize family health problems, investigate role of local cures and medicinal plants in providing adequate treatment, identify medicinal plants used and available locally, collect plants and vegetative material, and promote the use of medicinal plants.
- Domestic Production - continue working in women's groups in productive activities including bread baking, weaving and tailoring, and small animal production. Activities such as these have already demonstrated improved household economic returns, either through

local sales or savings in what would previously have been purchased. In several cases, women's groups have initiated spinoff projects such as a bakery or group savings account.

- Environmental Education - address themes relating to the management of the Reserve including conservation of soil, water, and forest resources, threats to the Reserve, and the role of Defensores in implementing a management plan - through lectures, videos, and field trips.

- Training

Defensores organized a "Women's Week" in September 1994, to promote the exchange of ideas and experiences among extensionists working with women's groups, to provide training, and to refine the strategy for 1995 (as outlined above). This type of event was extremely successful, and two such events are being planned for 1995 in the Polochic and Motagua Districts. In addition, the women's extension workers will continue to participate in the Sustainable Resource Management Training Program, which in their case is oriented to work on family gardens.

Further training needs have been identified on the use of native plants for medicinal and nutritional purposes. Beginning in December 1994, the first inventory of such plants will be carried out in the Motagua District with technical assistance provided by a German biologist.

- Coverage and Personnel

During 1994, the Women's Development Program reached 17 communities (280 women participated), with 1 full-time and 2 part-time extensionists, 1 Peace Corps Volunteer, 1 teacher (part-time) and 2 homemakers participating as extension workers. The project will expand activities to 21 communities in 1995 with the same personnel. Funds from WWF and the Ortenberg Foundation will compensate 5 of the people working in this component.

3. Community Forestry

- Objectives

Forestry in the Sierra de las Minas Biosphere Reserve has been a traditional factor in the loss and degradation of the Reserve's forest resources with consequent impacts on biodiversity. The undervaluation of the forest in economic terms has contributed to the replacement of forest cover by agricultural crops and cattle. Despite this situation, the communities of the Sierra have begun to show an increased

interest in protecting the natural forest due to its importance in regulating the hydrological cycle. They have also shown greater interest in reforesting degraded lands with tree species that can provide firewood and timber. This favorable situation gave rise to the establishment of a Community Forestry Program as part of Defensores' strategy for ecodevelopment.

Beginning in 1993, WWF began working with Defensores to develop a community forestry initiative to promote ecologically and socially sustainable use of forest resources within the multiple-use, buffer, and recuperation zones of the Reserve. The program's objectives are to: 1) reduce pressure on the natural forest of the core zone through agroforestry and reforestation in the outer zones; 2) reduce the incidence of forest fire and insect damage throughout the Sierra to improve forest quality; 3) promote sustainable management of timber and non-timber resources among communities in the Sierra to insure long-term viability and improved economic returns; and, 4) improve consciousness among the population of the Reserve about the need for conservation and proper management of the region's forest resources.

- Methodology and Strategy

Work under this component for 1995 will be carried out using the same methods applied in the Sustainable Agriculture Program.

- Agroforestry - The program will establish a number of family nurseries to produce seedlings of native tree species for firewood and timber, multiple-use species for agroforestry parcels, and plantation species for recuperation of critical degraded areas. Defensores has obtained plastic bags for nursery seedling production and seeds from the national forest seed bank of the General Directorate of Forestry.

- Forest Fire and Insect Infestation Prevention - With technical assistance from the U.S. Forest Service International Sister Forests Program (Great Lakes Region), Defensores is developing a forest fire prevention and education program. The program is aimed at responding to the uncontrolled agricultural burning that is prevalent in the Reserve through prevention, education, and training. Local fire control brigades will be formed, trained, and equipped through the program. The program is also coordinating with government agencies (CONAP and DIGEBOS), local communities, and landowners to obtain the proper licenses and cooperation to conduct tree removal in areas infested with the pine bark beetle.

- Forest Management - An analysis of community forest inventories as well as several new inventories will be conducted. Market study results will be analyzed to determine potential for initiation of pilot project in community-based forest management.

- Education - Education regarding forest conservation and management will be carried out by Defensores staff as a priority topic of the decisionmaker workshops (see section on Environmental Education).

- Training

Training of both Defensores staff and community members will be carried out in 1995 in various areas including: course on forest management for resource guards and extension workers; training in nursery establishment and maintenance; forest fire prevention and control, control of pine bark beetle, and participation in an intensive course in natural forest management offered by WWF in Costa Rica by Defensores' forestry technical assistant.

- Coverage and Personnel

The Community Forestry Program is coordinated by an agroforestry specialist, and staffed by a forestry technical assistant, extension workers, and Peace Corps Volunteers.

4. Environmental Education

- Objectives

Given the fundamental aim of the Ecodevelopment Project to resolve problems stemming from inadequate resource use, a principal challenge in the Reserve is to reinforce the messages and practices being transmitted through the Project (e.g., sustainable agriculture and forestry), to ensure coherence and provide a mechanism for evaluation, critique, and refocusing. The Environmental Education Program, therefore, serves to educate the broad range of actors influencing changes in the Reserve about the importance of conserving its resources, and foments community, institutional, and legal responses to achieve conservation ends.

- Methodology and Strategy

The strategy for strengthening the environmental education component has involved, over the past year, integrating environmental education more closely with the other components of the Ecodevelopment Project. Emphasis is on raising consciousness and changing attitudes by reinforcing conservation messages as an

effective means of resolving environmental problems and addressing development needs.

The Environmental Education Program includes four main elements. Local and interpersonal communication involves the transfer of information on specific themes on a one-to-one or small group basis by resource guards, assistants in environmental education, and schoolteachers and volunteers. Social communication aims to reinforce these themes on a community level through media campaigns. Extension and training through technology transfer in the other components of the Ecodevelopment Project provides the practical application of environmental education. And a program of wider public outreach to increase public and institutional understanding, cooperation, and support of effective management of the Reserve is carried out through workshops of local and district level decisionmakers, key institutions, and private landowners and ecological fairs.

- Training

Training needs have been identified to reinforce Defensores' staff in basic concepts and strategies for environmental education as well as in specific topics to be covered in the communities.

- Coverage and Personnel

Defensores plans to extend Ecodevelopment Project activities - primarily environmental education to disseminate information regarding the management objectives of the Reserve and resource management alternatives - to 17 new communities during 1995, projecting a total of 62 communities covered through the various program activities and united through the Environmental Education Program.

In 1994, Defensores hired an environmental education specialist and assistant to develop and coordinate the program. The environmental education assistant, in particular, has been instrumental in working with Defensores' field staff to reinforce extension and community organization methods, and to ensure the incorporation of basic environmental education concepts in extension and outreach. The addition of the assistant to the staff has also helped to nurture a well-functioning "team" approach among the field personnel at the district level. Based upon the success of this approach in the Motagua District, an environmental education assistant will be hired for the Chilascó District in 1995.

Three Peace Corps Volunteers participated in the program in 1994, primarily in the school-based environmental education activities. The total staff dedicated to environmental education for 1995 includes 1 specialist, 3 district-level assistants, and

five Peace Corps Volunteers. WWF and Ortenberg Foundation funds will cover salaries for the specialist and 1 district-level assistant.

Ecodevelopment in the Sierra de las Minas
Biosphere Reserve - Guatemala

General Project Budget

January 1, 1995 - December 31, 1995

	WWF	Claiborne/ Ortenberg	Other*	Total
SALARIES	\$ 17,250	68,600	17,800	103,650
PER DIEM EXPENSES	1,400	5,000	2,400	8,800
TRAINING	1,100	4,600	1,300	7,000
OPERATING EXPENSES	2,700	11,100	3,050	16,850
FURNITURE AND EQUIPMENT	<u>250</u>	<u>1,100</u>	<u>400</u>	<u>1,750</u>
SUB-TOTAL	22,700	90,400	24,950	138,050
ADMINISTRATION (10%)	<u>2,300</u>	<u>9,050</u>	<u>2,500</u>	<u>13,850</u>
TOTAL	\$ 25,000	99,450	27,450	151,900

* NOTE: WWF and DFN are fundraising to cover the outstanding Ecodevelopment Project Requirements for 1995. Prospects are good that the required funds (under "Other") will be raised through the organization EarthForce, which has selected WWF and Sierra de las Minas as beneficiaries of their Pennies for the Planet Campaign.

Ecodevelopment in the Sierra de las Minas
Biosphere Reserve - Guatemala

Total Project - Budget Detail

WWF and Claiborne/Ortenberg Foundation

January 1 - December 31, 1995

		Total
SALARIES		\$ 103,650
--Project Director	\$ 16,500	
--2 District Ag. Coordinators	21,350	
--1 District Agroforestry Coordinator	12,780	
--1 Environmental Ed. Specialist	10,520	
--1 Assistant for Environmental Ed.	7,100	
--2 Technical Assistants	11,500	
--2 Sector Coordinators	7,520	
--6 Extensionists	10,980	
--2 Project Secretaries (Teleman and Guatemala offices)	5,400	
PER DIEM EXPENSES		8,800
--For 6 field staff @ \$1050/year	6,300	
--For 4 field staff @ \$ 625/year	2,500	
TRAINING		7,000
--Formal courses in Salamá and Telemán (4 training courses)	1,750	
--Group meetings for Integrated Women's Development Component (2 meetings)	1,050	
--Workshops for participatory evaluation and planing process for 1996	2,100	
--Workshops for decisionmakers at the local, district, and farm level	2,100	
OPERATING EXPENSES		16,850
--Gasoline and Oil	4,380	
--Vehicle Maintenance	7,000	
--Materials and supplies	1,750	
--Printing (educational materials)	1,580	
--Office supplies	350	
--Communications	1,790	
FURNITURE AND EQUIPMENT		1,750
SUB-TOTAL		<u>138,050</u>
ADMINISTRATION (10%)		<u>13,850</u>
TOTAL		\$ 151,900